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ional Soil Map and Land Use Project

Ministry of Agriculture, Jordan

J O S C I S

Jordan Soil and Climatic Information System

G I S

V O L U M E

ation Processing Print & Plot Map Database Settings & Backup

Gerhard Bechtold
Amman
July 1993

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INTRODUCTION

A Geographical Information System (GIS), sometimes called a Geographic Information System, is a powerful set of tools for collecting, storing, retrieving, transforming and displaying spatial data from the real world. Geographical data describe objects from the real world in terms of:

their position with respect to a known coordinate system
their attributes unrelated to position, such as colour, cost pH, rainfall total etc
their spatial interrelations with each other (topological relations) which describe how they are linked together or how one can travel between them.

The evolution of GIS has been influenced strongly by the use of computers in cartography and general developments in computer graphics (Burrough 1986). In cartography, emphasis has been on automated data capture and production of high quality output whereas computer graphics are largely concerned with the display and manipulation of visible material and do not pay much attention to the non-graphic attributes that the visible entities might or might not have. Good computer graphics are essential for a modern GIS but a graphics package alone is not sufficient for performing the tasks expected.

Geographical information systems do have a great deal in common with computer-aided design (CAD) systems used for drafting a wide range of technical objects, from cars or aeroplanes to the circuits on a microchip. Both GIS and CAD systems need to be able to relate objects to a frame of reference, both need to handle non-graphic attributes and both need to have the capability of describing topological relations (Burrough 1986). The great volume and diversity of the data appropriate for input to a GIS can make even an efficient CAD system unsuitable as a GIS. However, the links between GIS and CAD systems remain strong, an example being that most standard data transfer formats used in CAD systems are supported by GIS.

The data in a GIS should be thought of as representing a model of the real world. In this context, the data in JOSGIS can serve as a test bed for studying environmental processes, analysing trends and supporting decisions about resource management. Geographical Information Systems have three important components - computer hardware, applications software and an organisational framework.

The hardware used for GIS in this project is described in detail in Section** but in summary comprises an IBM compatible personal computer (PC) with a digitizer, plotter, and disk and magnetic tape drives attached. The software consists of modules for:

Data input and verification;
Data storage and database management;
Data output and visualisation;
Data transformation;
Interaction with user

(After Burrough 1986).

In order to be used effectively, the GIS needs to be placed in an appropriate organizational context. In this project, the hardware and software for GIS have been procured and made operational, and some staff training has been undertaken. However, an outstanding task is the complete integration of the GIS activities of the Project into the whole work process. This requires further technological development but immediate attention to the retraining of managers in the use of GIS would bring rapid results.

Data structures:

There are five kinds of data which can be represented in a GIS:

- point features (soil pits, raingauges)
 - linear features (roads, rivers, elevation contours)
 - areas (polygons) with common properties (soil series, climate zone)
 - actual or potential surfaces (ground elevation)
 - temporal changes (land use)
- (After Chidley & Elgy 1991)

Three basic data structures exist for representing these types of data:

- vector, in which all features are defined by a series of x,y coordinate pairs
- raster, in which an area is covered by a grid with attributes specified for each grid cell or pixel
- tile, in which the area is represented by a number of irregularly shaped planar elements.

Any specific GIS may use one or more of these data structures. Generally the vector structure is used when most of the data can be structured as points or lines, the raster structure is used if most of the data represent areas of land (or if the data origin is an image) and the tile structure is used to represent surfaces in a vector system (Chidley and Elgy 1991).

SPANS

The SPANS GIS adopted for this Project is a raster based system and was chosen because of the need for rapid spatial analysis of data representing areas of land such as soil types and associations. However, data are captured in SPANS in vector form and then transferred to raster format by the appropriate processing module. Raster representation assumes that the geographical space can be treated as though it were a flat Cartesian surface. Each grid cell or pixel is representative of a square parcel of land. The resolution, or scale of the raster data is then the relation between the the cell size in the database and the dimensions on the ground.

The rapid processing capability characteristic of SPANS is achieved by use of the quadtree data structure, a more compact representation based on successive division of a square into quadrants (Burrough 1986). The lowest limit of division is the single pixel.. Quadrees are 'variable resolution' arrays in which detail is represented only when available without requiring excessive storage for areas where detail is lacking. It is an elegant technique which is highly developed in the SPANS GIS.

Volume G of this manual describes the implementation of SPANS as the GIS for the National Soil Map and Land Use Project. SPANS runs under MS_DOS and, in the early stages of the Project, version 4.3 was mounted. All the digitizing has been done using version 4 of the software. Later versions of SPANS 5 became available and have been used for processing previously digitized data. Currently SPANS version 5.22 is operational. The individual sections in this volume describe the digitization, processing, printing and plotting routines. Also described is a map database containing more than 80 maps of Jordan, a black and white example of each being included in the volume.

In SPANS, command (CMD) files are batch files used to execute a number of commands. They are created by an editor program such as QEDIT, referred to as 'Q', and strictly following the syntax rules of SPANS. In JOSGIS, several predefined CMD files are set up. These CMD files are for:

- * Importing and processing maps from the stage of digitization to the final SPANS map format
- * Importing points and exporting point related data out of SPANS (to the Soil database)

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DIGITIZATION of POLYGON (Quadtree) MAPS

1) Enter SPANS - Digitizing Module:

First: Turn digitizing tablet and monoscreen on

JOSCIS: Geographical Information System

SPANS - Digitizer

(Project name:) {Name of map sheet} (aaaacr),
 which consists of 4 letter name + 1 letter
 for column + 1 letter for row
 if only 1 sheet: 4 letter name + 'aa': aaaaaa

(Is this a new project?) Y or N

(Your name:) {Your initials}
 example: MOHSAM

<PageDown>

2) IF MAP SHEET IS NEW: Specify map details and define control points:

(Document Name:) {Name of map}

(Map Projection:) {Projection of source map}

(Scale 1:) {Scale}

<PageDown>

Generate Control Points <F8>

Move cursor to lower left calibration point (outside of any other map details)

Cursor-0

Move cursor to upper left calibration point (outside of any other map details)

Cursor-0

Move cursor to lower right calibration point (outside of any other map details)

Cursor-0

Cursor-0

<F1>

Move cursor to lower left control point

(a control point is a point, you know its exact latitude and longitude)

Cursor-0

<F3>

Longitude (in decimals)

example: 36.53185

<TAB>
 {Latitude (in decimals)}
 example: 31.42673
 <ENTER>
 <F5> to change last column to 'Y'

 <DOWN>

 <F1>
 Move cursor to upper right control point
 (a control point is a point, you know its exact latitude and longitude)
 Cursor-0
 <F3>
 {Longitude (in decimals)}
 example: 36.53185
 <TAB>
 {Latitude (in decimals)}
 example: 31.42673
 <ENTER>
 <F5> to change last column to 'Y'

 <F7>
 <F9>
 <F10>

3) Digitize lines:

Digitize New Data <F1>

If the map was not calibrated before:

Move cursor to lower left calibration point

Cursor-0

Move cursor to upper left calibration point

Cursor-0

Move cursor to lower right calibration point

Cursor-0

Cursor-0

Cursor-0 till you are in 'line segment' mode

Cursor-1 to start a line (e.g. at a node)

(If linked to another node, it has to beep twice!)

Cursor-5 continuously, when following the line

Cursor-1 to end the line

(If linked to another node, it has to beep twice!)

Remarks:

This procedure has to be followed for each line

Long lines have to be split in two or more individual lines

Cursor-E to delete a starting point or a line

*At maps with continuation to E or S, all units have to be extended to the E or S by 3-5 mm
At the end, all mapping units have to be 'closed'*

4) Assign the outside area:

Cursor-0 till you are in 'Centroid' mode
Move cursor outside any mapping unit
Cursor-1
Cursor-4 to define a centroid
(Level code:) Cursor-0
Cursor-A
(Feature code:) Cursor-0
Cursor-A
Move cursor to boundary
Cursor-1
Cursor-0 to accept (or: Cursor-3 to reject)
Check for correct direction of arrow
Cursor-0 to accept (or: Cursor-3 to reject)
Cursor-0

5) Assign centroids:

Cursor-0 till you are in 'Centroid' mode
Move cursor inside a mapping unit
Cursor-1
Cursor-4 to define a centroid
(Level code:) Cursor-1
Cursor-A
(Feature code:) Cursor-number of mapping unit
Cursor-A
Move cursor to boundary
Cursor-1
Cursor-0 to accept (or: Cursor-3 to reject)
Check for correct direction of arrow
Cursor-0 to accept (or: Cursor-3 to reject)
Cursor-0

Remarks:

*This procedure has to be followed for each mapping unit,
except islands (see next Section)
If different level codes are assigned, feature codes of mapping units with same
level code should be different*

6) Assign centroids to islands:

('islands' are mapping units, which are completely surrounded by ONE other mapping unit)

Cursor-0 till you are in 'Centroid' mode
 Move cursor to centroid of the **surrounding** unit
 Cursor-9
 Cursor-1
 Cursor-0
 Cursor-0
 Move cursor inside the island
 Cursor-1
 Cursor-5 to define an island centroid
 (Level code:) Cursor-1
 Cursor-A
 (Feature code:) Cursor-number of mapping unit
 Cursor-A
 Move cursor to boundary
 Cursor-1
 Cursor-0 to accept (or: Cursor-3 to reject)
 Check for correct direction of arrow
 Cursor-0 to accept (or: Cursor-3 to reject)
 Cursor-0

Remark:

This procedure has to be followed for each island mapping unit

7) Export:

Return to Main Menu <F10>
 Export Data <F6>
 SPANS VEC/VEH with topology <F1>
 (To change scale and offset...:) <ENTER>
 (If you want to check for arcs missing L/R p...:) **Y**
 (Building area topology...:) <ENTER>
 (Area has no enclosing polygon...:) <ENTER>
 Return to Main Menu <F10>

8) Following Procedures:

Copy VEC/VEH files to SPANS-universe subdirectory
 example: copy C:\DIGDAT\{filename}.VE? C:\SPANS521\JORDAN*.*
 Prepare backup of all 7 files (explained in Section G 6.3 of this Volume)
 Process in SPANS (explained in Section G 3.1 of this Volume)

DIGITIZATION of LINE MAPS

1) Enter SPANS - Digitizing Module:

First: Turn digitizing tablet and monoscreen on
JOSCIS: Geographical Information System
SPANS - Digitizer

(Project name:) {Name of map sheet} (aaaacr),
 which consists of 4 letter name + 1 letter
 for column + 1 letter for row
 if only 1 sheet: 4 letter name + 'aa': aaaaaa
(Is this a new project?) Y or N
(Your name:) {Your initials}
 example: MOHSAM
<PageDown>

2) IF MAP SHEET IS NEW: Specify map details and define control points:

(Document Name:) {Name of map}
(Map Projection:) {Projection of source map}
(Scale 1:) {Scale}
<PageDown>

Generate Control Points <F8>
Move cursor to lower left calibration point (outside of any other map details)
Cursor-0
Move cursor to upper left calibration point (outside of any other map details)
Cursor-0
Move cursor to lower right calibration point (outside of any other map details)
Cursor-0
Cursor-0

<F1>
Move cursor to lower left control point
 (a control point is a point, you know its exact latitude and longitude)
Cursor-0
<F3>
{Longitude (in decimals)}
 example: 36.53185

<TAB>
 {Latitude (in decimals)}
 example: 31.42673
 <ENTER>
 <F5> to change last column to 'Y'

 <DOWN>

 <F1>
 Move cursor to upper right control point
 (a control point is a point, you know its exact latitude and longitude)
 Cursor-0
 <F3>
 {Longitude (in decimals)}
 example: 36.53185
 <TAB>
 {Latitude (in decimals)}
 example: 31.42673
 <ENTER>
 <F5> to change last column to 'Y'

 <F7>
 <F9>
 <F10>

3) Digitize points and assign centroids:

Digitize New Data (F1)

If the map was not calibrated before:

Move cursor to lower left calibration point
 Cursor-0
Move cursor to upper left calibration point
 Cursor-0
Move cursor to lower right calibration point
 Cursor-0
 Cursor-0

Cursor-0 till you are in 'Line Segment' mode

Cursor-1 to start a line
 Cursor-5 continuously, when following the line
 Cursor-1 to end the line
 Cursor-4 to define a centroid
 (Level code:) Cursor-1
 Cursor-A
 (Feature code:) Cursor-number of line
 Cursor-A

Remarks:

This procedure has to be followed for each line

Cursor-E to delete a line

If different level codes are assigned, feature codes of lines units with same level code should be different

4) Export:

Return to Main Menu <F10>

Export Data <F6>

SPANS VEC/VEH without topology <F2>

(To change scale and offset...:) <ENTER>

Return <F10>

5) Following Procedures:

Copy VEC/VEH files to SPANS-universe subdirectory

example: copy C:\digdat\{filename}.VE? C:\spans521\jordan*.*

Prepare backup of all 7 files (explained in Section G 6.3 of this Volume)

Process in SPANS (explained in Section G 3.2 of this Volume)

DIGITIZATION of POINT MAPS

1) Enter SPANS - Digitizing Module:

First: Turn digitizing tablet and monoscreen on
JOSCIS: Geographical Information System
SPANS - Digitizer'

(Project name:) {Name of map sheet} (aaaacr),
 which consists of 4 letter name + 1 letter
 for column + 1 letter for row
 if only 1 sheet: 4 letter name + 'aa': aaaaaa

(Is this a new project?) Y or N

(Your name:) {Your initials}
 example: MOHSAM

<PageDown>

2) IF MAP SHEET IS NEW: Specify map details and define control points:

(Document Name:) {Name of map}

(Map Projection:) {Projection of source map}

(Scale 1:) {Scale}

<PageDown>

Generate Control Points <F8>

Move cursor to lower left calibration point (outside of any other map details)

Cursor-0

Move cursor to upper left calibration point (outside of any other map details)

Cursor-0

Move cursor to lower right calibration point (outside of any other map details)

Cursor-0

Cursor-0

<F1>

Move cursor to lower left control point

(a control point is a point, you know its exact latitude and longitude)

Cursor-0

<F3>

{Longitude (in decimals)}

example: 36.53185

<TAB>
 {Latitude (in decimals)}
 example: 31.42673
 <ENTER>
 <F5> to change last column to 'Y'
 <DOWN>
 <F1>
 Move cursor to upper right control point
 (a control point is a point, you know its exact latitude and longitude)
 Cursor-0
 <F3>
 {Longitude (in decimals)}
 example: 36.53185
 <TAB>
 {Latitude (in decimals)}
 example: 31.42673
 <ENTER>
 <F5> to change last column to 'Y'
 <F7>
 <F9>
 <F10>

3) Digitize points and assign centroids:

Digitize New Data <F1>

If the map was not calibrated before:

Move cursor to lower left calibration point

Cursor-0

Move cursor to upper left calibration point

Cursor-0

Move cursor to lower right calibration point

Cursor-0

Cursor-0

Cursor-0 till you are in 'Points' mode

Cursor-1 to enter a point

Cursor-4 to define a centroid

(Level code:) Cursor-1

Cursor-A

(Feature code:) Cursor-number of point

Cursor-A

Remarks:

This procedure has to be followed for each point

Cursor-E to delete a point

If different level codes are assigned, feature codes of mapping units with same level code should be different

4) Export:

Return to Main Menu <F10>

Export Data <F6>

SPANS VEC/VEH without topology <F2>

(To change scale and offset...:) <ENTER>

Return <F10>

Following Procedures:

Copy VEC/VEH files to SPANS-universe subdirectory

example: copy C:\digdat\{filename}.VE? C:\spans521\jordan*.*

Prepare backup of all 7 files (explained in Section G 6.3 of this Volume)

Process in SPANS (explained in Section in Section G 3.3 of this Volume)

ADVANCED PROCEDURES of MAP DIGITIZATION

1) Control Points:

Control Points are two benchmark points, the precise coordinates (longitude and latitude, in decimals) of which are known. Preferably, they are located in the extreme south-western part and in the extreme north-eastern part of the map.

In many cases, the best control points are the corners of the frame of topographic maps, which are used for definition of the map frame, e.g. topo maps 1:250,000 in a frame width of 1°: Example: sheet Aqaba with bottom left corner of 35.0000° E / 29.0000° N and the top right corner of 36.0000° E / 30.0000° N.

If coordinates are given in minutes/seconds, convert them to decimal values first:

$$\text{coordinates (decimals)} = \text{degrees} + \text{minutes} / 60 + \text{seconds} / 3600$$

On very general, very small scale maps without fixed coordinates points, control points have to be chosen by known localities:

	E	N
example:		
Aqaba	34.960	29.544
northernmost point of Jordan (bend of Yarmouk river)	35.805	32.755
boundary corner of Jordan, SSE of Azraq	37.000	31.500
boundary corner of Jordan, SE of Ruweishid	39.000	32.000
Ruweishid	38.190	32.500

When entering coordinates in the Control Point Menu (after pressing F3), take care, that you overwrite any previous digits with 0s, eventually you have to press <Tab> and <Enter> again.

The only reliable way to check, if the correct control point coordinates were entered is to display the VEH file after export of digitized data:

DOS
 CD\digdat
 TYPE {filename}.VEH

and check the two bottom lines for their coordinates

2) Calibration points:

Calibration points are three points marked on the map sheet. They can be digitized by the digitizing person, but they have to be placed **well outside any map features and outside the control points**. Thus, the frame of map sheet with the coordinates on, is **not** a good place to locate the calibration points on !

These calibration points have to be constant during the entire process of digitization. They can not be changed !

Because of these points, it is not possible, to start digitization with one map and continue with a different copy of the same sheet.

3) Bulk attribute entry:

This option is very useful to change previously assigned, wrong level and feature codes.

It is accessed by option 'Bulk Attribute Entry' (F9) of the Main Menu.

It will start with the first unit, but individual units can be selected by:

<CTRL> <HOME>	jump to 1. entity
<CTRL> <END>	jump to last entity
<CTRL> <PAGE DOWN>	jump backward n entity
<CTRL> <PAGE UP>	jump forward n entity
<ALT> G	jump to entity n
<ALT> P	jump to entity selected by cursor
<ALT> A	abandon and exit

Care has to be taken when entering the level or feature code, which have to be numeric, that they are entered to form the last letters in the row: They have to be right justified (aligned), not left justified (aligned) or in the centre.

After having entered or corrected one level or feature code, use <PAGE DOWN> to move to the next unit, to ensure that the corrected unit is actually saved.

4) Deletion:

To delete a digitized unit (line segment, point, whole polygon, centroid):

From 'Digitizing Command Menu':

<F10> Return to Main Menu

<F2> Edit Existing Data

Move cursor to unit which is to be deleted and press Cursor-1

(Is this the right entity?)

If yes: Cursor-1

If no: Cursor-3

Cursor-E

Cursor-3

Cursor-0

(Are you sure ...)

Cursor-0

The unit is then deleted, but can be recovered if necessary
(through 'Main Menu'-F4-F7)

5) Cleaning:

For very large files, it is recommended to occasionally 'clean' the data and permanently delete old, unnecessary units:

From 'Main Menu':

<F4> Post Processing

<F1> Clean File and Compress Deleted Records

after:

<F10> Return to Main Menu

It might be necessary, that two 'clean' files have to be copied to the original files:

CLN ---> CRD
DLN ---> DIR

example: copy C:\digdat\{filename}.CLN
 C:\digdat\{filename}.CRD
example: copy C:\digdat\{filename}.DLN
 C:\digdat\{filename}.DIR

6) Format of Digitized Map Files:

Each map sheet being digitized is stored during process of digitization in 5 files, after 'export' in 7 files:

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QUADTREE MAP COMPILATION in SPANS

1) Digitization:

See Section G 2.1 of this Volume

2) Export of digitized map:

In digitizing module:

Export Data <F6>

CRD/DIR/FMT/HDR/HST

SPANS VEC/VEH files with topology <F1>

--> VEC/VEH

3) Copy VEC/VEH files to SPANS subdirectory:

DOS

example: copy C:\digdat\{filename}.VE? C:\spans521\JORDAN*.*

4) Correct VEH file:

JOSCIS: Geographical Information System

Digitizer --> SPANS 5 [call of program 'sp5_dig']

or:

q {filename}.VEH

'Areas header' line should read as: AREAS_HEADER ... 5500032

'Points header' line should read as: POINTS_HEADER ... 5500

The underlined digit has to be changed from 0 to 5!

5) Enter SPANS

JOSCIS: Geographical Information System

SPANS - GIS: Processing & Retrieval

Jordan (total)

6) Import digitized vectors to SPANS 5 format:

Transform	VEC/VEH -> TOP/VTX
Import	
Vector	
(Vector files:)	<u>{filename}</u>
(New vector dataset:)	<u>{filename}</u>
(Quad level:)	0
(Window:)	00

Select from Custom Projection List

Select the correct projection !

(Ellipsoid:) <F10>

(Projection Title:) <ESC>

or: File - Command Mode - **arch_int l = {filename} v = {filename} t=0 w=00**

or: File - Command Mode - **exec f=proc1**

with modified 'proc1'

See example and comment in Annex 2 !

7) Transform vectors to map:

Transform	TOP/VTX -> MAP
Data Type	
Polygons to map	
(Polygon dataset:)	<u>{filename}</u>
(New map:)	<u>{filename}</u>
(Quadlevel:)	14

or: File - Command Mode - **polyc v = {filename} m = {filename} q = 14**

or: File - Command Mode - **exec f=proc2**

with modified 'proc2'

See example and comment in Annex 2 !

8) If more than 1 sheet: Join the individual sheets together:

Model	TEMP1.MAP/TEMP2.MAP
Overlay	
Join	
(Map 1:)	<u>{filename of 1.sheet}</u>
(Map 2:)	<u>{filename of 2.sheet}</u>
(Window:)	00
(New map:)	temp1

Repeat this step to join all sheets and save the intermediate results alternatively in files 'temp1' and 'temp2'. The last joining procedure can result in file ????TOT if no checking for Dead Sea shoreline will be done (next step).

temp1 + 3.sheet --> temp2

temp2 + 4.sheet --> temp1

temp1 + 5.sheet --> temp2

temp2 + 6.sheet --> temp1

... etc.

or: File - Command Mode -
joint m = {1.filename} n = {2.filename} o = {temp.filename} w=00 q=14

or: File - Command Mode - **exec f = proc3**
with modified 'proc3'
See example and comment in Annex 2 !

9) Check with 'Dead Sea' (line deadsea in window 'ds'):

Visualize
 Entity
 Map
 (Map:) **temp1 or temp2 or {filename} (...aa), if 1 sheet**
 (Window:) **ds**
 all others in default

Visualize
 Entity
 Vector
 (Vector dataset:) **deadsea**
 (Window:) **ds**
 all others in default

If the Dead Sea unit is not completely within the Dead Sea line, the units have to be redigitized, and extended to the W, thus 'reducing' the Dead Sea area.

Then:

Check what is the number of the Dead Sea (often the last number) by:

Analyze
 Maps
 Area
 (Map:) **{filename}**
 (Window:) **00**
 all others in default

<F4>

DOS

q equation.inp

Modify equation 'E deadsea':

interm2 = [{name of last joined map, e.g. temp1 or temp2}]
{ no.of Dead Sea unit } if

Example:

```
E deadsea      Dead Sea Alignment
                interm1 = [deadsea];
                interm2 = [temp3];
                {162 if (interm1 = 1),interm2};
```

then safe (<ESC>-F-S) and exit (<ESC>-Q-Q) from Q

Return to SPANS:

exit

Visualize (to change to window 00)

Entity

Polygons

(Polygon dataset:) {any}

(Window:) **00**

all others in default

Model

Overlays

Map

(Equation:) **deadsea**

(Quantiles:) **0**

(Classification:) **0**

(New map:) {final map (...tot)}

10) If many units: Optimize colours:

Visualize

Graphics

Colour Optimize

(Map:) {filename (...tot)}

11) Edit/create a title and/or a reference to a legend:

(has to be done every time when a map is created or modified)

Edit

Library

Map Information

(Map:) {filename}

(Delete...:) **N**

(New map:) {filename}

(Legend:) {filename}

(Short title:) {filename}

(Aggregation type:) **1**

(Long title:) {map name in capitals}

and press <F10> **before** you press <ENTER>

12) Edit/create legend:

(has to be done only the first time for a particular map)

Edit

Library

Legends

Create

(New legend:) {filename}

13) Transform map to vector lines:

Transform MAP -> TOP/VTX
 Data Types
 Map to
 Vectors

(Map:)	{filename} (...tot)
(New vector dataset:)	{filename} (...tot)
(Window:)	00
(Basemap cut:)	Y
(Quadlevel:)	0
(Areas:)	Y
(Entity map:)	Y
(New map:)	{temp}

14) Create and save a browse file:

Visualize
 Entity
 Maps

(Map:)	{filename}
(Window:)	00

all others in default

Visualize
 Entity
 Points

(Point dataset:)	townbb
(Radius:)	3

all following in default, except:
 (Filled circles:)

	No
--	----

Visualize
 Entity
 Points

(Point dataset:)	townbb
(Radius:)	1

all others in default

Visualize
 Annotations
 Title

(Title:)	<ENTER>
(Location:)	1
(Height:)	32
(Width:)	20

all others in default

<F10>
 Move <DOWN>-<DOWN>-<RIGHT>-<RIGHT>

Visualize

Annotations

Legend

(Legend title:) <ENTER>

(Location:) 3

<F10>

Modify size by <PAGE DOWN> and <PAGE UP>

<F10>

Visualize

Annotations

Scale

(Location:) 3

(Unit:) 0

(Height:) 48

(Width:) 120

all others in default

Visualize

Annotations

Labels

(Point dataset:) joscis

all others in default

Visualize

Slides

Save

(Slide:) {filename}

(Slide show:) A

(Description:) {short description}

You **can** create VEC/VEH files for AutoCAD transfer at this stage, but because of big file sizes you better create these only when required. See Section G 4.4 of this Volume.

15) Print out one legend (and file it)

16) Write down the colours of the legend

17) Print out one sample (and file it)

ANNEX 1

LIST OF PROCESSING COMMAND FILES

PROC1	1.step of quadtree map processing (import of vectors)
PROC2	2.step of quadtree map processing (transformatio of vectors to map)
PROC3	3.step of quadtree map processing (joining of sheets)

ANNEX 2

EXAMPLE of PROCESSING COMMAND FILES

a) '1.processing step' to import vectors:

```
arch_int l=soi2a2 v=soi2a2 t=0 w=00
arch_int l=soi2a3 v=soi2a3 t=0 w=00
arch_int l=soi2a4 v=soi2a4 t=0 w=00
arch_int l=soi2a5 v=soi2a5 t=0 w=00
arch_int l=soi2a6 v=soi2a6 t=0 w=00
arch_int l=soi2b2 v=soi2b2 t=0 w=00
arch_int l=soi2b3 v=soi2b3 t=0 w=00
arch_int l=soi2b4 v=soi2b4 t=0 w=00
arch_int l=soi2b5 v=soi2b5 t=0 w=00
arch_int l=soi2c7 v=soi2c7 t=0 w=00
```

b) '2.processing step' to transform vectors to map:

```
polyc v=soi2a2 m=soi2a2 q=14
polyc v=soi2a3 m=soi2a3 q=14
polyc v=soi2a4 m=soi2a4 q=14
polyc v=soi2a5 m=soi2a5 q=14
polyc v=soi2a6 m=soi2a6 q=14
polyc v=soi2b2 m=soi2b2 q=14
polyc v=soi2b3 m=soi2b3 q=14
polyc v=soi2b4 m=soi2b4 q=14
polyc v=soi2b5 m=soi2b5 q=14
polyc v=soi2c7 m=soi2c7 q=14
```

c) '3.processing step' to join sheets:

```
join m=soi2a2 n=soi2a3 o=temp1 w=00 q=14
join m=temp1 n=soi2a4 o=temp2 w=00 q=14
join m=temp2 n=soi2a5 o=temp1 w=00 q=14
join m=temp1 n=soi2a6 o=temp2 w=00 q=14
```

```
join m=temp2 n=soi2b2 o=temp1 w=00 q=14
join m=temp1 n=soi2b3 o=temp2 w=00 q=14
join m=temp2 n=soi2b4 o=temp1 w=00 q=14
join m=temp1 n=soi2b5 o=temp2 w=00 q=14
join m=temp2 n=soi2c7 o=temp1 w=00 q=14
```

According to examples above, command files have to be modified to apply for maps to be processed. Thus, filenames ('soi2...' in examples above) have to be changed. This can be done with Q editor in DOS shell (<F4> - DOS - Q {command filename with extension CMD}, after modification: save with <ESC>-F-S, then quit <ESC>-Q-Q, and return to SPANS by typing **exit**).

ANNEX 3

CODE for 'TOT' MAPS

TOT	Map with information of feature code
TOT5	Map with information of level code
TOTA...TOTZ	Map with reinterpretation of feature code (aggregation due to reclassification table)

LINE MAP COMPILATION in SPANS

1) Digitization:

See Section G 2.2 of this Volume

2) Export of digitized line map:

In digitizing module:

Export Data <F6>

SPANS VEC/VEH files without topology <F2>

CRD/DIR/FMT/HDR/HST

--> VEC/VEH

3) Copy VEC/VEH files to SPANS subdirectory:

DOS

example: copy C:\digdat\{filename}.VE? C:\spans521\jordan*.*

4) Correct VEH file:

in DOS:

q {filename}.VEH

and change ARCS_HEADER line that the end looks like: ... 4 4 4 0 0 0

Save with <ESC>-F-S, then quit with <ESC>-Q-Q

5) Enter SPANS

JOSCIS: Geographical Information System

SPANS - GIS: Processing & Retrieval

Jordan (total)

6) Import digitized vectors to SPANS 5 format:

Transform

Import

Vector

VEC/VEH -> TOP/VTX

(Vector files:) {filename}

(New vector dataset:) {filename}

(Quadlevel:) **14**
 (Window:) **00**

(Are arcs intended for polygon creation:) **N**

Select from custom projection list

Select projection of source map !

(Ellipsoid:) <F10>

(Projection title:) <ESC>

or: File - Command Mode - **arch_int l= {filename} v= {filename} t=0 w=00**

or: File - Command Mode - **exec f= proc1**

with modified 'proc1'

See comment in Annexes 1 and 2 of Section G 3.1 of this Volume !

7) Display of each individual sheet:

Visualize

Entities

Vectors

(Vector dataset:) {filename}
 (Window:) **00**
 (Line color:) **15** for display in white,
 or: **0** for display in colors according to feature code
 (Line Width:) **1**
 (Line Style:) **1**

In SPANS 5 (DOS) it is not possible, to join vectors of individual sheets to one map !

One way to overcome is to display sheet after sheet,

Or:

to convert the vectors to corridor maps and join these maps :

8) Convert vectors to corridor maps:

Transform

Data Types

Vectors to

Map

(Vector dataset:) {filename}
 (Priority:) Enter **1** for feature code 1,
 or **2** for feature code 2 etc.
 (New map:) {same filename}
 (Quad level:) **14**
 (Class 1 - Radius:) **.01**

8) If there is more than 1 map sheet, join the individual (corridor) maps:

Model TEMP1.MAP/TEMP2.MAP
 Overlay
 Join
 (Map 1:) {filename of 1.sheet}
 (Map 2:) {filename of 2.sheet}
 (Window:) 00
 (Quad level:) 14
 (New map:) temp1

temp1 + 3.sheet --> temp2
 temp2 + 4.sheet --> temp1
 temp1 + 5.sheet --> temp2
 temp2 + 6.sheet --> temp1
 ... etc.

9) Convert corridor map back to vectors:

Transform
 Data Types
 Map to
 Vectors
 (Map:) {filename, with ...tot}
 (New vector dataset:) {Same filename, with ...tot}
 (Window:) 00
 (Basemap cut:) N
 (Quadlevel:) 14
 (Areas:) Y
 (Entity map:) Y
 (New map:) temp

After having displayed all sheets, it is recommended to save the screen as a browse file:

10) Create and save a browse file:

Visualize
 Entity
 Maps
 (Map:) {filename}
 (Window:) 00
 all others in default
 Visualize
 Entity
 Points
 (Point dataset:) townbb
 (Radius:) 3
 all following in default, except:
 (Filled circles:) No

Visualize

Entity

Points

(Point dataset:) **townbb**
 (Radius:) **1**
 all others in default

Visualize

Annotations

Title

(Title:) **<ENTER>**
 (Location:) **1**
 (Height:) **32**
 (Width:) **20**
 all others in default

<F10>

Move **<DOWN>**-**<DOWN>**-**<RIGHT>**-**<RIGHT>**

Visualize

Annotations

Legend

(Legend title:) **<ENTER>**
 (Location:) **3**

<F10>

Modify size by **<PAGE UP>** and **<PAGE DOWN>**

<F10>

Visualize

Annotations

Scale

(Location:) **3**
 (Unit:) **0**
 (Height:) **48**
 (Width:) **120**
 all others in default

Visualize

Annotations

Labels

(Point dataset:) **joscis**
 all others in default

Visualize

Slides

Save

(Slide:) **{filename}**
 (Slide show:) **A**
 (Description:) **{short description}**

POINT DATA COMPILATION in SPANS

Three ways to generate points and to import them to SPANS 5:

- Option (A) Points generated by Soil Database retrieval program
- (B) Points digitized on digitizing tablet
- (C) Entry of point coordinates in ASCII file

Option (A): By Soil Database retrieval program:

A.1) Select points:

JOSCIS: Soil & Climatic Data
 JOSCIS: Retrieval of Soil Data
 Selected Data Retrieval
 Pits & Bores

(1. Define display:)	Do
(2. Define criteria:)	Define which points to be exported, or 'Do' for all
Do	
(Output:)	Transfer to File
SPANS 5	
(nsoil:)	1 or any number between 1 and 9
	DBF --> TBA/TXT

A.2) If more than 1 sheet (file): Joining:

Possibility to join the point data files (TXT) in DOS by:

copy {source1} + {source2} [+ ...] {target}

example: copy nsoil901.txt + nsoil902.txt nsoil9.txt

and then adjust the TBA file with an editor (Q) to refer to the new target file

example: copy nsoil901.tba nsoil9.tba

q nsoil9.tba, change all 'nsoil901' to 'nsoil9'

but Query-Point will not work on these files

A.3) Enter SPANS:

JOSCIS: Geographical Information System
 SPANS-GIS: Processing & Retrieval
 Jordan (total)

Transform **all** (!) point import files to SPANS point files:

A.4) Transform
 Import
 Library
 Table

(Table file:) {filename}
 example: nsoil901
 TBA/TXT -> TBB
and repeat for all point files !

or: File - Command Mode - **attimp f= {filename}**

A.5) Transform
 Import
 Points

(Table:) {filename}
 example: nsoil901
 (New point dataset:) {same filename, but without 'n'}
 example: soil901
 (Window:) 00
 (Type:) 2
 (Starting field:) 1
 TBB -> TBB

and repeat for all point files !

or: File - Command Mode - **impt f= {filename} o= {different filename} t=2 n=1**

OR (instead of process 4 and 5):

File

Command Mode

exec f=imp_900

with previously modified file 'imp_900.cmd'

See comment in Annex and description in Section D 2.1 of the
 DBMS volume.

Option (B): Digitized on tablet:**B.1) Digitization:**

See Section G 2.3 of this Volume

B.2) Export of digitized points (in digitizing module):

Export Data <F6>

SPANS VEC/VEH file without topology <F2>

B.3) Copy VEC/VEH files to subdirectory**B.4) Enter SPANS:**

JOSCIS: Geographical Information System

SPANS-GIS: Processing & Retrieval

Jordan (total)

Transform point import files to SPANS point files:

B.5) Transform

Import

Vector

(Vector files:) {filename}
 (New vector dataset:) {filename}
 (Quad level:) 14
 (Window:) 00
 (Are arcs intended for polygon creation:) N
 Select custom projection list
 Select correct projection of source map !
 (Ellipsoid:) <F10>
 (Projection title:) <ESC>

VEC/VEH -> ...

or: File - Command Mode - arch_int l = {filename} v = {different filename} t=0 w=00

Do not worry about error messages !

B.6) If more than 1 sheet (file): Joining:

Join the point data files in DOS by:

copy {source1} + {source2} [+ ...] {target}

example: copy points1. + points2. points.

<F4>

DOS (D)

copy {filename}. *.PNT

pntba {filename}

... -> TBA

exit

If error message appears, fill short Morton numbers (column 1, codes with less than 6 letters or digits) in {filename}.PNT with 0 to get a 7 letter/digit code, e.g. e7395b --> 0e7395b

B.7) Transform
Import
Library
Table

(Table file:) {filename}

If error message appears, same recommendation as above.

TBA/TXT -> TBB

B.8) Transform
Import
Points

(Table:) {filename}
(New point dataset:) {filename without 1.letter}
(Window:) 00
(Type:) 0
(Starting field:) 1

TBB -> TBB

If error message appears, same recommendation as above.

Option (C): Writing an ASCII file in DOS:

C.1) Generate point file:

cd\spans521\jordan

q {filename}.PNT

example: q ntown.pnt

Enter points with longitude (in decimals) - space(s) -

latitude (in decimals) - space(s) -

number or name of point in quotations (") at begin and end !

No blank rows at top or end !

Save (<ESC>-F-S) and exit from Q (<ESC>-Q-Q)

pnba {filename}

PNT --> TBA

C.2) If more than 1 sheet (file): Join

Join the point data files (PNT) in DOS by:

copy {source1} + {source2} [+ ...] {target}

example: copy points1.pnt + points2.pnt points.pnt

C.3) Enter SPANS:

JOSCIS: Geographical Information System
 SPANS-GIS: Processing & Retrieval
 Jordan (total)

Transform point import files to SPANS point files:

C.4) Transform Import Library Table

(Table:) {filename}

TBA/PNT -> TBB

or: File - Command Mode - **attimp f={filename}**
 with previously modified file {filename with extension CMD}
 See comment in Annex in Section D 2.1 of the DBMS Volume

C.5) Transform Import Points

(Table:) {filename}

example: nsoil901

(New point dataset:) {different filename: without n}

example: soil901

(Window:) 00

(Type:) 2

(Starting field:) 1

TBB -> TBB

or: File - Command Mode - **impt f={filename} o={different filename} t=2 n=1**

Create and save a browse file

See Section G 3.4 of this Volume

Print out one sample (and file it)

Annex

Appending-class-command files

Command file	Map	Map name	Transfer file	Field in CM files
GEL_9_A	Geology	gel1tot	--> nsoilA	--> GEOL_GIS
GOV_9_B	Governorates	gov3tot	--> nsoilB	--> GOV_GIS
ALT_9_C	Altitude	altxtot	--> nsoilC	--> ALT_GIS
SO1_9_D	Soil-Physiography	soi1tot	--> nsoilD	--> LST1_GIS + LST2_GIS + LST3_GIS
PR2_9_E	Project level II	pr2dtot	--> nsoilE	--> PR2LEVEL
EXS_9_F	Existing study areas	exs1tot	--> nsoilF	--> EXSSTUD
ARI_9_G	Soil moisture regime	aridtot	--> nsoilG	--> ARID_GIS
SO2_9_H	Soil map (Level I)	soi2tot	--> nsoilH	--> SOIL1_GIS + SNAME1_GIS
CLO_9_I	Cloudiness	cloutot	--> nsoilI	--> CLOUD_GIS
HUM_9_J	Relative humidity	humdtot	--> nsoilJ	--> HUMID_GIS
WND_9_K	Wind speed	windtot	--> nsoilK	--> WIND_GIS
PRC_9_L	Precipitation	prc1tot	--> nsoilL	--> PRC_GIS
SO3_9_M	Soil map (Level II)	soi3tot	--> nsoilM	--> SOIL2_GIS + SNAME2_GIS
SO4_9_N	Soil map (Level III)	soi4tot	--> nsoilN	--> SOIL3_GIS + SNAME3_GIS
REG_9_O	Regions	reg3tot	--> nsoilO	--> REG_GIS
SMP_9_P	Sample areas	smpatot	-->	--> SAMP_GIS
VIL_9_Q	Villages	villtot	--> nsoilQ	--> VILL_GIS
TMP_9_Z	Any temporary map	tmp	--> nsoilZ	--> TMP

This list can easily be extended, see DBMS Volume.

See also Section D 3.1 of the DBMS Volume.

STANDARD FOR BROWSE MAPS

It is recommended that a standard layout should be followed for all browse maps in SPANS to keep them uniform in design and therefore better looking for demonstrations:

1) Display map:

Visualize	
Entities	
Maps	
(Map:)	<u>{filename, withTOT}</u>
(Window:)	00
(Basemap cut:)	Y
(Interior fill:)	N
(Clear view first:)	Y

2) At light maps: Display outline:

Display	
Entities	
Vector	
(Vector dataset:)	outxtot
(Window:)	00
(Line color:)	15
(Line width:)	1
(Line style:)	1

3) Display towns:

Visualize	
Entities	
Points	
(Point dataset:)	townbb
(Radius (pixels):)	3
all following in default, except:	
(Filled circles:)	N

Visualize
Entities
Points

(Point dataset:)	townbb
(Radius (pixels):)	1
all others in default	
(Filled circle:)	Y

4) Display title:

Visualize
Annotations
Title

(Title:)	Enter <u>{title}</u> , or accept default with <Enter>
(Location:)	1
(Height:)	32
(Width:)	20
(Color:)	15
(Black background:)	N
(Font:)	0

<F10>

Move <DOWN>-<DOWN>-<RIGHT>-<RIGHT>

5) Display legend:

Visualize
Annotations
Legend

(Legend title:)	Legend
(Location:)	3

<10>

Modify size by <PAGE UP> and <PAGE DOWN>

<F10>

6) Display scale:

Visualize
Annotations
Scale

(Location:)	3
(Unit:)	0
(Height:)	48
(Width:)	120
(Color:)	15
(Black background:)	N
(Font:)	0

7) Display JOSGIS remark:

Visualize
Annotations
Labels
(Point dataset:) **joscis**
all others in default

8) Save as browse file:

Visualize
Slides
Save
(Slide:) {filename}
(Slide show:) **A**
(Description:) {short description}

9) They can be retrieved by:

Visualize
Slides
Slide
(Slide:) {filename}

or:

Visualize
Slides
Slide Show
(Slide show:) {letter of slide show: A - J}

ANNEX

Recommended slide show structure

- A All digitized 'master' maps
- B Maps, directly related to ongoing field work
- C Only windows definitions
- D Only temperature maps
- E - (free)
- F - (free)
- G - (free)
- H - (free)
- I - (free)
- J Any temporary map, which can be erased at the end of the day

TRANSFER OF POINTS FROM SPREADSHEET TO SPANS

This example explains how to transfer points with known latitude / longitude coordinates from Lotus 1-2-3 to SPANS:

1) Enter Lotus (or similar spreadsheet package):

Spreadsheet
Lotus

- Compile / enter data in such a way, that:
 - column A contains the longitude in decimal form (e.g. 35.7894)
 - column B contains the latitude in decimal form (e.g. 31.3458)
 - columns C... contain(s) the names

2) In Lotus:

/
Print
File

(Enter print filename:) {Filename with extension .PNT}
example: today.pnt

Range

*Define range with dot, then move over all rows to be copied and
over column A ... C*

Options
Others
Unformatted
Quit

Go

3) Exit from Lotus:

/
Quit
Yes

4) Copy file to floppy (if GIS is on a different computer):

DOS
 Insert floppy disk in drive A:
 copy C:\123\{filename}.PNT A:*.*

5) Copy file to GIS computer:

At computer with GIS:

Insert floppy
 DOS
 cd\spans521\jordan
 copy A:{filename}.PNT

6) Enter SPANS:

JOSCIS: Geographical Information System
 SPANS-GIS: Processing & Retrieval
 Jordan (total)

7) In SPANS:

<F4>
 DOS
 pntba {filename} (without extension .PNT)
 example: pntba towns

8) Transform

Import
 Library
 Table

(Table file:) {filename}
 example: towns

9) Transform

Import
 Points

(Table:) {filename}
 example: towns
 (New point dataset:) {filename + 1}
 example: towns1
 (Windows:) 00
 (Type of import file:) 2
 (Starting field:) 1

- 10) Visualize
Entities
Points
(Point dataset:) **{filename + 1}**
example: towns1
all others in default
- 11) Visualize
Annotations
Labels
(Point dataset:) **{filename + 1}**
example: towns1
(Label field:) **4**
(Character height:) **10** or similar
(Character aspect:) **1**
(Color:) **15**
(Classification scheme:) **0**
(Rotation angle:) **0**
(Font:) **0**
(Black background:) **N**

CONVERSION of SATELLITE IMAGES to SPANS QUADTREE MAPS

Satellite images are available in separate files. Typically, these files are 21 MB.

1) Copy files to harddisk:

DOS

```
copy A:{filename of Erdas data file} C:\spans521\erdas\*.*
      (if Erdas file is on floppy in drive A:, otherwise, modify)
      example: copy A:sheet1.lan c:\spans521\erdas\*.*
```

2) Create raster header file (RNH):

```
cd \spans521\erdas
rastmenu
```

```
Import
Erdas
(Input file:)      {filename as above, with extension}
                   example: sheet1.lan
(Output file:)     {same filename as filename, but without extension}
                   example: sheet1
(Integer 2-byte order:) 21
(Integer 4-byte order:) 4321
<F10>
                                LAN --> RNH
<ESC>
<ESC>
```

3) Enter SPANS:

```
JOSCIS: Geographical Information System
SPANS-GIS: Processing & Retrieval
Landsat images of Jordan
```

4) Edit raster header file (RNH):

<F4>
 DOS (D)
 q {filename}.RNH
 example: q sheet1.rnh

and edit line below 'GEO_REFERENCE 1' so that it reads as follows:

m (width of pixel in m) (height of pixel in m) m 0 0
(JTM easting of left bottom corner in m) (JTM northing of left bottom-
corner in m) 0

See Annex 1 below !

Example: m 75.200000 75.400000 m 0.000000 0.000000 266550 509200 0.000000

The file should look like:

```

VERSION 4.010
TITLE sheet1
ID sheet1
STORAGE_FORMAT 0 0 8 21 128
RECORD 1 0 0 1
DIMENSION 2747 2561
ORDER 1
PROJECTION ?
GEO_REFERENCE 1
m 75.2000000 75.4000000 m 0.0000000 0.0000000 266550 509200 0.0000000
BANDS 3 2 0 0
BAND_FILE sheet1.lan
BAND_TITLE Band1
BAND_LIMITS 0 255
CLASSIFICATION 0
BAND_FILE sheet1.lan
BAND_TITLE Band2
BAND_LIMITS 0 255
CLASSIFICATION 0
BAND_FILE sheet1.lan
BAND_TITLE Band3
BAND_LIMITS 0 255
CLASSIFICATION 0

```

For explanation of RNH file, see Annex 2 below !

Save (<ESC>-F-S) and quit (<ESC>-Q-Q)

and return to SPANS:

exit

5) Create SPANS raster file (RNL):

```

Transform
Import
Library
Raster headers
    (Raster:)          {Filename}
                        example: sheet1

<F10>
Select from Custom Projection List
JTM
    (Ellipsoid:)       <F10>
    (Projection Title:) <ESC>

LAN/RNH --> RNL

```

This format is sufficient for raster processing.

6) Transfer SPANS raster file to SPANS quadtree map (MAP file):

```

Transform
Data Types
Raster to Map
    (Raster:)          {filename}
                        example: sheet1
    (Band:)            1 or 2 or 3    - see Annex 3 below ! -
    (Classification scheme:) 6 or 7    - see Annex 4 below ! -
    (Quad level:)     13
    (New map:)         {filename + _ + band number}
                        example: sheet1_1
    all others in default

RNL --> MAP

```

This format is required for map processing in SPANS.

7) Display of raster:

```

Visualize
Entities
Raster
    (Raster:)          {filename}
    (Band:)            1 or 2 or 3    - see Annex 3 below ! -
    (Window Id:)       00
    (Classification scheme:) 6 or 7    - see Annex 4 below ! -

```

or: Display of map:

Visualize
Entities
Maps

(Map:)	{filename}
(Window:)	00
(Basemap cut:)	Y
(Interior fill:)	Y
(Clear view first:)	Y

8) If image has margins due to its preprocessing, they have to be cut off before joining individual sheets:

8a) Define image outline map:

<F4>
DOS
q {imag...veh}

File has to be in following format, but actual coordinates have to be adjusted:

```
FILE_TYPE P O U 3 1
VERSION 4.02
EXTENTS 1 34.9 29.0 41.5 33.5
AREAS_HEADER 1 1 1 0.0 0.0 0.0 0.0 7 3 4 7 5 6 0
PROJECTION 0
```

For explanation of these VEH file, see Annex 5 below !

Save (<ESC>-F-S) and quit (<ESC>-Q-Q)

q {imag...vec}

File has to be in following format, but actual coordinates have to be adjusted:

```
AREAS
1 1 1 1 0 0 4
34.900 32.000
36.375 32.000
36.375 33.500
34.900 33.500
```

For explanation of these VEC file, see Annex 6 below !

Save (<ESC>-F-S) and quit (<ESC>-Q-Q)

8b) Generate image outline map:

Transform

Import

Vector

(Vector files:) {filename}
 example: imag1

(New vector dataset:) {filename}
 example: imag1

(Quadlevel for...:) 0

(Windows:) 00

Transform

Data Type

Polygons to Map

(Polygon dataset:) {filename}
 example: imag1

(New map:) {file name}
 example: imag1

(Quadlevel:) 13

8c) Cut image according to image outline map:

Model

Overlays

Impose

(Map 1:) {image outline map, as define above}

(Map 2:) {image map}
 example: sheet1_1

(Windows:) 00

(Quadlevel:) 0

(New map:) {filename}
 example: sheet1_a

9) If more than 1 image, they can / have to be combined:

sheet 1 + sheet 2 --> temp1

temp1 + sheet 3 --> temp2

temp2 + sheet 4 --> temp1

temp1 + sheet 5 --> temp2 etc.etc.

last:

temp... + last sheet -->tot

By:

Model
Overlays
Join

(Map 1:)	{as explained above}
(Map 2:)	{as explained above}
(Window:)	00
(Quad level:)	13
(New map:)	{as explained above}

It might be possible, that SPANS memory is insufficient for the whole, joined display. It is recommended in such a case, to combine the individual sheets into **2** maps covering Jordan.

One browse file for the whole of Jordan can still be created by displaying the individual images with:

(Interior fill:)	N
(Clear view first:)	N

ANNEX 2

Explanation of codes/numbers in RNH file

Storage_format:

0 No runlength encoding
 0 Runlength integers < 2 bytes, no ordering of bytes required
 8 1 byte, unsigned, per pixel
 21 Ordering of bytes in pixel follow Intel 80x86 definition
 128 Length of header (128 bytes, if present)

Record:

1 1 byte in each record, including leading and trailing byte
 0 No leading byte in each record
 0 No trailing byte in each record
 1 Records are padded (new row starts on new record)

Dimension:

first number: number of rows in entire raster (y direction)
 second number: number of columns in entire raster (x direction)

Order:

1 Storage order by row, top to bottom, left to right within each row

Projection:

? No projection defined yet (SPANS will prompt for projection information when raster is imported)

Geo-reference:

1 Specification by one reference point, cell size, and orientation angle

(next line:)

m Units (for raster cell size) in meter
 75.200 Width of a raster cell
 75.400 Height of a raster cell
 m Units (for georeference) in meter
 0.000 no use is made of reference point in raster coordinate system (x)
 0.000 no use is made of reference point in raster coordinate system (y)
 266500 x coordinate of left bottom corner (in JTM - easting)
 509200 y coordinate of left bottom corner (in JTM - northing)
 0 anti-clockwise angle of raster is 0 degrees

Bands:

3 3 bands with this raster
 2 Storage of bands is line interleaved
 0 No band header
 0 No band trailer

For each band:

Band_file:

Name of file containing the band raster

Band_title:

Title assigned to the band

Band_limits:

0 Minimum pixel value
 255 Maximum pixel value

ANNEX 1

Source for width/height sizes of cell and for left bottom corner coordinates

Either:

a) They should be provided by EOSAT / SPOT or any other supplier (or pre-processor) of the satellite image.

Or:

b) If not and if grid system is already overlaid in a pro-processing procedure: They can be derived empirically from superimposed grid references (applied projection grid and/or latitude-longitude system). Required steps: 1. As first approximation, enter approximate coordinates of left bottom corner of entire image (ie. with margin, if existing), 70 m for width and for height of Landsat MSS cells, 30 m for width and height of Landsat TM cells, 30 m for width and height of SPOT multi-chromatic images. 2. Process map as described above. 3. Quantify error of grid point with known grid references as close as possible to the SW corner, and correct coordinate entry in RNH file. 4. Process again. 5. Check NE corner: Quantify error of grid point with known grid references as close as possible to the NE corner, and correct cell width and height in RNH file.

Repeat steps 3 till 5 till errors become negligible (ie. less than 100 m).

If neither original georeference is made, nor any grid references are superimposed, the only possible way is to identify calibration points, determine their coordinates and use them as fixed points in the same way as process (b) above. But better to ask supplier for correct data !!

See Annex 7 with data of Landsat MSS scenes.

ANNEX 3

Image bands

Satellite images are normally delivered in different bands (wave lengths). The number of bands can be read from the raster header file (as created in step 2 above) in line BANDS ..., 1.number.

MSS scenes as delivered in the Project came with 3 bands: Green (500 nm), red (600 nm) and near infrared (NIR: 700-800/900 nm), while the complete set contains another NIR band (800-1100 nm).

Landsat TM, as used by the Project for larger scale survey, is scanned in 7 bands (3 visible, 3 near/mid infrared, and one thermal band).

Shorter bands (visible wavelengths) are better suited for land cover mapping, near infrared for vegetation cover and intensity, mid infrared for minerals.

ANNEX 4

Remote sensing interpretation: Classification

Definition of a classification scheme is an important interpretation process, which is mainly based on remote sensing experience. Classification of a satellite image ('enhancement') is the aggregation of various intensities of radiation into defined classes.

For example, classification scheme 6 is an equally spaced class system, putting the intensities ranging from 0 to 255 into 14 different classes (in value mode, ascending, with base value class 1):

Class	Intensity
1	1.0- 18.2
2	18.2- 36.4
3	36.4- 54.6
4	54.6- 72.9
5	72.9- 91.1
6	91.1- 109.3
7	109.3- 127.5
8	127.5- 145.7
9	145.7- 163.9
10	163.9- 182.1
11	182.1- 200.4
12	200.4- 218.6
13	218.6- 236.8
14	236.8- 255.0

Further remote sensing interpretation techniques include contrast improvement, suppression of image faults, filtering, combination of bands for multispectral images, which are possible in SPANS through equations, which define the relations between the various bands (in 'equation.inp', then 'Model-Overlays-Map'), and geometric restitution into superior coordinate system (e.g. JTM, as explained above).

ANNEX 5

Explanation of codes/numbers in VEH file

File_Type:

P	Polygon format
O	Polygons overlapping
U	Unclean
3	Undefined topological link
1	1 data section in VEC file

Extents:

1	Raw coordinates data
34.9	W margin of Jordan (longitude)
29.0	S margin of Jordan (latitude)
41.5	E margin of Jordan (longitude)
33.5	N margin of Jordan (latitude)

Areas_Header:

1	1 polygon in VEC file
1	Direction of arc traversal unknown (not relevant)
1	Raw coordinates data
0.0	Min x value of area vertices
0.0	Min y value of area vertices
0.0	Max x value of area vertices
0.0	Max y value of area vertices
7	fields in Areas section of VEC file
3	no. of field in VEC files, identifying area classification
4	no. of field in VEC files, identifying area priority
7	no. of field in VEC files, identifying number of vertices in polygon boundary
5	no. of field in VEC files, identifying envelope polygon
6	no. of field in VEC files, defining number of contained polygon
0	no. of field in VEC files, identifying the number of boundary arc for each field

Projection:

0	Longitude / latitude
---	----------------------

ANNEX 6

Explanation of codes/numbers in VEC file

Areas:

- 1 Sequential number (as identified in VEH file)
- 1 Sequential number (as identified in VEH file)
- 1 Sequential number (as identified in VEH file)
- 1 Sequential number (as identified in VEH file)
- 0
- 0
- 4 Number of vertices

- 34.900 x value
- 32.000 y value

ANNEX 7

Coordinates of Landsat MSS Scenes (preprocessed by HTS)

Sheet	Cell size (m)		Bottom left corner (m)	
	Width	Height	Easting	Northing
1	75.09	75.07	268500	511230
2	75.09	75.07	265080	344980
3	75.09	75.07	262000	178830
4	75.03	75.00	422130	511370
5	75.09	75.07	421190	344840
6	75.09	75.07	420200	179350
7	75.09	75.07	574135	483800

TABLE 3
 Conversion of Satellite Images
 (continued)

1. The following information is required for the conversion of satellite images:

Parameter	Symbol	Units	Notes
Latitude	ϕ	Degrees	
Longitude	λ	Degrees	
Altitude	h	Meters	
Slant range	R	Meters	
Incidence angle	θ	Degrees	
Scattering angle	α	Degrees	
Phase angle	β	Degrees	

DEFINITION of NEW MAP(s)

A) RECLASSIFICATION of ONE MAP:

This procedure is useful, if a map is to be redefined,

- either: to select/display only a few, selected units
- or: to aggregate units of a more complex map to form a 'simplified' map with a smaller number of units

Model
Reclass
Build Map
Interactively

```
(Map:)                {filename of original map}
(Window:)             00
(Reclassification scheme:) 0
    then:  under Low value:  mapping unit of original (source) map
           under High value: mapping unit of original (source) map
           under New value:  mapping unit of new (target) map
(Reclassification template:) latest.rcl
(Quad level:)        13
(Basemap cut:)       Y
(Window cut:)        Y
(New map:)           {filename of new map}
```

If more than 20 aggregations are to be formed:

Start as above, after definition of 20 units: <ESC>, and exit from menu.

Edit 'latest.rcl' with Q editor in DOS (or DOS shell from SPANS)

Repeat steps above, but with:

```
(Reclassification scheme:) 1
(Reclassification template:) latest.rcl
```

B) MATRIX OVERLAY of TWO MAPS

This process is to overlay two maps with the result of a table showing the area in each of these two maps (cross-tabulation):

```
Analyze
Maps
Cross-Tab
  (Row map:)      {filename of 1.map}
  (Column map:)  {filename of 2.map}
  (Windows:)     00
  (Display:)     Y
  (Printer:)     N
  (New report file:) standard.rep
```

C) MATRIX OVERLAY TO CREATE NEW MAP

This process is to define and create a new map based on the mapping units of two source maps.

C.1) Create MAT file:

```
Model
Overlays
Matrix
Make Template
  (Row map:)      {filename of 1.map}
  (Column map:)  {filename of 2.map}
  (New matrix template:) {any filename}
```

C.2) Edit file which was created in step above (with extension 'MAT') with Q editor in DOS
(or DOS shell from SPANS)

```
C.3) Model
Overlays
Matrix
Build Map
  (Matrix template:) {filename of MAT file}
  (Windows:)         00
  (Quadlevel:)      13
  (New map:)         {filename of new map, to be created}
```

D) INDEX OVERLAY

This process is to define and create a new map based on individual (index) values of one source map.

D.1) Create IND file:

- Model
- Overlays
- Indexing
- Make Template

D.2) Edit file which was created in step above (with extension 'IND') with Q editor in DOS
(or DOS shell from SPANS)

D.3)

- Model
- Overlays
- Index
- Build Map

TRANSFER OF POINTS FROM DBASE TO GENERATE VORONOI MAPS (Voronoi Map)

A Voronoi map is a map which defines areas in such a way that all locations within the unit are closer to the point than any other point. Thus, each unit 'belongs' to its closest point. They are also called Thiessen polygons. A Voronoi map or Thiessen polygon is typically used to model zones of influence. For example, a Voronoi map can be used to model theoretically the catchment for rain gauges in Jordan.

1) Extract data from dBase to ASCII 'point' file:

```
cd \dbase\natsoild
dbase
use {filename}
    example: use gen_vill
list off gcords_e,gcords_n,{attribute} to file "C:\spans521\jordan\{point file name}.pnt"
    for gcords_e > 0 .and. gcords_n > 0 .and. {attribute} > 0
    example: list gcords_e,gcords_n,code to file "C:\spans521\jordan\villag.pnt"
    for gcords_e > 0 .and. gcords_n > 0 .and. code > 0

    Remark: Point file name should consist of 7 or less letters
quit
```

2) Edit 'point' file:

```
cd\spans521\jordan
q {point file name}.pnt
    example: q villag.pnt

    and edit: Take out any non-coordinates lines (blank lines, header lines) at top
    and bottom

    and write down the number of lines (=points)
```

3) Transfer PNT file to TBA format:

```
pntba {point file name}
    example: pntba villag
```

4) Enter SPANS

5) Transfer TBA file to TBB format in SPANS:

Transfer
 Import
 Library
 Table
 (Table file:) {point file name}

6) Transfer
 Import
 Point
 (Table:) {point file name}
 (New point dataset:) {point file name + 1}
 (Window:) 00
 (Type of import file:) 2
 (Starting field:) 1

7) Transform
 Data Types
 Points to Map
 Voronoi
 (Point dataset:) {point file name + 1}
 (Window:) 00
 (Points to process:) {number of points, from above}
 (Quad level:) 13
 (New map:) {point file name + 1}

8) Model
 Points
 Append Class
 (Point dataset:) {point file name + 1}
 (Map:) {point file name + 1}
 (Window:) 00
 (New point dataset:) {point file name + 2}

9) Model
 Reclass
 Build map
 From table
 (Map:) {point file name + 1}
 (Table:) {point file name + 2}
 (Map class field:) 5
 (Value field:) 4
 (Quad level:) 13
 (Window:) 00
 (Classification scheme:) 0
 (Area field:) 1
 (Basemap cut:) Y
 (Window cut:) Y

(New map:) {point file name + 2} or any other final map name

If message 'Class not given new class or assigned more than once. Create ERROR.MAP ?' appears: 'Y', and display error map later to find out which unit(s) has / have an error.

The actual aggregated map is processed and displayed, when answered with 'N'

10) Check with 'Dead Sea' (line deadsea in window 'ds'):

Visualize

Entity

Map

(Map:) {point file name + 2}
 (Window:) **ds**
 all others in default

Visualize

Entity

Vector

(Vector dataset:) **deadsea**
 (Window:) **ds**
 all others in default

Check what is the number of the Dead Sea (often the last number) by:

Analyze

Maps

Area

(Map:) {point file name + 2}
 (Window:) **00**
 all others in default

<F4>

DOS

q equation.inp

Modify equation 'E deadsea':

interm2 = [{point file name + 2}]
 { {no.of Dead Sea unit} if

Example:

```
E deadsea            Dead Sea Alignment
                    interm1 = [deadsea];
                    interm2 = [towns2];
                    {162 if (interm1 = = 1),interm2};
```

then safe (<ESC>-F-S) and exit (<ESC>-Q-Q) from Q

Return to SPANS:

exit

Visualize (to change to window 00)

Entity

Polygons

(Polygon dataset:) **{any}**

(Window:) **00**

all others in default

Model

Overlays

Map

(Equation:) **deadsea**

(Quantiles:) **0**

(Classification:) **0**

(New map:) **{final map (...tot)}**

MODELLING by EQUATION

The equation feature in SPANS allows complex overlays and analyses of maps. A small program defines the analyses and algorithms of mapping units of individual maps. There is no actual limit to the numbers of maps which can be combined.

Modeling equations consist of mathematical equations which can include general mathematical functions and other special functions which can be tailored for the various modeling types.

The most important feature is the map modeling option.

Each 'equation' has to have the following syntax:

- start with 'E'
- name of equation (less than 9 letters, no underline etc.) has to follow after 'E'
- short explicatory text
- assignment of variables with the '=' command
- following arithmetic, binary, logical and relational operators are accepted:
+ - * / & | ^ ~ and or xor not > >= < <= == <>
- each line (including the last one) has to end with an ';'.
- remark lines start with an ':' in the first column
- references to maps are to be inclosed in square brackets, '[' and ']'
- most important conditional expression is:
{ <truevalue> if <condition> , <falsevalue> };
- the last line, which can be a single value or a formula, is the actual value to be assigned to the new map
- for a complete listing of syntax rules and commands, see 'SPANS Manual - Volume 2 (vers.5.2)', page 13-1 - 13-112

1) Definition of equation:

In SPANS:

<F4>

DOS

q equation.inp

and modify following rules of above, then save (<ESC>-F-S)
and exit (<ESC>-Q-Q) from Q

Return to SPANS:

exit

2) Execution of the equation:

Model
Overlays
Map

(Equation:) {equation name}
 example: today

(Quantiles:) 0

(Classification scheme:) 0

(New map:) {filename of map to be created}

ANNEX

Examples for Equations

E temda Air Temperature (f(alt,lat,long))

```
altit = [altxtot];
altit = {1 if altit == 23,altit};
latit = [lat];
longi = [long];
altit = altit * 100 - 450;
latit = latit * 0.01 + 28.99;
longi = longi * 0.01 + 33.99;
31.57 - altit*0.006827 - latit*1.2119 + longi*0.8104
```

E potpina Pot. Pinus h. +Arbutus (f(altx,prc1,urb1))

```
altit = [altxtot];
altit = {1 if (altit >= 14)and(altit <= 22),0};
prc1h = [prc1tot];
prc1h = {1 if prc1h >= 12,0};
urb1h = [urb1tot];
{1 if (altit = 1)and(prc1h = 1)and(urb1h = 0),0};
```

E deadsea Dead Sea Alignment

```
interm1 = [deadsea];
interm2 = [temp1];
{162 if (interm1 = 1),interm2};
```

E compr Compare two maps

```
soil1 = [soi2old];
soil2 = [soi2tot];
final = {10 if (soil2 = 46)or(soil2 = 47)or(soil2 = 58)or(soil2 = 59),1 if (soil1 = soil2)and(soil1 < 46),
          1 if (soil1 = soil2-1)and(soil2 > 47),3};
final;
```

GIS MODELLING: GENERATION of TEMPERATURE MAPS

1) Create a longitude map (LONG.MAP), if not already existing:

1a) Define classification scheme:

```

Edit
Library
Classifications
  (Classification scheme:) 2
  (New classif.scheme:) 2
  (Title:) {any title}
  (Mode:) z (value)
  (Set order:) ascending
  (Base value class:) 1
  (Type of intervals:) e (equal spacing)
  (Number of intervals:) 600 intervals
  (1) = 'from' 34
  (2) = 'to' 40
      (i.e. from 34 E to 40 E in steps to 0.01)

(longitude can thus be calculated: mapping unit * 0.01 + 33.99)

```

1b) Create the map:

```

Transform
Data Types
Graticules to Map
Longitude
  (Coordinate type:) 1 (longitudinal)
  (Window:) 00
  (Quantiles:) 0
  (Classification:) 2 - see above !-
  (Quad level:) 13
  (Minimum quad level:) 0
  (Base map cut:) Y
  (Query results:) N
  (New map:) {any filename}
              example: long

```

2) Create a latitude map (LAT.MAP), if not already existing:

2a) Define classification scheme:

```

Edit
Library
Classifications
  (Classification scheme:) 3
  (New classif.scheme:) 3
  (Title:) {any title}
  (Mode:) z (value)
  (Set order:) ascending
  (Base value class:) 1
  (Type of intervals:) e (equal spacing)
  (Number of intervals:) 500 intervals
  (1) = 'from' 29
  (2) = 'to' 34
      (i.e. from 29 E to 34 E in steps to 0.01)

      (latitude can thus be calculated: mapping unit * 0.01 + 28.99)

```

2b) Create the map:

```

Transform
Data Types
Graticules to Map
Longitude
  (Coordinate type:) 2 (latitudinal)
  (Window:) 00
  (Quantiles:) 0
  (Classification:) 3 - see above ! -
  (Quad level:) 13
  (Minimum quad level:) 0
  (Base map cut:) Y
  (Query results:) N
  (New map:) {any filename}
      example: lat

```

3) Define a classification scheme for grouping of calculated values:

```

Edit
Library
Classification
  (Classification scheme:) 5
  (New classif.scheme:) 5
  (Title:) {any title}

```

(Mode:)	z (value)
(Set order:)	ascending
(Base value class:)	1
(Type of intervals:)	e (equal spacing)
(Number of intervals:)	60 intervals
(1) = 'from'	8.5
(2) = 'to'	51.5

4) Define formula and enter into system in file 'equation.inp' (using Q editor):

```
cd \spans521\jordan
q equation.inp
```

See Annex 1 for an example, and Annex 2 for regression values !

5) Compile map:

```
Model
Overlay
Map
  (Equation:)      {temdajan for January, etc.}
  (Quantiles:)    0
  (Classification) 5 - as created above ! -
  (New map:)      {temdajan for January, etc.}
```

6) Edit title and legend:

```
Edit
Library
Map Information
  (Map:)          {filename}
  (Delete ...:)  N
  (New map:)      {filename}
  (Legend:)       {filename}
  (Short title:)  {filename}
  (Long title:)   {title} and <F10> before <ENTER>
```

ANNEX 1

Example for temperature formula in 'equation.inp'

```

E temda      Air Temperature (f(alt,lat,long))
altit = [altxtot];
altit = {1 if altit == 23,altit};
latit = [lat];
longi = [long];
altit = altit * 100 - 450;
latit = latit * 0.01 + 28.99;
longi = longi * 0.01 + 33.99;
31.57 - altit*0.006827 - latit*1.2119 + longi*0.8104

```

ANNEX 2

Temperature regression values

File	Air/Soil	Period	Formula
temda	air	annual	31.57 - 0.006827 * alt - 1.2119 * lat + 0.8105 * long
temdajan	air	January:	52.22 - 0.006489 * alt - 0.8991 * lat - 0.2979 * long
temdafeb	air	Febuary:	44.38 - 0.006533 * alt - 1.1039 * lat + 0.1400 * long
temdamar	air	March:	36.98 - 0.006762 * alt - 1.4586 * lat + 0.7324 * long
temdaapr	air	April:	27.35 - 0.006958 * alt - 1.5952 * lat + 1.2404 * long
temdamay	air	May:	18.49 - 0.007074 * alt - 1.5679 * lat + 1.5767 * long
temdajun	air	June:	14.43 - 0.007237 * alt - 1.5979 * lat + 1.8050 * long
temdajul	air	July:	13.88 - 0.007172 * alt - 1.5997 * lat + 1.8644 * long
temdaaug	air	August:	14.84 - 0.007295 * alt - 1.5461 * lat + 1.7950 * long
temdasep	air	September:	8.73 - 0.006784 * alt - 1.0431 * lat + 1.4681 * long
temdaoct	air	October:	38.04 - 0.006627 * alt - 0.7689 * lat + 0.3117 * long
temdanov	air	November:	53.78 - 0.006656 * alt - 0.6570 * lat - 0.3807 * long
temdadec	air	December:	55.73 - 0.006338 * alt - 0.7053 * lat - 0.5305 * long
temds	soil	annual	derived from annual air temperature: 3.43 + 0.972*temda

where: alt = altitude [m]
lat = latitude [degrees]
long = longitude [degrees]

ANNEX 3

Syntax of File Names

temDAMon:	tem	tem
	D	D for d:degrees or t:taxonomy
	A	A for a:air temperature or s:soil temperature
	Mon	Mon for month: jan / feb

SETUP of NEW UNIVERSE

A 'universe' in SPANS is the logical grouping of data files. It is similar to a DOS directory, except that it also contains special files relating to the spatial characteristics of each SPANS data file within that universe.

SPANS can only be accessed through an existing universe.

The spatial definition of a universe is directly related to the level of detail of the maps in the universe. The universe of 'jordan' on a quadlevel 13 produces map output on a raster size of some 126 m, to increase the quadlevel from 13 to 14 will increase the level of detail by the factor of 2, i.e. to a raster resolution of some 63 m (and increases the file sizes by the factor of 2, and the processing speed of 2-4!). A universe of a part of Jordan, let's say of the Northern highlands only, will have at a quadlevel of 13 a raster size of approximately 20 - 30 m only. Before setting up a new universe, a universe index system (similar to map sheet index) has to be carefully planned and established.

Data in form of digitized maps can easily be copied to any universe and processed. Thus, a map which was digitized and previously processed and displayed in a general universe such as 'jordan' can be copied from \DIGDAT\ to a new (e.g. more detailed, 'larger scale') universe subdirectory and processed there with a higher level of accuracy.

File

New Study Area

Create directory

(Directory of new study area:) C:\spans521\{name of new subdirectory}

(Title of new study area:) {any title}

File

Open Study Area

Select new area

File

New study area

Est Projection

Interactively

Select from custom projection list

Select output projection (JTM)

(Ellipsoid:) <F10>

(Projection title:) <ESC>

Set extents

from Two points

Define two points and enter their geographical coordinates (in decimals)

<F10>

Select size with <PAGE UP> and <PAGE DOWN>

and position with <RIGHT> and <LEFT>

<F10>

The next step is to digitize a map with the outline of the project area (for example, the project area boundary or international boundaries) only, with only one feature code (=1), thus only 1 mapping unit! After digitization and processing in the new subdirectory (see Section G 3.1 of this Volume):

File

New study area

Basemap

Select this new map

File

New study area

Legend position

Remarks:

1) Names of universes are stored in file '\spans521\univ.dat'.

2) The settings of a universe (in particular, the geographical definitions) are stored in file '\spans521\{universe subdirectory}\curparam.dat'. This is an extremely important file (see Section G 6.1 of this Volume).

CLIPPER - LINK

For complex map processing, the GIS package SPANS does not have sufficient capability (program commands, access to soil database files etc.). Therefore, it is necessary to transfer maps in raster format to the soil database environment (dBase files, in program environment of Clipper), to process them there, and transfer these processed rasters back to the GIS and form a map:

- 1) Transfer from GIS to DBMS
- 2) Process
- 3) Transfer from DBMS to GIS

Steps (1) and (3) are explained below.

Only maps with less than 255 mapping units can be transferred and processed with this approach !

1.a) Create binary raster files:

In SPANS 5:

Transform		MAP -> RNL
Data Types		
Map to		
Raster		
(Map:)	{filename}	
(Window:)	00	
(New raster:)	{filename}	
(Raster quadlevel:)	10	
(Bits per pixel:)	8	
Transform		RNL -> RNH
Export		
Library		
Raster headers		
(Raster:)	{filename}	

1.b) Convert binary file to ASCII file:

JOSCIS: Geographical Information System RNL -> RS1
 SPANS 5 --> Database --> SPANS 5 [call of program 'sp5_cl']
 SPANS 5 --> Clipper (1)

1.c) Convert ASCII file to dBase file:

with program 'bin2db' (see remark below)

2.a) Convert processed dBase file to ASCII file:

JOSCIS: Geographical Information System RNL -> RS1
 SPANS 5 --> Database --> SPANS 5 [call of program 'sp5_cl']
 Clipper --> SPANS 5 (2) RS2 -> RN_

copy {filename}.RS2 *.RNL

2.b) Edit RNH file:

Copy RNH file with same resolution and same bits/pixel (8) to new file,
 e.g. copy {output raster file}.RNH NSOIL1.RNH
 and then edit (with Q):

```
TITLE Landevaluation
ID nsoil1
.
.
BAND_FILE nsoil1.rnl
BAND_TITLE Landevaluation
BAND_LIMITS 0100
```

2.c) Import ASCII to SPANS internal raster binary file:

In SPANS 5:

```
Transform RNL -> RNH
Import
Library
Raster headers
(Raster:) {filename}
```

Transform

RNL/RNH -> MAP

Data Types

Raster to Map

(Raster:)	<u>{filename}</u>
(Band:)	1
(Classification scheme:)	0
(Raster quad level:)	10
(New map:)	<u>{name of new map}</u>
others in default	

ANNEX

File Sizes of Jordan Rasters

Quadlevel	Rows	Columns	Approx.length of pixel
7	60	80	8000 m
8	120	160	4000 m
9	240	320	2000 m
10	480	640	1000 m
11	960	1280	500 m
12	1920	2560	250 m
13	3840	5120	125 m

Remark:

This procedure is not finally tested. Application programs for interpretation and processing in dBase / Clipper environment are not developed.

National Soil Map and Land Use Project

Ministry of Agriculture, Jordan

J O S C I S

Jordan Soil and Climatic Information System

G I S

V O L U M E

Digitization

Processing

Print &
Plot

Map
Database

Settings &
Backup

DISPLAY and WINDOWS SETUP

(Quadtree) maps for entire Jordan are displayed in SPANS by:

Visualize	
Entities	
Maps	
(Map:)	<u>{filename of map, ending with ...TOT}</u>
(Window:)	00
(Basemap cut:)	Y
(Interior fill:)	Y
(Clear view first:)	Y

Line maps (vectors) are displayed by:

Visualize	
Entities	
Vectors	
(Vector dataset:)	<u>{filename of vector pair}</u>
(Window:)	00
(Line color:)	15 or any colour number or 0
(Line width:)	1
(Line style:)	1

A quadtree map can be transferred to a line map by:

Transform	
Data Types	
Map to...	
Vectors	
(Map:)	<u>{filename of map, ending with ...TOT}</u>
(New vector dataset:)	<u>{same filename}</u>
all others in default	

Points can be displayed with:

Visualize
 Entities
 Points

(Point dataset:)	{ <u>name of point TBB file</u> }
(Radius (pixels):)	1
(Color:)	15 or any colour number
(Filled circle:)	Y
(Classification scheme:)	1
all others in default	

At the present, six predefined window frames are defined:

00 - frame	Entire Jordan
a - frame	Jordan in 17 sheets, according to 'old' 1:250000 topo sheets
p - frame	Jordan in 3 sheets
q - frame	Jordan in 6 sheets
r - frame	Jordan in 10 sheets
s - frame	

See following pages for the setup and dimensions of these frames.

Display of any map under these windows:

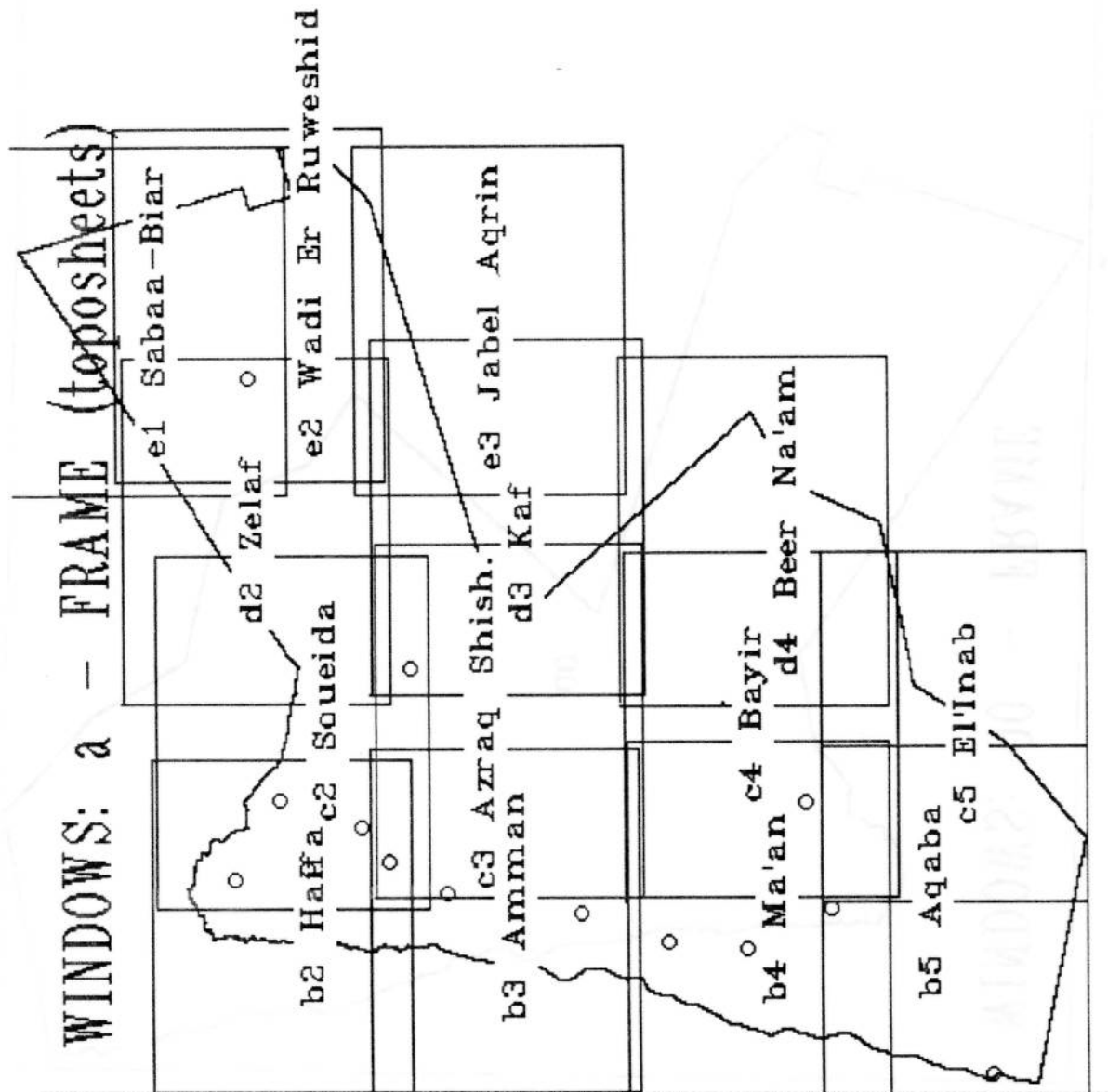
Visualize
 Entities
 Maps

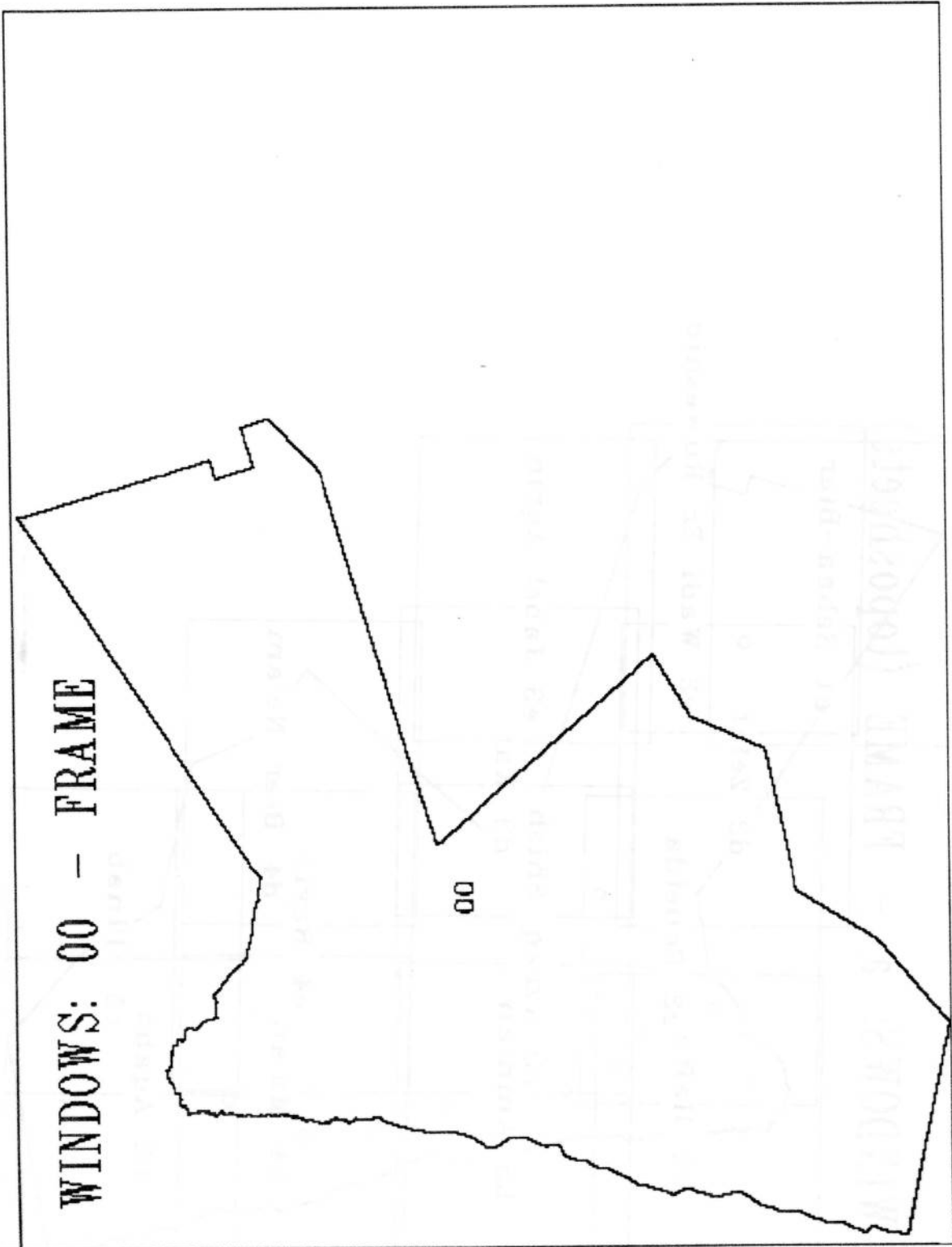
(Map:)	{ <u>filename of map, ending with ...TOT</u> }
(Window:)	{ <u>two-letter code of window</u> }
(Basemap cut:)	Y
(Interior fill:)	Y
(Clear view first:)	Y

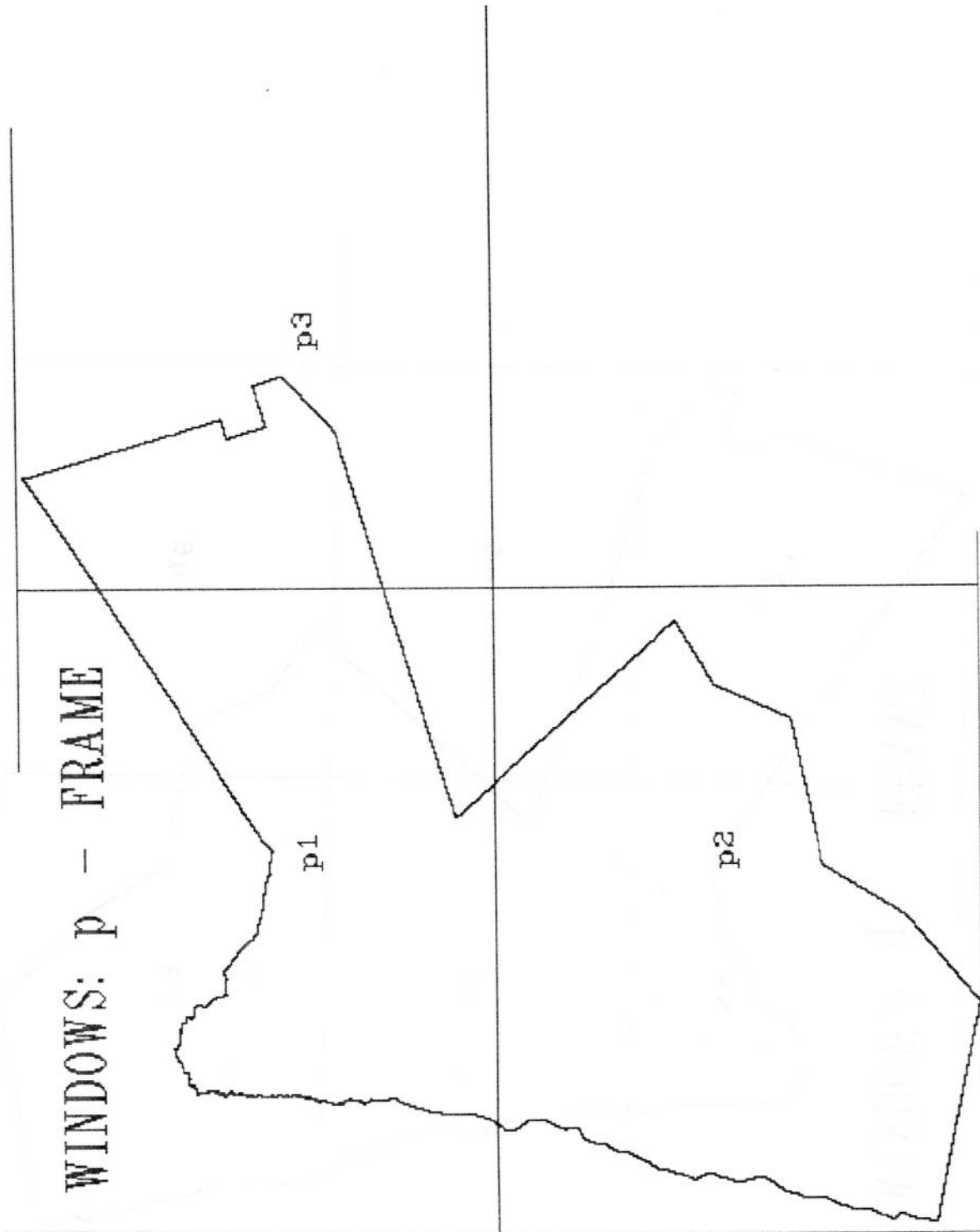
A window can be defined by:

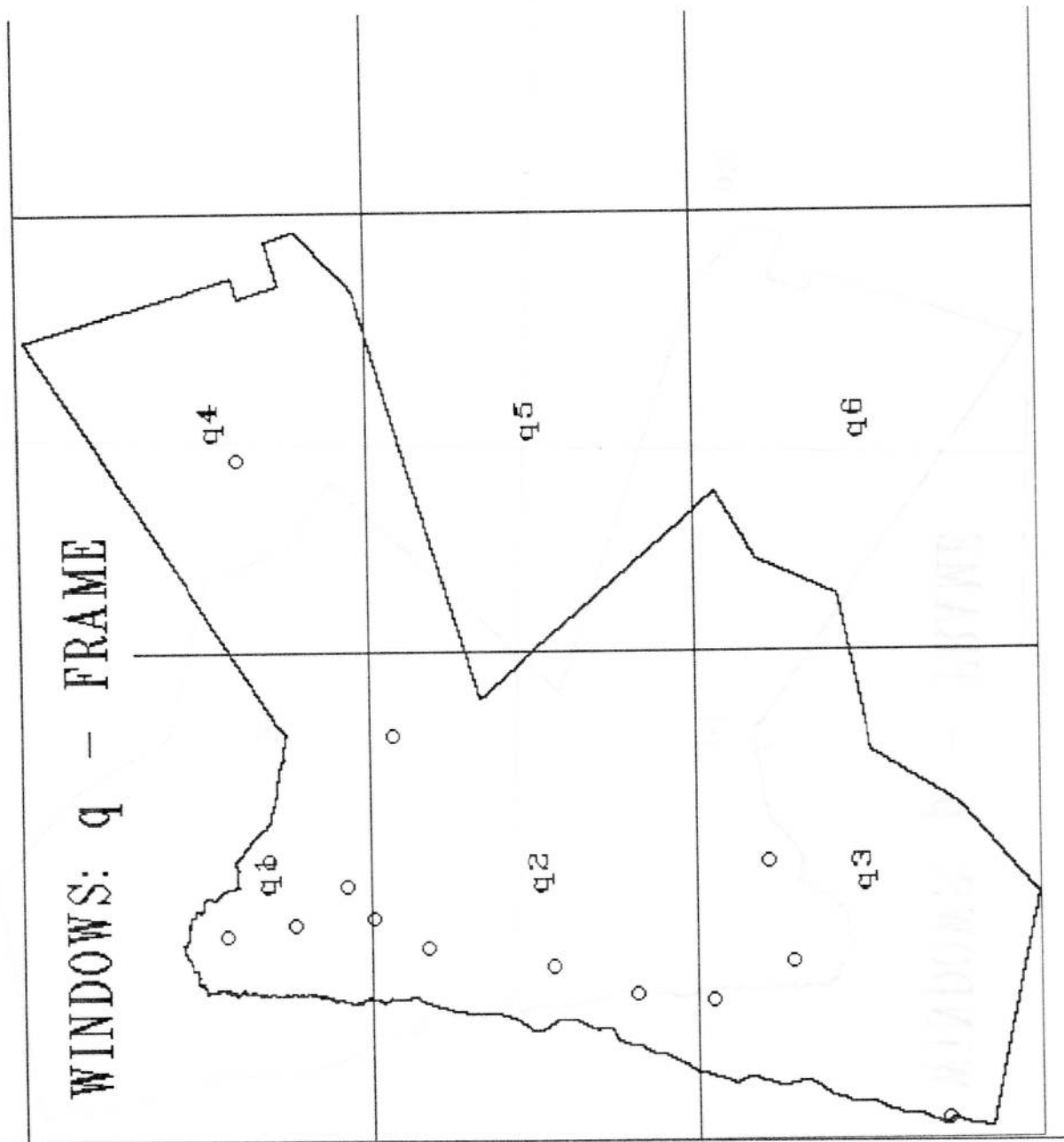
Edit
 Library
 Window
 Define

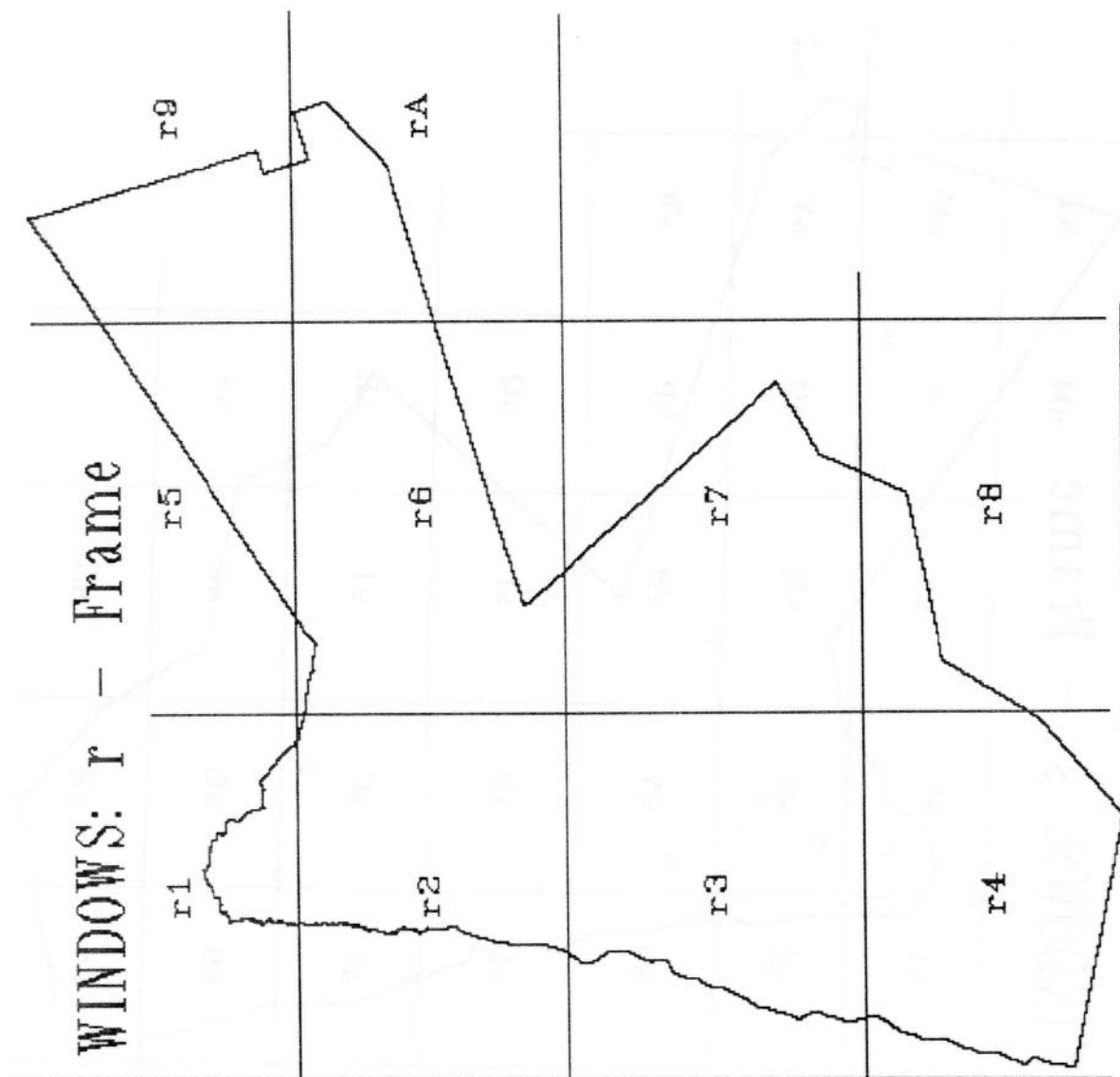
Adjust size with <PAGE UP> and <PAGE DOWN>
 and location with <RIGHT> and <LEFT>
 <F10>

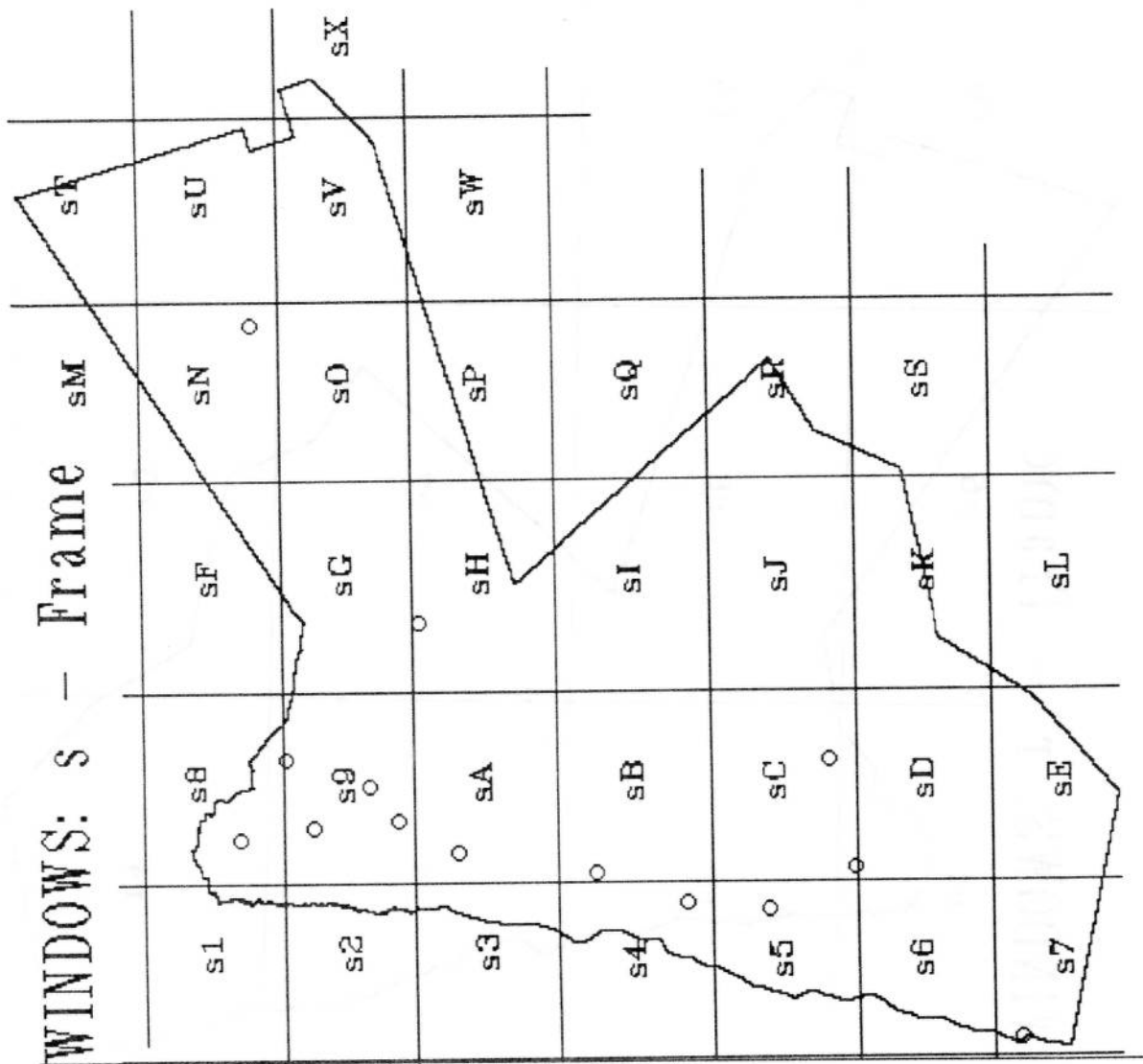












MAP OUTPUT PLOT OPTIONS A Summary

Hard copies of SPANS maps can be produced in various ways. The following subsections summarize the options with their advantages (+) and disadvantages (-).

1) Print on NEC colour printer (through SPANS):

- + No editing/further processing required
Full colouring possible
Easy and relatively fast
- Dot matrix quality (colour stripes !)
Low resolution
Scaling of parts of Jordan not precise
No advanced editing possible

Summary of procedure:

- 1) Edit as much as possible in SPANS
- 2) Save as 'browse file'
- 3) Print through SPANS print manager

Details explained in Section G 4.3: 'Printing maps in SPANS'

2) Print on A1 plotter (Houston Instrument) (through AutoCAD):

- + High quality, high resolution
Large size (A1 or A2)
Precise scaling
Many possibilities for editing, including:
Different text fonts and sizes
Overlays of various maps (with different hatching, line types, colours etc.)
Outplot in upto 14 colours
Selection of window (parts of Jordan)
- Full colouring effect possible only through hatching
Various steps of processing after SPANS (export procedures)
Advanced experience in AutoCAD required

Plotter pens required (availability in Jordan ?)

Summary of procedure:

- 1) Transfer of single map from SPANS to DXF format
 - a) Convert SPANS polygon data (vec/veh) with utility to DXF file, or;
 - b) When displayed, save with 'Trace' option as DXF file
- 2) Correction of DXF file
- 3) Import to AutoCAD with 'dxfin' command
- 4) Edit within AutoCAD
- 5) Optionally: Overlay with other features
- 6) Configure AutoCAD for plotter Houston-Instrument 'DMP52 MP
- 7) Plot

Details explained in Section G 4.4 'AutoCAD: Processing and editing'
and G 4.5 'AutoCAD: Plotting'

3) Print on A3 plotter (BBC) (through AutoCAD):

- + *Same as print on A1 plotter:*
High quality, high resolution
Precise scaling
Many possibilities for editing, including:
Different text fonts and sizes
Overlays of various maps (with different hatching, line types, colours etc.)
Selection of window (parts of Jordan)
But:
Outplot in upto 8 colours
Medium size (A3 or A4)
- *Same as print on A1 plotter:*
Full colouring effect possible only through hatching
Various steps of processing after SPANS (export procedures)
Advanced experience in AutoCAD required
Plotter pens required (availability in Jordan ?)

Summary of procedure:

- 1) Transfer of single map from SPANS to DXF format
 - a) Convert SPANS polygon data (vec/veh) with utility to DXF file, or;
 - b) When displayed, save with 'Trace' option as DXF file
- 2) Correction of DXF file
- 3) Import to AutoCAD with 'dxfin' command
- 4) Edit within AutoCAD
- 5) Optionally: Overlay with other features
- 6) Configure AutoCAD for plotter Hewlett-Packard 7550
- 7) Plot

Details explained in Section G 4.4 'AutoCAD: Processing and editing'
and G 4.5 'AutoCAD: Plotting'

4) Print on Laser printer without cartridge (through AutoCAD):

- + High resolution, in particular very high resolution text
Precise scaling
Pen width smaller than for plotting
Many possibilities for editing, including:
Different text fonts and sizes
Overlays of various maps (with different hatching etc.)
Selection of window (parts of Jordan)
- Black / white
Small size (A4 or smaller)
Various steps of processing after SPANS (export procedures)
Advanced experience in AutoCAD required
No dashed/dotted lines possible

Summary of procedure:

- 1) Transfer of single map from SPANS to DXF format
 - a) Convert SPANS polygon data (vec/veh) with utility to DXF file, or:
 - b) When displayed, save with 'Trace' option as DXF file
- 2) Correction of DXF file
- 3) Import to AutoCAD with 'dxfin' command
- 4) Edit within AutoCAD
- 5) Optionally: Overlay with other features
- 6) Configure AutoCAD for 'printplotter' Laserjet II
- 7) 'Printplot'

Details explained in Section G 4.4 'AutoCAD: Processing and editing'
and G 4.5 'AutoCAD: Plotting'

5) Print on Laser printer with HP-GL emulation cartridge (through AutoCAD):

- + *Same as print on laser printer without cartridge:*
High resolution, in particular very high resolution text
Precise scaling
Pen width smaller than for plotting
Many possibilities for editing, including:
Different text fonts and sizes
Overlays of various maps (with different hatching, line types etc.)
Selection of window (parts of Jordan)
Additional:
Dashed/dotted lines possible, different line types
- *Same as print on laser printer without cartridge:*
Black / white
Small size (A4 or smaller)
Various steps of processing after SPANS (export procedures)
Advanced experience in AutoCAD required
Additional:

Emulation cartridge required/to be inserted
Sizing (positioning of window) difficult for any map other than entire
Jordan map

Summary of procedure:

- 1) Transfer of single map from SPANS to DXF format
 - a) Convert SPANS polygon data (vec/veh) with utility to DXF file, or:
 - b) When displayed, save with 'Trace' option as DXF file
- 2) Correction of DXF file
- 3) Import to AutoCAD with 'dxfin' command
- 4) Edit within AutoCAD
- 5) Optionally: Overlay with other features
- 6) Configure AutoCAD for plotter HP 7475
- 7) Plot to file
- 8) Insert HP-GL emulation cartridge in laser printer
- 9) Copy plot file to laser printer

Details explained in Section G 4.4 'AutoCAD: Processing and editing'
and G 4.5 'AutoCAD: Plotting'

6) Print on Laser printer (through SPANS):

- + No editing/further processing required
Easy and fast
- Very low resolution (around 75 dpi)
Small size (A4 or smaller)
Scaling of parts of Jordan not precise
No advanced editing possible

Summary of procedure:

- 1) Edit as much as possible in SPANS
- 2) Save as 'browse file'
- 3) Print through SPANS print manager

Details explained in Section G 4.3 'Printing maps in SPANS'

7) Print on any printer (through VPG or similar vector-based graphic program):

- + High resolution
Flexible size (depends on printer: A3 or A4, or smaller)
Many possibilities for editing, including:
Different text fonts and sizes
Overlays of various maps (through different hatching, line types etc.)
Selection of window (parts of Jordan)
- Black / white
No support of plotters
Various steps of processing after SPANS (export procedures)

Advanced experience in AutoCAD and VPG required
Scaling not precise

Summary of procedure:

- 1) Transfer of single map from SPANS to DXF format
 - a) Convert SPANS polygon data (vec/veh) with utility to DXF file, or:
 - b) When displayed, save with 'Trace' option as DXF file
- 2) Correction of DXF file
- 3) Import to AutoCAD with 'dxfin' command
- 4) Edit within AutoCAD
- 5) Optionally: Overlay other features
- 6) Export from AutoCAD with 'dxfout' command to DXF file
- 7) Convert to Lotus PIC file using HiJaak graphic conversion utility
- 8) Delete PAL file from GIS subdirectory
- 9) In graphic package VPG: Load PIC file 'as is'
- 10) Option to re-edit
- 11) Print

8) Print on any printer (through Paintbrush or similar raster-based graphic program):

- + No editing/further processing required
Further editing possible
Full colouring possible
Very flexible in further transfer to other programs/formats,
as PCX format is widely accepted standard
Easy
- Low resolution
Scaling of parts of Jordan not precise
Except in SPANS, no overlays possible

Summary of procedure:

- 1) Edit as much as possible in SPANS
- 2) Save as 'browse file' (with CUT extension)
- 3) Correct SPANS BIC file to PAL file
- 4) Convert to Paintbrush PCX file using HiJaak graphic conversion utility
- 5) Delete PAL file from GIS subdirectory
- 6) In graphic package Paintbrush: Load 'pcx' file
- 7) Option to re-edit
- 8) Print

Details explained in Section G 4.6 'Transfer of maps to Paintbrush (PCX Format)'

9) Print inside a document:**9a) Wordstar 2000:**

- + No editing/further processing required
Further editing possible
Full colouring possible
- Low resolution
Scaling of parts of Jordan not precise
Except in SPANS, no overlays possible

Summary of procedure:

- 1) Edit as much as possible in SPANS
- 2) Save as 'browse file' (with CUT extension)
- 3) Correct SPANS BIC file to PAL file
- 4) Convert to Inset PIX file using HiJaak graphic conversion utility
- 5) Delete PAL file from GIS subdirectory
- 6) Option to re-edit
- 7) In Wordstar 2000, in the document, graphic-merge file
- 8) Print

Details explained in Section G 4.7 'Transfer of maps to Inset (PIX Format)'

9b) Word for Windows:

- + No editing/further processing required
Further editing possible
Full colouring possible
- Low resolution
Scaling of parts of Jordan not precise
Except in SPANS, no overlays possible

Summary of procedure:

- 1) Edit as much as possible in SPANS
- 2) Save as 'browse file' (with CUT extension)
- 3) Correct SPANS BIC file to PAL file
- 4) Convert to Paintbrush PCX file using HiJaak graphic conversion utility
- 5) Delete PAL file from GIS subdirectory
- 6) Option to re-edit
- 7) In Word for Windows, in the document, insert picture file
- 8) Print

Details explained in Section G 4.8 'Transfer of maps to Windows'

10) Display of GIF format (through Share):

- + Very good screen display
No editing/further processing required
Easily portable
High resolution
- No particular hardcopy (printout) support
Various steps of processing after SPANS (export procedures)
No advanced editing possible

Summary of procedure:

- 1) Edit as much as possible in SPANS
- 2) Save as 'browse file' (with CUT extension)
- 3) Correct SPANS BIC file to PAL file
- 4) Convert to CompuServe GIF file using HiJaak graphic conversion utility
- 5) Delete PAL file from GIS subdirectory
- 6) Display in Share as VGA format

In AutoCAD vers.12 and higher, it will be possible to export an AutoCAD drawing to 'gif' format:

- Not supported at present setup with AutoCAD vers.10,
but possible in AutoCAD 12:
Software and hardware update required
Advanced experience in AutoCAD required

Summary of procedure:

- 1) Transfer of single map from SPANS to DXF format
 - a) Convert SPANS polygon data (vec/veh) with utility to DXF file, or:
 - b) When displayed, save with 'Trace' option as DXF file
- 2) Correction of DXF file
- 3) Import to AutoCAD with 'dxfin' command
- 4) Edit within AutoCAD
- 5) Optionally: Overlay with other features
- 6) Export from AutoCAD with special command to GIF file

PRINTING MAPS in SPANS

Maps can be printed from SPANS on a dot matrix colour printer (e.g. NEC) or on a laser printer (e.g. HP IIP) - see Subsections 1 and 6 of G 4.2.

This is one of the fastest and easiest, but not one of the better quality output facilities.

Maps have first to be saved as browse files.

1) Display and edit map as required:

Display and edit map(s),
with colours, vector overlay(s), legend, scale, 'JOSCIS' remark etc.etc.

2) Save as browse file:

Visualize	
Slides	
Save	
(Slide:)	{ <u>filename</u> }
(Slide show:)	J
(Description:)	{ <u>Short description</u> }

3) Enter SPANS printer menu:

JOSCIS : Geographical Information System	
SPANS - Print on NEC printer, or: SPANS - Print on Laser printer	
Print Colour Image	
Select browse file (slide) !	
(Print from screen...:)	screen
(Width:)	<ENTER>
(Scale:)	{ <u>Required outprint scale</u> }
(Number of copies)	1
(Number of line feeds:)	99
(Center on page:)	Y
(Print sideways:)	N for NEC (wide carriage) printers Y for A4 laser printers

AUTOCAD PROCESSING and EDITING

1) SPANS 5 --> AUTOCAD TRANSFER:

There are three ways to transfer SPANS maps to AutoCAD. Maps must be either in original polygon - uncorrected vector (VEC/VEH) format (A and B), or in corrected VEC/VEH format (C). Each of these formats has its advantages and disadvantages, which will be discussed below. It depends both on the original map **and** on the level of editing of the map in SPANS, which translation procedure is to be chosen.

- | | |
|------------|--|
| Option (A) | recommended for line map version of quadtree maps without islands |
| Option (B) | recommended for line map versions of quadtree maps with islands and inlets (outliers) |
| Option (C) | recommended for vector maps ('true' line maps), point maps, labels, symbols, more difficult maps and map combinations (all-in-one drawing) |

PRO:

CON:

- | | | |
|------------|--|--|
| Option (A) | <ul style="list-style-type: none"> + each mapping unit is 1 layer + very easy to hatch | <ul style="list-style-type: none"> - requires original dongle - might be many individual layers (if many mapping units) - no map combinations - no points, no labels, no lines |
| Option (B) | <ul style="list-style-type: none"> + easy to hatch | <ul style="list-style-type: none"> - requires original dongle - many individual layers (each containing 1 polyline) - no map combinations - no points, no labels, no lines |
| Option (C) | <ul style="list-style-type: none"> + only very few layers | <ul style="list-style-type: none"> - many lines form one mapping unit - almost impossible to hatch |

1) Create DXF files for AutoCAD:

1.A) *With each mapping unit = 1 polyline,
recommended for most maps without islands (whenever possible):
(through VEC/VEH files)*

In SPANS:

Transform TOP/VTX --> VEC/VEH
Export
Vector

(Vector dataset:) {filename (...tot)}

(New vector files:) {filename}

(Coordinate format:) 0

(Topology representation:) 3 (whole polygons)

Remark: If TOP/VTX files are not found, repeat step 'Transform - DataType -
Map to - Vector'
(see Section G 3.1 of this Volume, Subsection 13: 'Transform map to
vector lines')

Outside SPANS, but only in master GIS computer (software key required):

JOSCIS: Geographical Information System
SPANS 5 - Graphic Conversion [call of 'vecmenu']
Export
DXF

(Input file:) {filename}

(Output file:) {filename}

VEC/VEH --> DXF

<ESC>

<ESC>

OR:

1.B) *With each node-to-node line = 1 polyline, recommended mainly for maps with islands:
(through VEC/VEH files)*

In SPANS:

Transform TOP/VTX --> VEC/VEH
Export
Vector

(Vector dataset:) {filename (...tot)}

(New vector files:) {filename}

(Coordinate format:) 0

(Topology representation:) 1 (SPANS)

Outside SPANS, but only in master GIS computer (software key required):

JOSCIS: Geographical Information System
SPANS 5 - Graphic Conversion [call of 'vecmenu']
Export

DXF

(Input file:)

{filename}

(Output file:)

{filename}

VEC/VEH --> DXF

<F10>

<ESC>

<ESC>

OR:

1.C) Created when drawing a map in SPANS (map combinations, point files,
not for maps to be hatched):
(not through VEC/VEH files):

In SPANS:

<F4>

MAP --> DXF

Trace Options

Start of trace

AutoCAD

(Trace file name:)

{filename}

Display the map as requested through 'Visualize-Entity-Points' and/or
'Visualize-Entity-Vectors'

Then:

<F4>

Trace Options

Permanently OFF

Outside SPANS:

JOSCIS: Geographical Information System

SPANS 5 --> AutoCAD Correction

(Source dxf file:)

{filename}

You can add:

- a) Frame around Jordan, N arrow, scale bar, and JOSCIS source remark
 - b) Grid marks (latitude/longitude in full, 1/2, 1/4, or 1/8 degrees, or JTM)
- This is highly recommended for the first map, when imported into AutoCAD !*
You can manipulate the text size for AutoCAD.

DXF --> DXF

It is possible, though not recommended, to overlay various maps, features, or combinations of vector maps, points, text etc., to create **one** output/transfer DXF file. It is better, to create an individual DXF file for each feature (for each map displayed).

It is not possible, to transfer fully coloured maps (created through 'Visualize-Entity-Map' !

2) Import DXF files to AutoCAD:

Enter AutoCAD

(Main Menu:)	Begin a new drawing (1)
(Enter name of drawing:)	{ <u>any filename</u> }
(Command:)	dxfin
(File name...:)	\spans521\jordan\{ <u>filename from procedure above</u> }

If the map was not assigned with the frame of Jordan in the previous process, two options are given to add the frame (and outline of Jordan, etc.) in this stage:

You can insert a block with frame, N arrow, JOSDIS remark, and scale by:

```

INSERT
frame - see Annex 10 -
(Insertion point:) 0,0
<ENTER>
<ENTER>
<ENTER>

```

You can insert Jordan's outline (international boundary) by:

```

INSERT
outxtot - see Annex 10 -
(Insertion point:) 0,0
<ENTER>
<ENTER>
<ENTER>

```

For more pre-defined maps, see Annex 10 !

SAVE

3) Insert grid coordinates:

There are two ways to insert grid corners to a map:

- (a) *Insert block (file) with grid*
- (b) *Add grid system, when transferred via SPANS 5 --> AutoCAD module*

(a) Insert block (file) with grid:

Turn all layers off:

```

LAYER
OFF
*

```

Screen display will be blank

This option uses the plotter's built-in, non-continuous linetypes, not AutoCAD's non-continuous linetypes. Therefore, do not use the 'layer-linetype' option inside AutoCAD!

Most plotters have built-in non-continuous linetypes:

example:

Houston Instrument plotter: BBC plotter:

0	continuous	continuous
1	dots	dots
2	dots (with spaces)	dots (with spaces)
3	dashed - - - - -	dashed - - - - -
4	dashed (with spaces) - - - - -	dashed (with spaces) - - - - -
5		
6	dashed-dots --- . --- . --- .	

After the 'plot' command (see below):

(Do you want to change anything ? <N>) **Y** <Enter>

(Do you want to change any of the above parameters? <N>) **Y** <Enter>

Select linetype for the screen colour, as specified in 'Colour reference table'.

It is a good practice to design a '**Colour Translation Table**' for the references between layers, screen colours, plot colours, and line types: See Subsection 10.

10) Feature specific plot of lines:

Lines ('vectors') have to be displayed in SPANS and transferred to AutoCAD in a special way:

- In SPANS:

Turn transfer to AutoCAD dxf files on (see Subsection 1C above)

Display vector maps

(because merging of vectors/lines is not fully functional in SPANS,
it is better to display vector map after vector map)

Turn transfer to AutoCAD dxf files off

- Correct DXF file (see Subsection 1C above)

- In AutoCAD:

Import dxf file:

DXFIN

\spans521\jordan\{filename}

Change all lines to have colour assignment by layer:

CHPROP

Mark all lines, e.g. with windowing from top left to bottom right

Colour

BYLAYER

- Assign colours to individual layers (according to feature codes):

Each feature code of each map is transferred to AutoCAD into a specific layer. In many cases, the number of the layers has following syntax:

aabb, where aa = sequential number of map (starting with 00)
bb = feature code

example: layer 105: vectors with feature code 5 of second displayed map

It is recommended, to prepare a 'Colour / layer reference table', showing the assignment of features and layers to colours.

Example: Rivers (riv2tot)

Map no.	Feature code	Layer	Colour assignment
1	1	1 --->	5 blue
2	1	101 --->	5 blue
1	2	2 --->	4 cyan
2	2	102 --->	4 cyan
3	2	202 --->	4 cyan
1	3	3 --->	6 purple
2	3	103 --->	6 purple
3	3	203 --->	6 purple
1	4	4 --->	2 yellow
2	4	104 --->	2 yellow
1	5	5 --->	1 red
2	5	105 --->	1 red
1	9	9 --->	3 green
2	9	109 --->	3 green

11) Colour Translation Table:

For the right selection of colour both for display in AutoCAD and for the plot, it is important to be aware of the various steps of colour (and line type) references.

Precondition indeed is to know which features (entities) are stored in which layer.

The logical steps are:

(Entity --->)	Layer --->	Screen display ---> ('layer colour')	Plot colour (& line type) ('pen number', 'line type')
----------------	------------	---	--

with commands: with commands: after command 'plot':

chprop - select item(s)- C	layer - C	Do you want to change ...:Y
----------------------------------	--------------	--------------------------------

Import grid:

```
DXFIN
\spans521\jordan\corn_fl, or:
\spans521\jordan\corn_hf
(see Annex 10 for definition of these files)
```

Create new layer for grid points:

```
LAYER
New
coords
```

Assign grid to this new layer:

```
CHPROP
W (for window)
Define window with mouse (move mouse to corner, press left mouse button,
then move mouse to opposite corner, press left mouse button,
then press right mouse button)
LA
coords
```

- (b) When transferring/correcting from SPANS 5 --> AutoCAD, there is the option of adding a grid system (either full degrees or half degrees width)

4) Insert additional map layers (prepared in SPANS):

Recommended, first to turn all existing features (layers) off:

```
LAYER
OFF
*
```

Screen display will be blank

Then, insert DXF file of map prepared in SPANS:

```
INSERT
\spans521\jordan\{name of dxf file}
(Insertion point:) 0,0
<ENTER>
<ENTER>
<ENTER>
```

5) Insert additional map layers (previously prepared in AutoCAD):

Recommended, first to turn all existing features (layers) off:

```
LAYER
OFF
*
```

Screen display will be blank

Insert AutoCAD drawing (DWG file):

INSERT
{name of map file in AutoCAD}

Create new layer for this map:

LAYER
New
{name of new layer (one word, no spaces)}

Assign map to this new layer:

CHPROP
W (for window)
Define window with mouse (move mouse to corner, press left mouse button,
then move mouse to opposite corner, press left mouse button,
then press right mouse button)
LA
{name of new layer}
Colour
BYLAYER

7) General recommendation for working in AutoCAD:

ALWAYS CHECK, WHAT IS IN WHICH LAYER !!
E.g. JOSDIS, TEXT, GRID

8) Hatching:

Pull-down menu: Draw

Hatch

Select pattern (recommended are normally only patterns consisting of straight lines,
do not use patterns too much which give a rather
uneasy image)

(Scale for pattern:)

Scale	Very dense (1.0 mm)	Wide (2.0 mm)	Very wide (only large units) (3.0 mm)
1: 1000000	8000	16000	22000
1: 883000	7000	14000	20000
1: 500000	4000	8000	11000
1: 250000	2000	4000	6000
1: 100000	800	1500	2500
1: 50000	400	800	1100
1: 25000	200	400	600

(Angle for pattern: <Enter> (most cases: 0)

Select with mouse all polylines/lines which form the mapping unit, including lines inside the mapping unit, and lines of outlier units

Recommended to work with the **Window** option: all units completely inside the window, which will be defined by two opposite corners with the cursor, or:
with the **Crossing** option: all units which are in the window or at least have a part of it in the window, which will be defined in the same way as for the window option above

(It is possible to remove a previously selected unit by **Removing** it from the list, following units to be added will have to be **Added** !

If adjacent unit is already hatched and not changed to invisible layer, take care that no hatch pattern will be selected by mistake !

After all units are marked: right mouse button
- and wait ! (It can take a long time)

If individual lines form a mapping unit (option (c), not recommended !), better convert them first to polylines:

PEDIT

Select one line with mouse !

(Do you want to turn it into one? <Y>) <ENTER>

(Close/Join/...:)

J

(Select objects:) Move cursor to one corner, click left mouse button,
then move to opposite corner, click left mouse button

After hatching, it is recommended to transfer the hatching into individual layers:

LAYER

New

{name for new layer}

CHPROP

LA

```
{specific layer name (just created)}
C
BYLAYER
```

For more complex maps, it is recommended to prepare a 'Hatching table':

For example:

Topic	Layer name	Hatch pattern	Hatch scale	Angle	Colour
dead sea	deadsea	page 1/patt. 7	4000	0	blue 5
altitude < 0	below0	page 1/patt. 1	17000	0	yellow 2
altitude 0-400	above0	page 1/patt. 1	14000	90	green 3
altitude 400-800	above400	page 1/patt. 1	11000	0	cyan 4
altitude 800-1200	above800	page 1/patt. 1	8000	45	red 1
altitude > 1200	above1200	page 1/patt. 1	5000	135	purple 6

- If hatching lines overrun a boundary, change the hatching scale number and do it again !

If a hatch line 'overruns' a boundary:

- Either: 'explode' it and edit the line manually,
- Or: erase hatch pattern, and do it again with a slightly different hatch scale number

9) Prepare lines for dash-dotting:

Lines which should be printed as non-continuous line (such as dots or dashes), should be transferred to a separate layer with command 'chprop' - 'layer' and assign a specific colour to these (and only these) layers.

Write down which screen colour should be plotted in which colour on the printer and with which line type. It is recommended to prepare 'Colour reference table', which refers screen colours (in AutoCAD display) to plot colours / widths / pens:

Screen colour	--->	Pen no.:	Line type:
Red	1 --->	1	0 (continuous)
Yellow	2 --->	1	1 (dots)
Green	3 --->	2	0 (continuous)
Black	7 --->	2	0 (continuous)
with pen no.		1: red	
		2: black	

Example for a Colour Translation Table:

Feature	Layer	Layer colour	Plot colour (pen number)	Line type
Jordan	1	1 (red)	6 magenta	0
Rivers 2.class	2	2 (yellow)	6 magenta	0
Rivers 3.class	3	3 (green)	4 cyan	0
Rivers 4.class	4	4 (cyan)	5 blue	0
Very wide wadis	5	10 (bright yellow)	1 red	3 - - - -
Arid river beds	6	11 (bright green)	2 yellow	6 - . - . -
Small desert wadis	7	12 (bright cyan)	2 yellow	1
Irrigation channel	9	9 (bright red)	3 green	0
Text, boundary etc.	others	7 (black)	7 black	0

12) Points:

Points can be displayed/printed in various forms and sizes.

To change the form and/or size of points:

```
SETVAR
PDMODE
{number for point shape}
```

0	.
1	(blank)
2	+
3	x
32	⊙
33	○
34	⊕
35	⊗
64	⊠
65	□
66	⊕
67	⊗
96	⊠
97	⊠
98	⊕

```
PDSIZE
{number for point size}
```

The point size depends on the (final) outplot scale:

Scale	Very small	Normal
1: 1000000	1000	1500
1: 500000	600	800
1: 250000	300	400
1: 100000	120	160
1: 50000	60	80
1: 25000	30	40

REGEN**13) Add text:**

Download fonts:

STYLE

(Text style name:)	COMPLEX
(Font file:)	COMPLEX
(Height:)	<ENTER>
(Width:)	<ENTER>
(Oblique Angle:)	<ENTER>
(Backwards:)	<ENTER>
(Upside-down:)	<ENTER>
(Vertical:)	<ENTER>

Write text:

Pull-down menu: Draw

Dtext

Move cursor to start point, and click

(Height:) Move cursor down to specify the height, and click

(Rotation angle:) <ENTER>

{text}

<ENTER>

<ENTER>

Move mouse to 'AutoCAD' (top right)

The text size depends on the (final) outplot scale:

Scale	Very small	Normal	Large
1: 2000000	4000	5000 - 6000	10 - 20.000
1: 1000000	2000	2500 - 3000	
1: 500000	1000	1500	
1: 250000	500	700	
1: 100000	200	280	
1: 50000	100	150	
1: 25000	50	75	

If you want to change the size of text, or the text itself:

CHANGE

- Select text with mouse, and press left mouse button
- After having selected all text, press right mouse button
- <ENTER> for change properties

Smallest text size for outprint on laser printer of full size Jordan maps: 2000

ANNEX 1

Colours in AutoCAD

Check entity colour no. (as displayed in AutoCAD) - Pen number (on plotter)

Reference: AutoCAD colour	1	red
	2	yellow
	3	green
	4	cyan
	5	blue
	6	magenta
	7	white / black

ANNEX 2

Recommended settings in AutoCAD for JOSGIS maps

	Small scale: (1:750,000-1 Mio)	Large scale: (1:100,000-500,000)
Hatching:	50,000 - 100,000	2000 - 10,000
Points (e.g.pits) (e.g.towns)	5000	200- 500 (1:150,000) 500-1000 (1:150,000)
Labels (e.g.towns) (e.g.pits) (smallest units)	3000 500 - 1000	1000 (1:250,000) 300 - 500 (1:250,000) 100 (1:250,000)

ANNEX 3

Calculation of scale

Half degree latitude = 55400 m (from 29.5⁰ to 30.0⁰ N)
 Half degree longitude = 48300 m (at 30⁰ N)

ANNEX 4

Definition of mapping units in AutoCAD

Option A (if converted under 0/3):

display till edges of actual drawing
 each polygon (mapping unit) forms 1 unit (polyline) as 1 layer
 does not consider islands

hatching:

- select polygons (entire polygon can be selected as 1 unit)
 - check first through inquiry-list
- it will run through islands !

Option B (if converted under 0/1):

display till edges of actual drawing
 each node-to-node line forms 1 unit (1 polyline) as 1 layer
 islands can be considered

hatching:

- select all node-to-node lines and all islands (consider islands)

Option C (if recorded with F4 - Tracing):

display with setting of SPANS (i.e. with some white frame around)
 each single straight line forms 1 line (not polyline),
 all at the same layer

islands are considered, when all individual lines are aggregated

hatching:

- select all individual lines (line segments)

ANNEX 5

SPANS 4 - Procedure to create 'dxf' file

<F4>

MAP --> DXF

Trace

Turn on

AutoCAD

(then: Visualize-Entity-Points or Vectors)

(after:)

<F4>

Trace
Permanently off

Enter AutoCAD

Begin a new drawing(1)
DXFIN
\spans4\jordan\{filename}
SAVE

ANNEX 6

Grid coordinates

Grid coordinates ('corners') of full degrees: ('corn_fl')

35	30	37	30	38	32
36	30	37	31	38	33
36	31	37	32	39	32
36	32	38	30	39	33
36	33	38	31		

Grid coordinates ('corners') of half degrees: ('corn_hf')

35	29.5	36.5	29.5	37.5	32.5
35	30	36.5	30	37.5	33
35.5	29.5	36.5	30.5	38	30
35.5	30	36.5	31	38	30.5
35.5	30.5	36.5	31.5	38	31
35.5	31	36.5	32	38	31.5
35.5	31.5	36.5	32.5	38	32
35.5	32	37	30	38	32.5
35.5	32.5	37	30.5	38	33
35.5	33	37	31	38.5	31.5
36	29.5	37	31.5	38.5	32
36	30	37	32	38.5	32.5
36	30.5	37	32.5	38.5	33
36	31	37.5	30	39	32
36	31.5	37.5	30.5	39	32.5
36	32	37.5	31	39	33
36	32.5	37.5	31.5		
36	33	37.5	32		

ANNEX 7

Definition of frame around all maps of Jordan

Bottom left corner in AutoCAD:	x = 290000	y = 220000
Bottom right corner in AutoCAD:	x = 940000	y = 220000
Top left corner in AutoCAD:	x = 290000	y = 700000
Top right corner in AutoCAD:	x = 940000	y = 700000

This is important for the scale of plots. Zoom has to be set to 'all' or to a defined multiplication factor after being zoomed to 'all'.

All coordinate readings in AutoCAD are in JTM coordinates (in meters).

ANNEX 8

Documentation of 'sp5_acad' module

Format procedure in SPANS 5	Requires correction	Option to add frames	Correction of text size
0 / 1	no	yes	yes
3 / 1	no	yes	yes
F4 - T	yes	yes	yes

ANNEX 9

Transfer of labels

On large scale maps (1:50,000, 1:25,000), text labels appear to be adjusted to lines, sometimes in some distance from the actual point. This is caused by a rounding algorithm in SPANS, when displaying labels on screen.

When imported (via 'dxfin') as 2. block or later:

Colours will be changed to **BYBLOCK**

--> Recommended to change colour to **BYLAYER** by:

Display one 1 layer (layer - off - all,
except the one in process)

CHPROP

Select (preferably with window)
 Colour
BYLAYER
 Topmenu: Settings - Modify Layer - Change colour

ANNEX 10

List of prepared AutoCAD drawings for insertion to Jordan maps

File name (extension DWG)	Topic	Size (KB)	
corn_fl	Full degrees grid corners	470152	
corn_hf	Half degrees grid corner	5047661	
frame	Frame, N arrow, JOSDIS remark, scale	271172	page G 4.4-19
outxtot	Outline (international boundary) of Jordan	268610	page G 4.4-20
townbb	Towns: Set B (14 most important towns)	272421	page G 4.4-21
towncc	Towns: Set C (30 most important towns)	6085	page G 4.4-22
towndd	Towns: Set D (980 villages)	339523	page G 4.4-23

AutoCAD DWG file: 'frame'

File 'frame'

100 km
1:500,000



JOSCIS 1.0

AutoCAD DWG file: 'outxtot'

File 'outxtot'



JOSCIS 1.0

AutoCAD DWG file: 'townaa'

File 'townbo

Bwv1810

1809

1808

1807

1806

1805

1804

1803

1802

1801

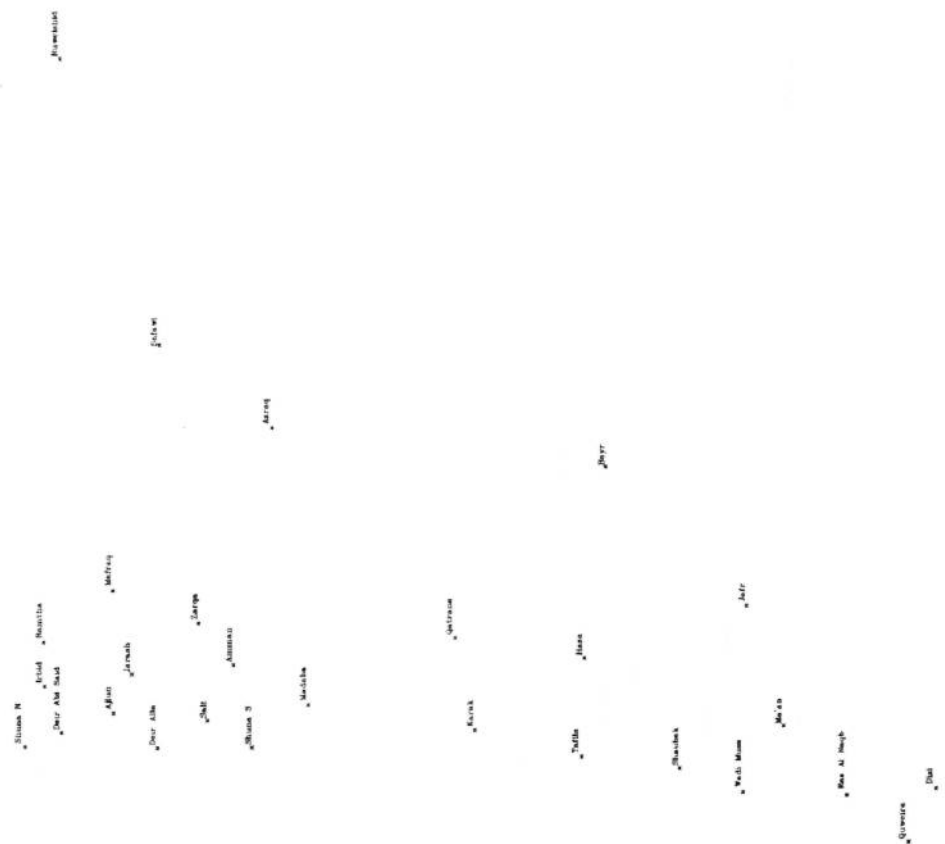
1800

1799

1798

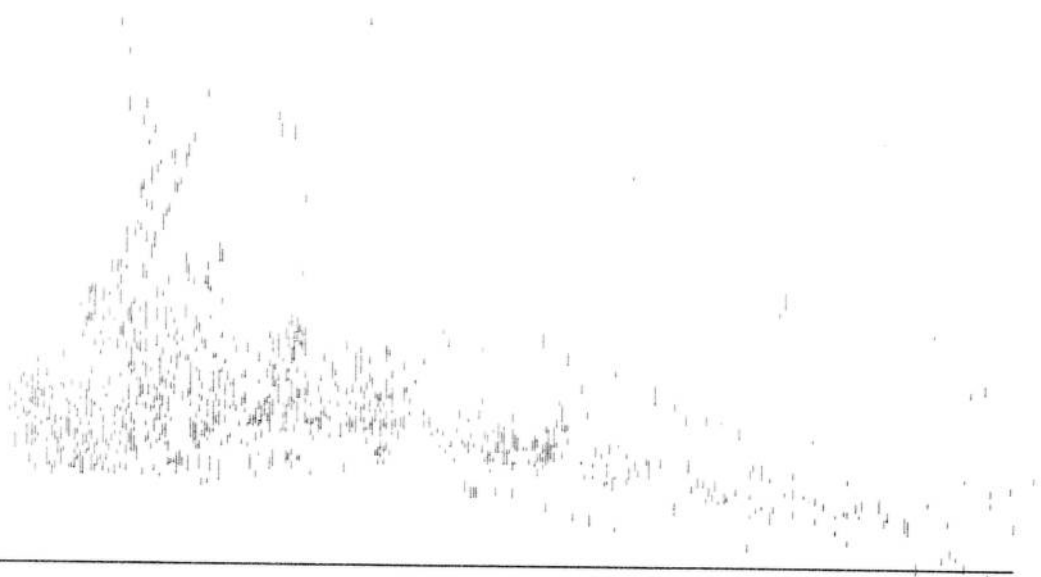
AutoCAD DWG file: 'townbb'

File 'towncc'



AutoCAD DWG file: 'towncc'

File 'towndd'



AUTOCAD PLOTTING

1) Plotting on Houston Instrument (DIN A1 size) plotter:

Maximum plotting scale for entire Jordan is 1:900,000, larger for parts of Jordan ('windows')
recommended for plot scales of 1:900,000 to approx. 1: 2,500,000

Prepare plotter:

Turn plotter on (switch at back, left handside)

Wait a minute

Load paper (DIN A1 size) from back, till it reaches front plate
(see mark)

Press 'Large' button

Insert pens in pen holder 1-7 (right pen holder)

for black-white map:

pen holder 1: black pen

for coloured map (upto 7 colours):

pen holder 1: red

pen holder 2: yellow

pen holder 3: green

pen holder 4: cyan

pen holder 5: blue

pen holder 6: magenta (purple)

pen holder 7: black

If you did not plot on this plotter last time, you will have to reconfigure AutoCAD as follows:

(Main Menu:)	Configure AutoCAD (5)
(Configuration Menu:)	Configure plotter (5)
(Do you want to select a different one? <N>)	Y
(Select device number or ...:)	Houston Instrument (9)
(Supported models ... Enter selection:)	DMP-52 MP (10)
(Enter plot name, or address ... <COM1>:)	<ENTER>
(Would you like to calibrate your plotter? <N>)	<ENTER>
(Write the plot to a file? <N>)	<ENTER>
(Size units (Inches or Millimeters)? <I>)	M
(Plot origin in Millimeters <0.00,0.00>:)	<ENTER>
(Enter the size or ... (in Millimeters) <Max>:)	<ENTER>

(Rotate 2D plots 90 degrees clockwise? <N>) <ENTER>
 (Pen width <0.25>:) <ENTER>
 (Adjust area fill boundaries for pen width? <N>) <ENTER>
 (Remove hidden lines? <N>) <ENTER>
 (Specify scale by entering:
 Plotted Millimeters=Drawing units or Fit or ? <F>) <ENTER>
 (Configuration Menu:) Exit to Main Menu (0)
 (Keep configuration changes <Y>) <ENTER>

Edit the requested drawing !

Display on screen, adjusted to approximate plot scale:

Calculate zoom magnification factor:

ZMF = 883000 / requested scale, or:

example:

	Outprint scale :	ZMF
	-----	-----
1:	2000000	0.442
1:	1500000	0.589
1:	1000000	0.883
1:	900000	0.981
1:	750000	1.18
1:	500000	1.77
1:	250000	3.515
1:	100000	8.786
1:	50000	17.57
1:	25000	35.14

Remark: These values are based on the frame around all Jordan maps, which is in map/frame 'outxtot' and in 'jordan' or which is inserted when answering 'yes' to map inclusion in SPANS 5 --> AutoCAD transfer

ZOOM

All

ZOOM

Center

(Center point:) <ENTER>

(Magnification or ...:) {ZMF}x

ZOOM

Dynamic

Move window to right position, but don't click mouse

<ENTER>

REGEN

PLOT

Display

Define precise plot scale:

(Do you want to change anything? <N>) **Y**

(Do you want to change any of the above parameters? <N>) **Y**

(Write the plot to a file? <N>) **<ENTER>**

(Size units (Inches or Millimeters)? <I>) **M**

(Plot origin in Millimeters <0.00,0.00>:) **<ENTER>**

(Enter the size or Width,Height (in Millimeters) <Max>:) **<ENTER>**

(Rotate 2D plots 90 degrees clockwise? <N>) **<ENTER>**

(Pen width <0.25>:) **<ENTER>**

(Adjust area fill boundaries for pen width? <N>) **<ENTER>**

(Remove hidden lines? <N>) **<ENTER>**

(Specify scale by entering:
Plotted Millimeters=Drawing units or Fit or ? <F>) **1={scale in thousands}**

2) Plotting on BBC (DIN A3 size) plotter:

Maximum plotting scale for entire Jordan is 1:1,900,000, larger for parts of Jordan ('windows')
recommended for plot scales of 1:1,900,000 to approx. 1: 5,000,000

Prepare plotter:

Turn plotter on (switch at back, next to power socket)

Wait a minute

Load paper (DIN A3 size) so that it touches bottom and left mark, smooth 'Chart' switch has to be on, 'View' off

Insert pens in pen holder 1-7 (from left to right)

for black-white map:

pen holder 1: black pen

for coloured map (upto 7 colours):

pen holder 1: red

pen holder 2: yellow

pen holder 3: green

pen holder 4: cyan

pen holder 5: blue

pen holder 6: magenta (purple)

pen holder 7: black

pen holder 8: -

If you did not plot on this plotter last time, you will have to reconfigure AutoCAD as follows:

(Main Menu:)	Configure AutoCAD (5)
(Configuration Menu:)	Configure plotter (5)
(Do you want to select a different one? <N>)	Y
(Select device number or ...)	Hewlett-Packard (8)
(Supported models ... Enter selection:)	7550 (4)
(Enter plot name, or address ... <COM1>:)	<ENTER>
(Would you like to calibrate your plotter? <N>)	<ENTER>
(Write the plot to a file? <N>)	<ENTER>
(Size units (Inches or Millimeters)? <I>)	M
(Plot origin in Millimeters <0.00,0.00>:)	<ENTER>
(Enter the size or ... (in Millimeters) <Max>:)	<ENTER>
(Rotate 2D plots 90 degrees clockwise? <N>)	<ENTER>
(Pen width <0.25>:)	<ENTER>
(Adjust area fill boundaries for pen width? <N>)	<ENTER>
(Remove hidden lines? <N>)	<ENTER>
(Specify scale by entering:	
Plotted Millimeters=Drawing units or Fit or ? <F>)	<ENTER>
(Configuration Menu:)	Exit to Main Menu (0)
(Keep configuration changes <Y>)	<ENTER>

Edit the requested drawing !

Display on screen, adjusted to approximate plot scale:

Calculate zoom magnification factor:

ZMF = 1880000 / requested scale, or:

example:

	Outprint scale :	ZMF
	_____	_____
1:	2000000	0.940
1:	1880000	1.00
1:	1000000	1.88
1:	900000	2.09
1:	750000	2.51
1:	500000	3.76
1:	250000	7.52
1:	100000	18.8
1:	50000	37.6
1:	25000	75.2

Remark: These values are based on the frame around all Jordan maps, which is in map/frame 'outxtot' and in 'jordan' or which is inserted when answering 'yes' to map inclusion in SPANS 5 --> AutoCAD transfer

ZOOM

All

ZOOM

Center

(Center point:) <ENTER>

(Magnification or ...:) {ZMF}x

ZOOM

Dynamic

Move window to right position, but don't click mouse

<ENTER>

REGEN

PLOT

Display

Define precise plot scale:

(Do you want to change anything? <N>) Y

(Do you want to change any of the above parameters? <N>) Y

(Write the plot to a file? <N>) <ENTER>

(Size units (Inches or Millimeters)? <I>) M

(Plot origin in Millimeters <0.00,0.00>:) <ENTER>

(Enter the size or Width,Height (in Millimeters) <Max>:) <ENTER>

(Rotate 2D plots 90 degrees clockwise? <N>) <ENTER>

(Pen width <0.25>:) <ENTER>
(Adjust area fill boundaries for pen width? <N>) <ENTER>
(Remove hidden lines? <N>) <ENTER>
(Specify scale by entering:
Plotted Millimeters = Drawing units or Fit or ? <F>) 1 = {scale in thousands}

3) Plotting on Laser printer HP II P (with or without cartridge) (DIN A4 size):

Maximum plotting scale for entire Jordan is 1:3,500,000 in portrait mode,
or 1:2,500,000 in landscape mode (rotated by 90⁰),
larger for parts of Jordan ('windows')

recommended for text maps (figures)

Prepare printer as usual:

Turn printer on (switch on right side)
Wait a minute
Load paper

If you did not plot on this printer last time, you will have to reconfigure AutoCAD as follows:

(Main Menu:)	Configure AutoCAD (5)
(Configuration Menu:)	Configure printer plotter (6)
(Do you want to select a different one? <N>)	Y
(Select device number or	Hewlett-P. LaserJet(6)
(Select desired model ...)	HP LaserJet Series II with 1,2,4 MB (5)
(Select dots per inch ...)	300
(Select number of copies for each plot ... <1>)	<ENTER>
(Would you like to allow this? <N>)	<ENTER>
(Would you like to calibrate your printer? <N>)	<ENTER>
(Write the plot to a file? <N>)	Y
(Size units (Inches or Millimeters)? <I>)	M
(Plot origin in Millimeters <0.00,0.00>:)	<ENTER>
(Enter the size or ... (in Millimeters) <Max>:)	<ENTER>
(Rotate 2D plots 90 degrees clockwise? <N>)	<ENTER>
(Remove hidden lines? <N>)	<ENTER>
(Specify scale by entering: Plotted Millimeters = Drawing units or Fit or ? <F>)	<ENTER>
(Configuration Menu:)	Exit to Main Menu (0)
(Keep configuration changes <Y>)	<ENTER>

Edit the requested drawing !

Display on screen, adjusted to approximate plot scale:

Calculate zoom magnification factor:

ZMF = 3280000 / requested scale (for not-rotated outprint), or:

ZMF = 2570000 / requested scale (for rotated outprint)

examples:

	Outprint scale-unrotated	ZMF
1:	7500000	.437
1:	6560000	.500
1:	5000000	.656
1:	3280000	1.00
1:	2000000	1.64
1:	1640000	2.00
1:	1500000	2.19
1:	1000000	3.28
1:	820000	4.00
	Outprint scale-rotated	ZMF
1:	7500000	.343
1:	5140000	.500
1:	5000000	.514
1:	2570000	1.00
1:	2000000	1.285
1:	1285000	2.00
1:	1500000	1.71
1:	1000000	2.57
1:	642500	4.00

Remark: These values are based on the frame around all Jordan maps, which is in map/frame 'outxtot' and in 'jordan' or which is inserted when answering 'yes' to map inclusion in SPANS 5 --> AutoCAD transfer

ZOOM

All

ZOOM

Center

(Center point:) <ENTER>

(Magnification or ...:) {ZMF}x

ZOOM

Dynamic

Move window to right position, but don't click mouse

<ENTER>

REGEN

PLOT
Display

Define precise plot scale:

(Do you want to change anything? <N>)	Y
(Write the plot to a file? <Y>)	Y
(Size units (Inches or Millimeters)? <M>)	M
(Plot origin in Millimeters <0.00,0.00>:)	<ENTER>
(Enter the size or Width,Height (in Millimeters) <Max>:)	<ENTER>
(Rotate 2D plots 90 degrees clockwise? <N>)	N for not-rotated outprint (default, for portrait mode), or Y for rotated outprint (landscape mode)
(Remove hidden lines? <N>)	<ENTER>
(Specify scale by entering: Plotted Millimeters=Drawing units or Fit or ? <F>)	1 = {scale in thousands}
(Enter file name for plot ...:)	LPT2 (without colon;)
(Main Menu:)	Exit (0)

If plot is not satisfying, because unexpected symbols and/or signs appear on the map and/or map is incomplete, direct the plot to a file, and print from this file to the laser printer:

At step: Enter file name for plot ..., you have to proceed in a slightly different way:

(Enter file name for plot ...:)	{any filename}
(Main Menu:)	Exit (0)

In DOS:

copy {filename}.LST LPT2: /b

4) Plotting on Laser printer HP II P (with HP-GL emulation cartridge) (DIN A4 size):

Maximum plotting scale for entire Jordan is 1:3,500,000 in portrait mode,
or 1:2,500,000 in landscape mode (rotated by 90⁰),

recommended for text maps (figures)

Prepare printer:

Before switching printer on, insert HP-GL emulation cartridge in slot on
right side (instead of 25-in-1 cartridge)

Turn printer on (switch on right side)

Wait a minute

Load paper

If you did not plot on this printer last time, you will have to reconfigure AutoCAD as follows:

(Main Menu:)	Configure AutoCAD (5)
(Configuration Menu:)	Configure plotter (5)
(Do you want to select a different one? <N>)	Y
(Select device number or)	Hewlett-Packard(8)
(Supported models ... Enter selection:)	7475 (3)
(Enter port name, or address ... <COM1>:)	<ENTER>
(Would you like to calibrate your printer? <N>)	<ENTER>
(Write the plot to a file? <N>)	Y
(Size units (Inches or Millimeters)? <I>)	M
(Plot origin in Millimeters <0.00,0.00>:)	<ENTER>
(Enter the size or ... (in Millimeters) <Max>:)	<ENTER>
(Rotate 2D plots 90 degrees clockwise? <N>)	Y
(Pen width <0.25>:)	<ENTER>
(Adjust area fill ... <N>)	<ENTER>
(Remove hidden lines? <N>)	<ENTER>
(Specify scale by entering:	
Plotted Millimeters = Drawing units or Fit or ? <F>)	<ENTER>
(Configuration Menu:)	Exit to Main Menu (0)
(Keep configuration changes <Y>)	<ENTER>

Edit the requested drawing !

Display on screen, adjusted to approximate plot scale:

Calculate zoom magnification factor:

ZMF = 2620000 / requested scale (for not-rotated output), or:

example:

	Outprint scale-unrotated	ZMF
1:	7500000	.349
1:	5240000	.500
1:	5000000	.524
1:	2620000	1.00
1:	2000000	1.31
1:	1310000	2.00
1:	1000000	2.62
1:	500000	5.24

Remark: These values are based on the frame around all Jordan maps, which is in map/frame 'outxtot' and in 'jordan' or which is inserted when answering 'yes' to map inclusion in SPANS 5 --> AutoCAD transfer

ZOOM

All

ZOOM

Center

(Center point:) <ENTER>

(Magnification or ...:) {ZMF}x**ZOOM**

Dynamic

Move window to right position, but don't click mouse

<ENTER>

REGEN**PLOT**

Display

Define precise plot scale:

(Do you want to change anything? <N>) **Y**

(Do you want to change any of the above parameters...? <N>) <ENTER>

(Write the plot to a file? <Y>) **Y**(Size units (Inches or Millimeters)? <M>) **M**

(Plot origin in Millimeters <0.00,0.00>:) <ENTER>

(Enter the size or Width,Height (in Millimeters) <Max>:) <ENTER>

(Rotate 2D plots 90 degrees clockwise? <Y>) **Y**

(Pen width <0.25> ?) <ENTER>

(Adjust area fill boundaries ... ? <N>) <ENTER>

(Remove hidden lines? <N>) <ENTER>

(Specify scale by entering:

Plotted Millimeters = Drawing units or Fit or ? <F>) **1 = {scale in thousands}**(Enter file name for plot ...:) **{any filename}**

(Main Menu:)

Exit (0)

In DOS:

copy {filename}.PLT LPT2: /b

TRANSFER OF SPANS MAPS TO PAINTBRUSH (PCX Format)

1) Be sure in SPANS, that you are **saving browse files ('slides')** in **CUT format**:

You can modify SPANS setup to save in CUT format,
either by:

```
cd \spans521
copy boards.cut boards.sys
```

or by:

```
cd \spans521
q boards.sys
```

and edit it, so that the row starting with the current screen driver identifier
(which is the letter of the first line not having a colon in column 1;
example: **X** Id Seg ...) has a '1' in column 'Type' (8.data set in the row, ex-
ample for VGA driver, after '85')

```
X Id Seg  Dev  Mode Asp  Maxcol colstep Type Plan Colort Repal Board
X 0  haloibmv 7  1.0000 16   85   1  1  1  1  VGA
```

2) Create CUT/BIC files:

In SPANS, save the final map (including legend, title, etc.) as usual:

Visualize
Slides
Save

```
(Slide:)           {filename}
(Slide show:)     J
(Description:)    {short description}
```

3) Convert BIC file to PAL file:

```
cd \spans521\jordan
bictopal {filename}
example: bictopal pre1tot
```

4) Convert CUT file (Dr.Halo format) to PCX file (Paintbrush format):

If transfer from GIS computer to other computer with Paintbrush, copy {filename}.CUT and {filename}.PAL via disk to other computer.

```
cd\hj2
```

```
hj
```

```
Convert (<ALT> C)
```

```
(Select File To Be Converted:)
```

```
Under 'Type' (<ALT> T) select 'Dr.Halo CUT'
```

```
Under 'CUT files' (<ALT> I) select file !
```

```
Under 'Set Options' (<ALT> O), set 'X'
```

```
(Dr.Halo Source Options:)
```

```
Select file (with extension PAL) !
```

```
(Destination Files:)
```

```
Under 'Type' (<ALT> T) select 'PC Paintbrush PCX'
```

```
Under 'Set Options' (<ALT> O), set 'X'
```

```
(Options:)
```

```
Under 'Colors' (<ALT> C) select 'Same'
```

```
Under 'Reverse B/W' (<ALT> E), set 'X'
```

```
Exit from HiJaak
```

5) Delete PAL file(s) in SPANS subdirectory:

```
DOS
```

```
delete \spans521\jordan\{filename}.PAL
```

6) Load file in Paintbrush and edit:

```
gmouse 1
```

```
- if mouse is not already loaded ! -
```

```
cd \pbrush
```

```
paint
```

```
File (<ALT> F)
```

```
Open
```

```
Select file with <SPACE> and <ENTER>
```

```
*****
```

When printing off Paintbrush, the setting for full size maps can be:

Set Units
cm

Top margin
5

Left margin
2.5

Print Width
15

If during outprint, error message 'Not sufficient memory' or similar appears, repeat step 4 with modified settings in 'Options' of 'Destination Files':

Resolution: 300 horizontal (or 400)

Resolution: 300 vertical (or 400)

TRANSFER OF SPANS MAPS TO INSET (PIX Format)

1) Be sure in SPANS, that you are saving browse files ('slides') in CUT format:

You can modify SPANS setup to save in CUT format, either by:

```
cd \spans521
copy boards.cut boards.sys
```

or by:

```
cd \spans521
q boards.sys
```

and edit it, so that the row starting with the current screen driver identifier (which is the letter of the first line not having a colon in column 1; example: X Id Seg ...) has a '1' in column 'Type' (8.data set in the row, example for VGA driver, after '85')

```
X Id Seg Dev Mode Asp Maxcol colstep Type Plan Colorl Repal Board
X 0 haloibmv 7 1.0000 16 85 1 1 1 1 VGA
```

2) Create CUT/BIC files:

In SPANS, save the final map (including legend, title, etc.) as usual:

```
Visualize
Slides
Save
```

```
(Slide:)           {filename}
(Slide show:)      J
(Description:)     {short description}
```

3) Convert BIC file to PAL file:

```
cd \spans521\jordan
bictopal {filename}
example: bictopal prcltot
```

4) Convert CUT file (Dr.Halo format) to PIX file (Inset format):

If transfer from GIS computer to other computer with Inset, copy {filename}.CUT and {filename}.PAL via disk to other computer.

```
cd\hj2
```

```
hj
```

```
Convert (<ALT> C)
```

```
(Select File To Be Converted:)
```

```
Under 'Type' (<ALT> T) select 'Dr.Halo CUT'
```

```
Under 'CUT files' (<ALT> I) select file !
```

```
Under 'Set Options' (<ALT> O), set 'X'
```

```
(Dr.Halo Source Options:)
```

```
Select file (with extension PAL) !
```

```
(Destination Files:)
```

```
Under 'Type' (<ALT> T) select 'Inset Systems PIX'
```

```
Under 'Set Options' (<ALT> O), set 'X'
```

```
(Options:)
```

```
Under 'Colors' (<ALT> C) select 'Same'
```

```
Exit from HiJaak
```

5) Delete PAL file(s) in SPANS subdirectory:

```
DOS
```

```
delete \spans521\jordan\{filename}.PAL
```

6) Edit PIX file in Inset (outside wordprocessor):

```
From 'automenu':
```

```
Wordprocessor
```

```
Graphis Utility
```

```
[call of program 'inset']
```

```
DOS
```

```
<LEFT CTRL> + <LEFT SHFT> [invoke of 'inset']
```

```
View
```

```
Select file !
```

```
(Screen conversion required:) Yes
```

```
VGA_HIGH
```

The map should then appear on screen, with black background.

Editing is now possible (including writing text, scaling, setting a border etc.)

```
Save
```

```
<ESC>
```

TRANSFER OF SPANS MAPS TO WINDOWS

1) Be sure in SPANS, that you are saving browse files ('slides') in CUT format:

You can modify SPANS setup to save in CUT format,
either by:

```
cd \spans521
copy boards.cut boards.sys
```

or by:

```
cd \spans521
q boards.sys
```

and edit it, so that the row starting with the current screen driver identifier
(which is the letter of the first line not having a colon in column 1;
example: X Id Seg ...) has a '1' in column 'Type' (8.data set in the row, ex-
ample for VGA driver, after '85')

```
X Id Seg Dev Mode Asp Maxcol colstep Type Plan Colort Repal Board
X 0 haloibmv 7 1.0000 16 85 1 1 1 1 VGA
```

2) Create CUT/BIC files:

In SPANS, save the final map (including legend, title, etc.) as usual:

```
Visualize
Slides
Save
```

```
(Slide:)           {filename}
(Slide show:)     J
(Description:)    {short description}
```

3) Convert BIC file to PAL file:

```
cd \spans521\jordan
bictopal {filename}
example: bictopal pre1tot
```

4) Convert CUT file (Dr.Halo format) to PCX file (Paintbrush format):

If transfer from GIS computer to other computer with Paintbrush, copy `{filename}.CUT` and `{filename}.PAL` via disk to other computer.

```
cd\hj2
```

```
hj
```

```
Convert (<ALT> C)
```

```
(Select File To Be Converted:)
```

```
Under 'Type' (<ALT> T) select 'Dr.Halo CUT'
```

```
Under 'CUT files' (<ALT> I) select file !
```

```
Under 'Set Options' (<ALT> O), set 'X'
```

```
(Dr.Halo Source Options:)
```

```
Select file (with extension PAL) !
```

```
(Destination files:)
```

```
Under 'Type' (<ALT> T) select 'PC Paintbrush PCX'
```

```
Under 'Set Options' (<ALT> O), set 'X'
```

```
(Options:)
```

```
Under 'Colors' (<ALT> C) select 'Same'
```

```
Under 'Reverse B/W' (<ALT> E), set 'X'
```

```
Exit from HiJaak
```

5) Delete PAL file(s) in SPANS subdirectory:

```
DOS
```

```
delete \spans521\jordan\{filename}.PAL
```

6) Load Windows and wordprocessor:

example: Word for Windows

```
cd\windows
```

```
win
```

```
Double-click 'MS Word'
```

```
Insert (<ALT> I)
```

```
Picture (P)
```

```
Change directory to \PBRUSH (<ALT> D)
```

```
Select file (<ALT> N)
```

```
<ENTER>
```

This approach functions for all Windows applications !

You can now print this file (step 7) or integrate it in your wordprocessing document (step 8).

7) Print PIX file:

In Inset:

Modify

Inches

Set size (in inches) and keep height-width ratio as 100 %

<ESC>

Print

Go

Recommended for full page, landscape mode printing are following settings:

Modify

Rotate

Left

Modify

Expand

Inches

(Enter Width:) 6

(Enter Aspect Ratio:) 100

Modify

Border

Yes

<ESC>

Print

Margin

(Left Margin:) .5

Down, and press <ENTER> 10 times

Go

8) Load wordprocessor:

From 'automenu':

Wordprocessor

Wordstar 2000 with Graphics Utility

E (edit document)

Select document

Go to place where graphic should be located

Ctrl-G M (to load graphics)

Select graphic file

Do not try to modify graphic image now !

If map comes at outprint with black background, invert black and white:

Either:

- In HiJaak: Destination File(s) - Options: Invert B/W,

Or:

- In Inset: Modify - Ink - Invert

If a mapping unit comes in the same colour as the background, e.g. in white, it is recommended to draw an outline of Jordan (international boundary: vector files 'outxtot') **in SPANS** around the map, and then repeat the process of conversion and loading.

National Soil Map and Land Use Project

Ministry of Agriculture, Jordan

J O S C I S

Jordan Soil and Climatic Information System

G I S

V O L U M E

Digitization

Processing

Print &
Plot

Map
Database

Settings &
Backup

MAP DATABASE

An Inventory of Maps in the GIS

Short map name:	Full map name:	Page:
ALXTOT	Altitude	G 5.2-1
AQUFTOT	Aquifer	G 5.2-5
AQUFTOT5	General aquifers	G 5.2-9
ARIDTOT	Soil moisture regime	G 5.2-13
BCLITOT	Bioclimatology	G 5.2-17
BITLTOT	Bituminous limestone	G 5.2-21
CARBTOT	Hydrocarbon	G 5.2-25
CAT2TOT	Catchment	G 5.2-29
DEADSEA	Dead Sea	G 5.2-33
DEWMTOT	Dewfall	G 5.2-37
DRAITOT	Drainage basins	G 5.2-41
DRAITOT5	General drainage basins	G 5.2-45
EXS1TOT	Existing study areas	G 5.2-49
FORETOT	Forest units	G 5.2-53
FORETOT5	Forest: Site class	G 5.2-57
FORETOTA	Forest: Types	G 5.2-61
FORETOTB	Forest: Species	G 5.2-65
FORETOTD	Forest: Density	G 5.2-69
FORETOTE	Forest: Height	G 5.2-73
FST1TOT	Ground frost	G 5.2-77
GEL1TOT	Geology	G 5.2-81
GEL1TOT5	Geology (generalized)	G 5.2-85
GEL1TOT6	Geology: Quaternary	G 5.2-89
GEL1TOT7	Geology (aggregated)	G 5.2-93
GOV1TOT	Governorates (1)	G 5.2-97
GOV2TOT	Governorates (2)	G 5.2-101
GOV3TOT	Governorates (3)	G 5.2-105
GOV4TOT	Governorates (4)	G 5.2-109
GRW1TOT	Groundwater	G 5.2-113
GRWBTOT	Groundwater balance	G 5.2-117
GRWBTOT5	Generalized groundwater balance	G 5.2-121
IMAGTOT	Landsat Images	G 5.2-129
IRR1TOT	Irrigated areas (1977)	G 5.2-125
MSS1TOT	Landsat MSS, Band 1	G 5.2-133
MSS1TOTT	Landsat MSS, Band 1	G 5.2-133

G 5.2-137	LandSAT MSS, Band 2	MSS2TOT
G 5.2-137	LandSAT MSS, Band 2	MSS2TOT
G 5.2-141	LandSAT MSS, Band 3	MSS3TOT
G 5.2-141	LandSAT MSS, Band 3	MSS3TOT
G 5.2-144	Oil wells	OILXTOT
G 5.2-147	Outline of Jordan	OUTXTOT
G 5.2-150	Phosphorites	PHOSTOT
G 5.2-153	Physiography - Geology	PHSGTOT
G 5.2-157	Project area, level II (final)	PR2DTOT
G 5.2-161	Project area, level II (preliminary)	PR2XTOT
G 5.2-165	Precipitation (1) - NWMP	PRC1TOT
G 5.2-169	Precipitation (1) - Water Authority	PRC2TOT
G 5.2-172	Raingauges	RAINGAUG
G 5.2-175	Regions (2)	REG2TOT
G 5.2-179	Regions (3)	REG3TOT
G 5.2-183	Regions (1)	REGXTOT
G 5.2-186	Rivers (2)	RIV2TOT
G 5.2-188	Roads (2)	ROADS
G 5.2-191	Rangeland survey areas	RRLSTOT
G 5.2-195	Rangeland survey areas - progress	RRLSTOTS
G 5.2-199	Groundwater salinity	SAGRTOT
G 5.2-203	Schematic soil map	SLGSTOT
G 5.2-207	Sample areas of level I	SMPATOT
G 5.2-211	Soil - Physiography	SOI1TOT
G 5.2-215	Soils (Project: Level I)	SOI2TOT
G 5.2-219	Soils (Project: Level II)	SOI3TOT
G 5.2-223	Sowing date	SOWDTOT
G 5.2-227	Land systems	SYS2TOT
G 5.2-231	Annual air temperature	TEMDA
G 5.2-231	January air temperature	TEMDAJAN
G 5.2-231	February air temperature	TEMDAFEB
G 5.2-231	March air temperature	TEMDAMAR
G 5.2-231	April air temperature	TEMDAAPR
G 5.2-231	May air temperature	TEMDAMAY
G 5.2-231	June air temperature	TEMDAJUN
G 5.2-231	July air temperature	TEMDAJUL
G 5.2-231	August air temperature	TEMDAUG
G 5.2-231	September air temperature	TEMDASEP
G 5.2-231	October air temperature	TEMDAOCT
G 5.2-231	November air temperature	TEM DANOV
G 5.2-231	December air temperature	TEM DADDEC
G 5.2-231	Annual soil temperature	TEMDS
G 5.2-235	Annual air temperature (USDA classes)	TEMTA
G 5.2-235	Annual soil temperature (USDA classes)	TEMTS
G 5.2-239	Urban area	URBITOT
G 5.2-243	Vegetation (FAO)	VEG2TOT
G 5.2-247	Land use intensity	VEG2TOTA
G 5.2-251	Vegetation (HTS)	VEGXTOT
G 5.2-255	Villages	VILLTOT
G 5.2-259	Wildlife reserve areas	WLDRTOT
G 5.2-263	Wildlife reserve areas - progress	WLDRTOTS

Full name: Altitude - Topography
 Short name: ALXTOT
 Digitized features: Contour lines with interval of 100 m

Source (authority): Royal Jordanian Geographic Centre (date: 1960's)
 Source map(s): Topographic map
 Source map projection: Palestine Grid
 Source map scale: 1:250,000

Sheet index: 'Old' 250000 topo sheet index
 1.columns (A...F)
 2.rows (1...5)

Sheets:

A	5
B	2...5
C	3...5
D	2...5
E	1...3
F	2

in total: 17 sheets
 joining sequence: A5 - B2...5 - C3...5 - D2...5 - E1...3 - F2

Number of units: 23 (from 1:-400 - -300, to 22: 1700-1800 m asl);
 conversion formula: m = mapping unit no. * 100 - 450

Colour of units:

6-6-7-7-8-	8-9-9-5-5-
4-4-3-3-2-	1-12-11-11-10
10-10-13	

Dead Sea: Mapping unit 23 (serves as reference unit for all other maps)

Level codes: not used (only '1')
 Feature codes: mapping units
 Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
 Date of digitization: November/December 1989

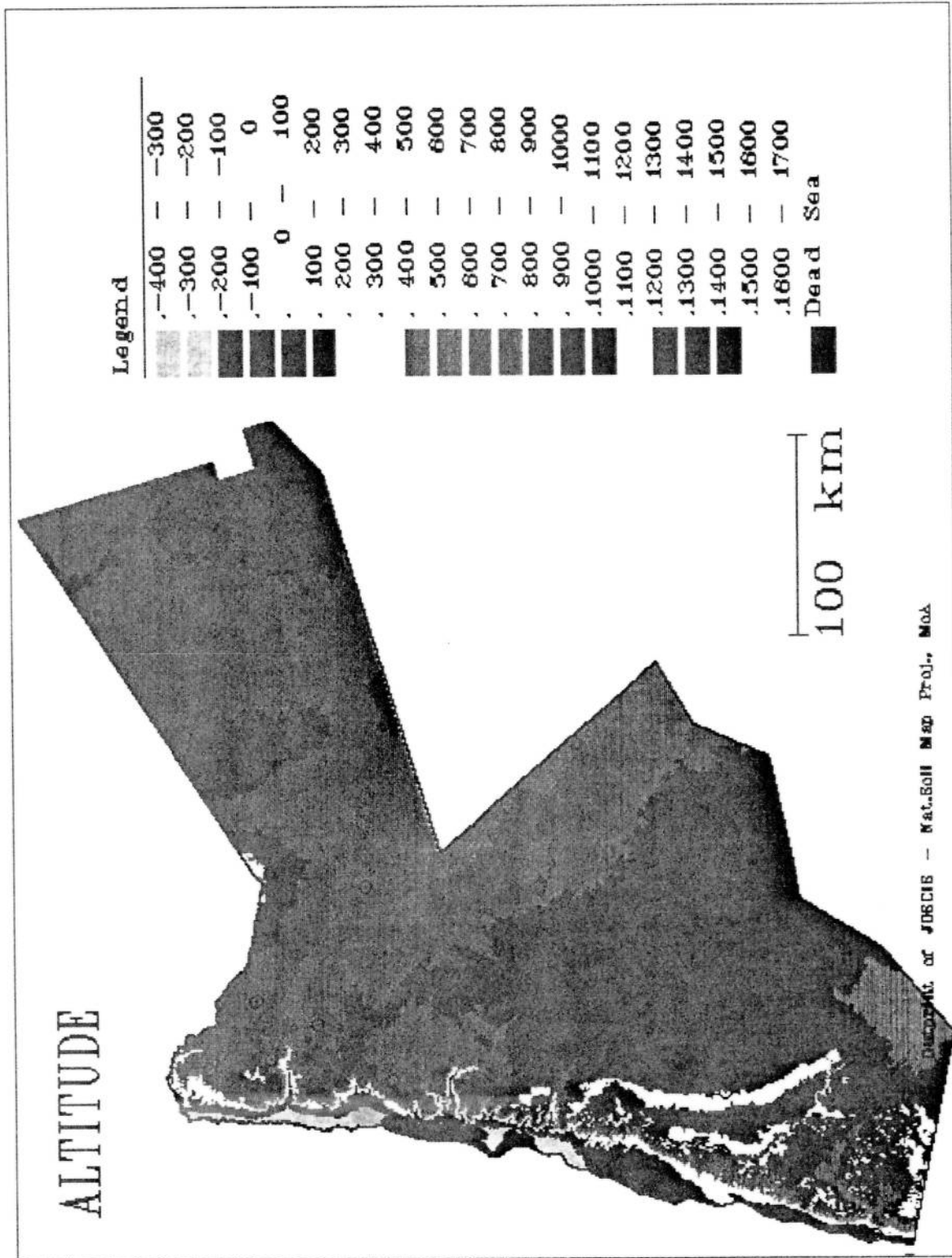
Remarks: This map is aggregated to form:
 OUTXTOT as base map (see page G 5.2-147), and
 DEADSEA (see pag G 5.2-33)

SINGLE MAP ANALYSIS

Map : altxtot - ALTITUDE

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	.-400 - -300	0.47	0.47	421.9
2	.-300 - -200	0.56	1.03	499.5
3	.-200 - -100	0.45	1.48	398.9
4	.-100 - 0	0.52	2.00	459.7
5	. 0 - 100	0.90	2.90	804.5
6	. 100 - 200	0.97	3.86	861.5
7	. 200 - 300	0.88	4.74	780.8
8	. 300 - 400	0.82	5.56	729.4
9	. 400 - 500	1.16	6.71	1031.0
10	. 500 - 600	6.44	13.15	5742.4
11	. 600 - 700	15.83	28.98	14119.4
12	. 700 - 800	21.72	50.70	19368.2
13	. 800 - 900	26.08	76.78	23260.5
14	. 900 - 1000	13.37	90.15	11925.6
15	.1000 - 1100	3.92	94.07	3495.0
16	.1100 - 1200	2.25	96.32	2008.8
17	.1200 - 1300	1.32	97.64	1178.2
18	.1300 - 1400	0.80	98.44	714.6
19	.1400 - 1500	0.55	98.99	488.1
20	.1500 - 1600	0.31	99.30	276.1
21	.1600 - 1700	0.10	99.40	93.2
22	.1700 - 1800	0.00	99.41	2.8
23	Dead Sea	0.59	100.00	530.1
Total of 23 classes		100.00		89190.1





Full name: Aquifer
Short name: AQUFTOT
Digitized features: Aquifers of Jordan (aturated strata that have sufficient porosity and permeability to yield ample supplies of groundwater)

Source (authority): Water Authority - National Water Master Plan
Source map(s): -
Source map projection: Palestine Grid
Source map scale: 1:750,000

Sheet index: -
Sheets: AA + BB

in total: 2 sheets

Number of units: 12
Colour of units: 13-2-3-4-5- 6-7-8-9-14-
1-13
Dead Sea: Mapping unit 12 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
Date of digitization: Early 1990

Remarks: This map is aggregated to form:

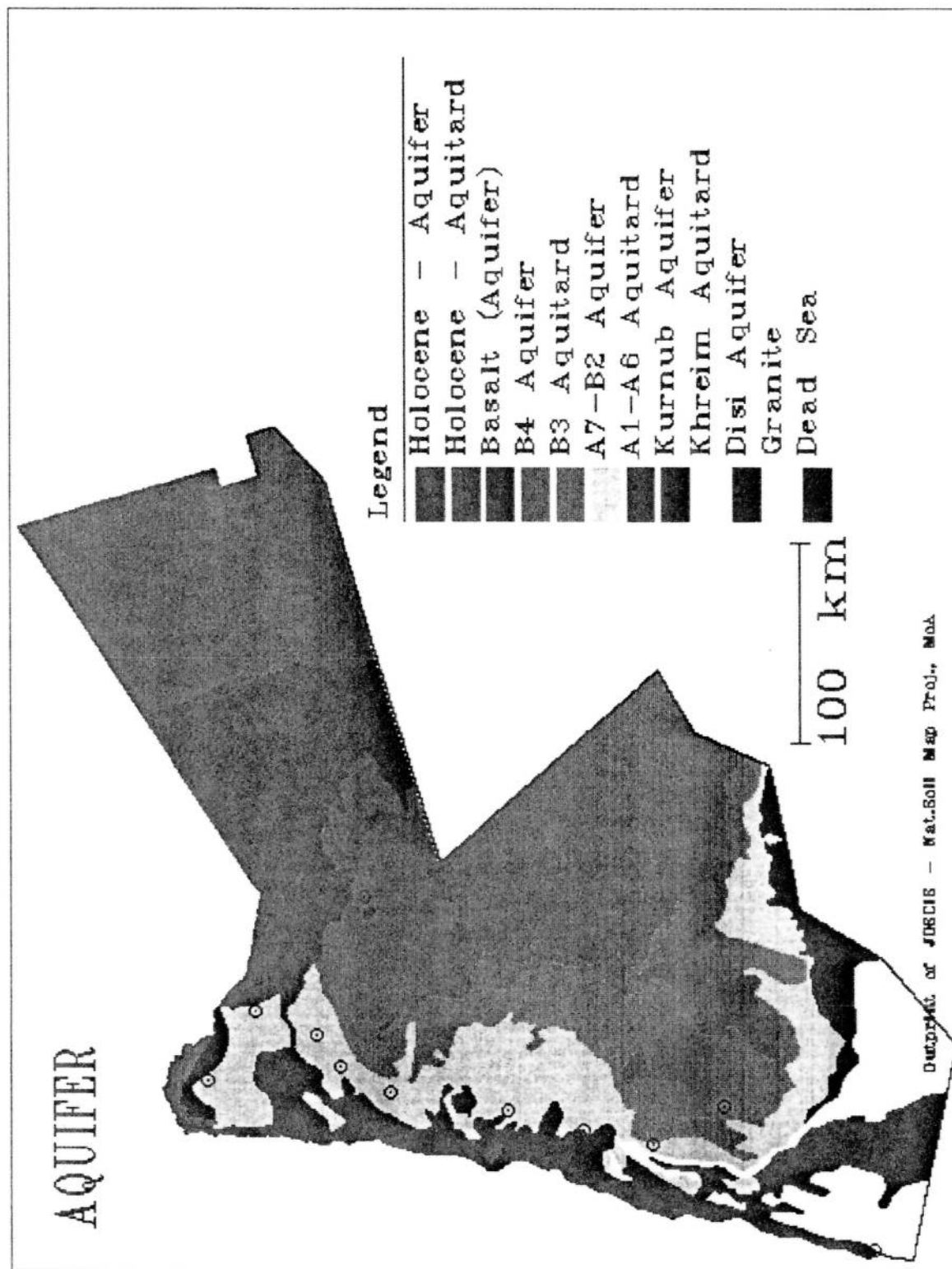
AQUFTOT5 (see page G 5.2-9)

SINGLE MAP ANALYSIS

Map : aquftot - AQUIFER

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Holocene - Aquifer	2.05	2.05	1832.5
2	Holocene - Aquitard	0.39	2.44	347.1
3	Basalt (Aquifer)	12.95	15.39	11548.7
4	B4 Aquifer	43.08	58.47	38419.4
5	B3 Aquitard	11.32	69.79	10100.1
6	A7-B2 Aquifer	13.64	83.43	12167.9
7	A1-A6 Aquitard	2.73	86.16	2434.2
8	Kurnub Aquifer	2.95	89.12	2633.2
9	Khreim Aquitard	3.76	92.88	3356.1
10	Disi Aquifer	3.79	96.67	3376.4
11	Granite	2.74	99.41	2444.5
12	Dead Sea	0.59	100.00	529.9
Total of 12 classes		100.00		89190.1





Full name: Aquifer / aquitard
 Short name: AQUFTOT5
 Digitized features: Classification due to aquifer characteristics, based on Aquifer map

Source (authority): Water Authority - National Water Master Plan
 Source map(s): -
 Source map projection: Palestine Grid
 Source map scale: 1:750,000

Sheet index: same as / derived from 'aquftot'
 Sheets: same as / derived from 'aquftot'

in total: 2 sheets

Number of units: 3
 Colour of units: 11-14-13
 Dead Sea: Mapping unit 3 (transferred from 'altxtot' map)

Level codes: not used (only '1')
 Feature codes: mapping units for 'aquftot', then reassigned
 Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
 Date of digitization: Early 1990

Remarks: Derived from 'aquftot' map (see page G 5.2-5),
 using following reference table:

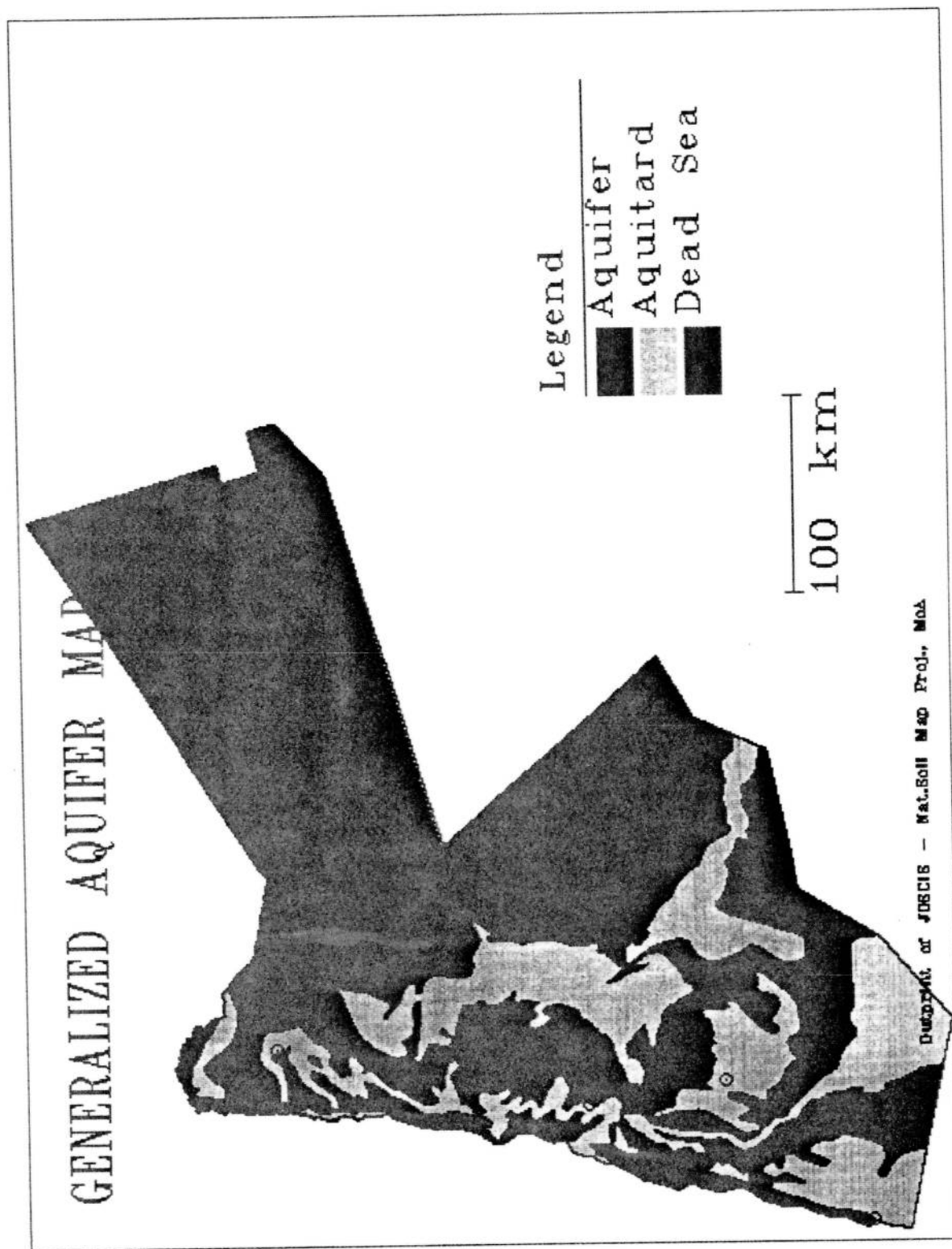
1	-->	1
2	-->	2
3	-->	1
4	-->	1
5	-->	2
6	-->	1
7	-->	2
8	-->	1
9	-->	2
10	-->	1
11	-->	2
12	-->	3

SINGLE MAP ANALYSIS

Map : aquftot5 - GENERALIZED AQUIFER MAP

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Aquifer	78.46	78.46	69978.2
2	Aquitard	20.95	99.41	18682.0
3	Dead Sea	0.59	100.00	529.9
Total of 3 classes		100.00		89190.1





Full name: Soil moisture regime
 Short name: ARIDTOT
 Digitized features: Soil moisture regime units according to USDA moisture definition

Source (authority): National Soil Map Project
 Source map(s): Based on topo sheets (various editions) by Royal Jordanian
 Geographic Centre
 Source map projection: various
 Source map scale: 1:50,000

Sheet index: 50000 topo sheet index
 1.columns (C...J)
 2.rows (1...9,A...F)

Sheets: C C...F
 D 4...F
 E 4...C
 F 4...A
 G 5...9
 H 5,6
 I 5,6
 J 5,6

in total: 43 sheets
 + background setting for aridic regime (mapping unit no.1) for rest
 of Jordan

Number of units: 6
 Colour of units: 6-3-5-8-7- 13
 Dead Sea: Mapping unit 13 (transferred from 'altxtot' map)

Level codes: not used (only '1')
 Feature codes: mapping units
 Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Mohammed Sameh
 Date of digitization: July/August 1992

Remarks: After digitization of units, modification was done due to 22⁰
 isotherm line:

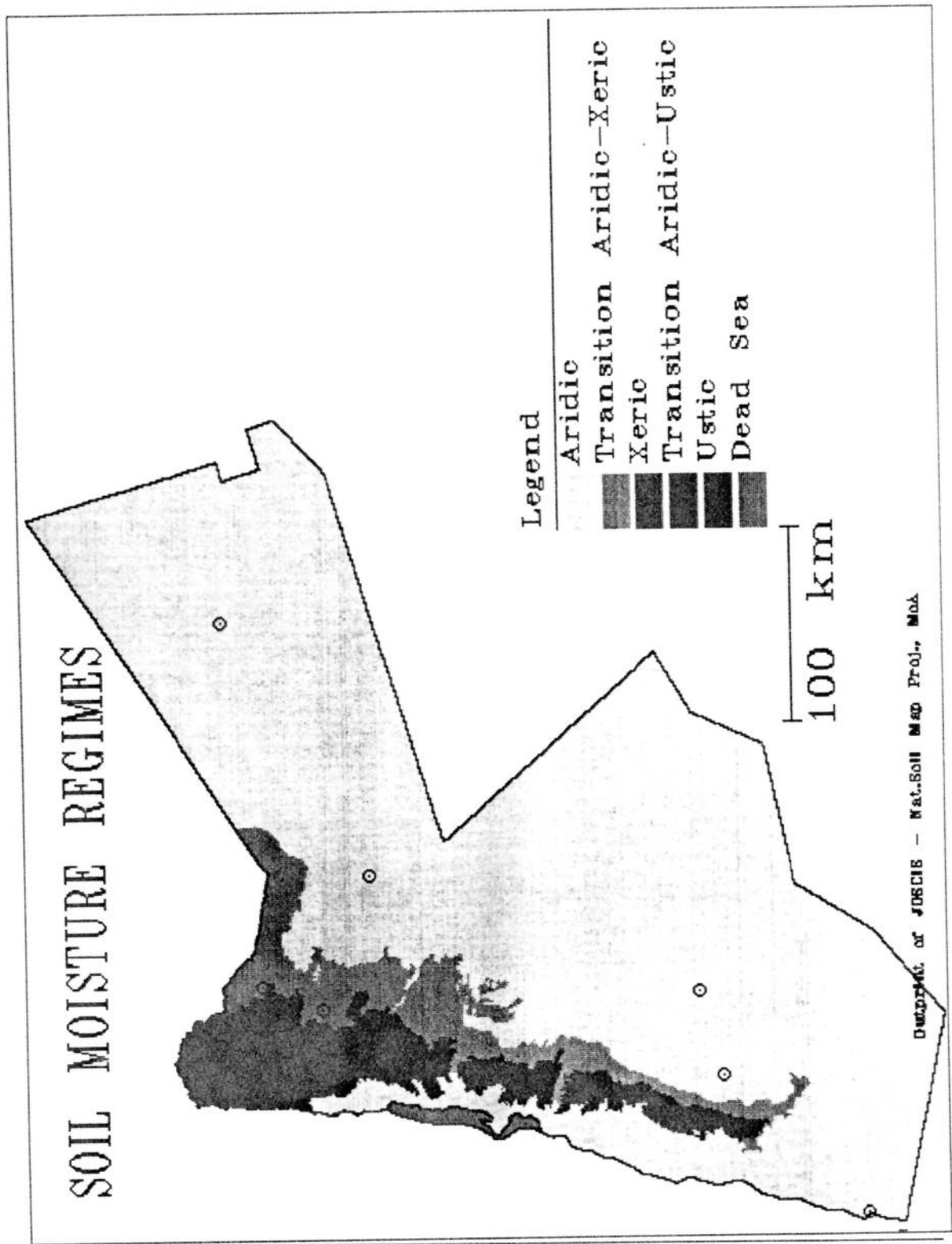
Above 22⁰ annual temperature, and lat > 345:
 xeric --> ustic
 Above 22⁰ annual temperature, and lat 276 - 244:
 xeric --> transition
 Below 22⁰ annual temperature, and lat 276 - 344:
 transition --> xeric
 Above 22⁰ annual temperature, and lat 191 - 203 (W.Hassa):
 transition --> xeric

SINGLE MAP ANALYSIS

Map : aridtot - SOIL MOISTURE REGIMES

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Aridic	82.50	82.50	73583.6
2	Transition Aridic-Xeric	7.61	90.11	6785.8
3	Xeric	8.18	98.29	7292.4
4	Transition Aridic-Ustic	0.69	98.98	619.2
5	Ustic	0.43	99.41	379.3
6	Dead Sea	0.59	100.00	529.9
Total of 6 classes		100.00		89190.1





Full name: Bioclimatology
Short name: BCLITOT
Digitized features: 'Bioclimatology', general climatic classification,
considering precipitation and temperature

Source (authority): FAO 1957
Source map(s):
Source map projection: Palestine Grid (?)
Source map scale: 1:1,667,000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 9
Colour of units: 9-8-1-2-3- 4-7-6-13
Dead Sea: Mapping unit 13 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Ali K. Odeh
Date of digitization: Early 1990

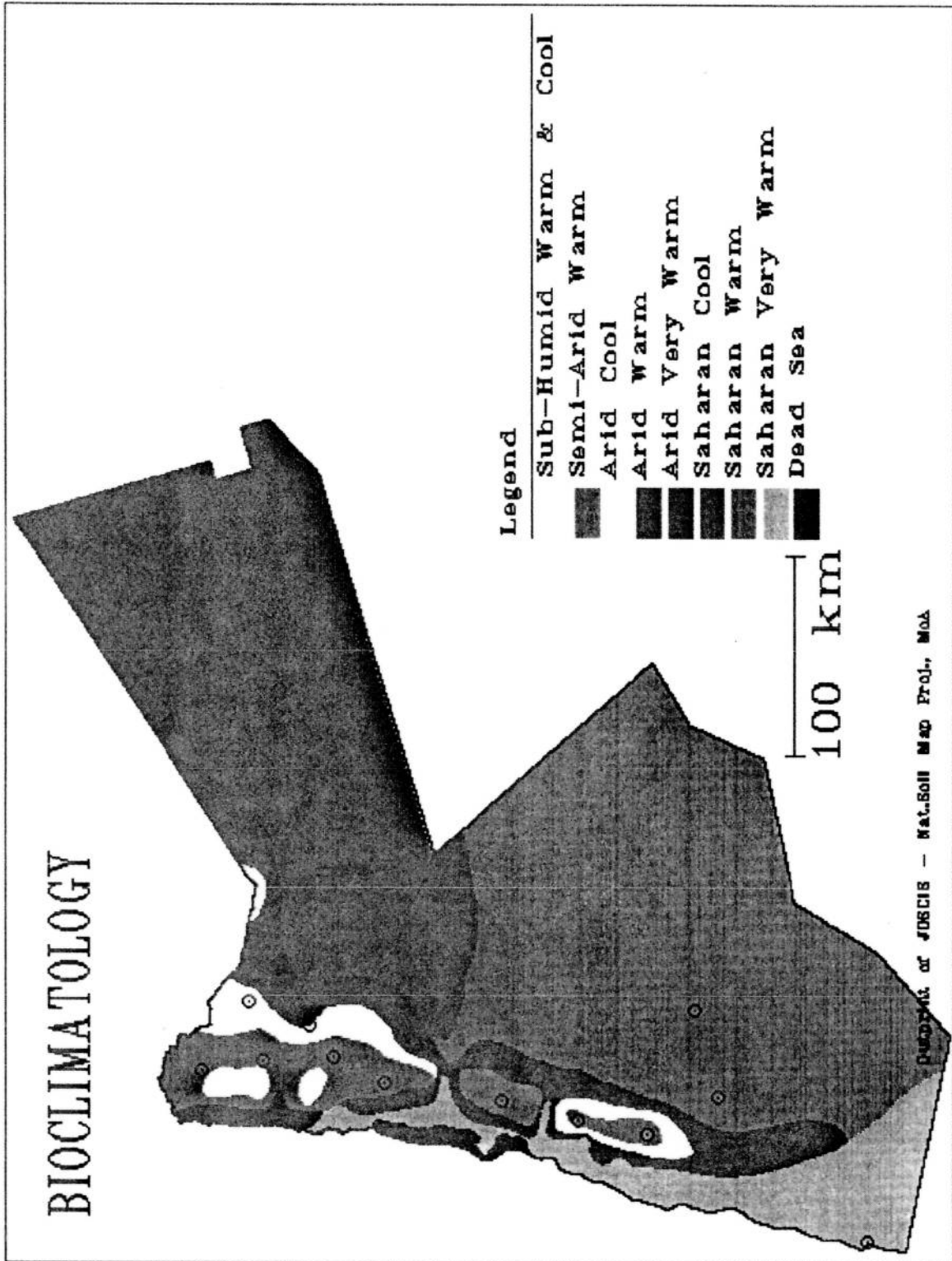
Remarks:

SINGLE MAP ANALYSIS

Map : bclitot - BIOCLIMATOLOGY

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Sub-Humid Warm & Cool	0.70	0.70	627.0
2	Semi-Arid Warm	5.20	5.90	4639.5
3	Arid Cool	3.07	8.97	2733.8
4	Arid Warm	9.10	18.07	8120.0
5	Arid Very Warm	0.73	18.80	651.1
6	Saharan Cool	34.56	53.36	30821.8
7	Saharan Warm	38.13	91.49	34008.8
8	Saharan Very Warm	7.91	99.41	7058.2
9	Dead Sea	0.59	100.00	529.9
Total of 9 classes		100.00		89190.1





Full name: Bitumen
Short name: BITLTOT
Digitized features: Occurrence of bituminous limestone ('oil shale')

Source (authority): Natural Resource Authority: Abu-Ajamieh, M.M. + Bender, F.K. +
Eicher, R.N.: 'Natural Resources in Jordan, Inventory -
Evaluation - Development Program'; December 1988

Source map(s): Text map, fig.12 (after Hufnagel 1985, updated)
Source map projection: Palestine Grid
Source map scale: 1:4160000, enlarged to 1:2080000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 2
Colour of units: 5-2
Dead Sea: -

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
Date of digitization: April 1993

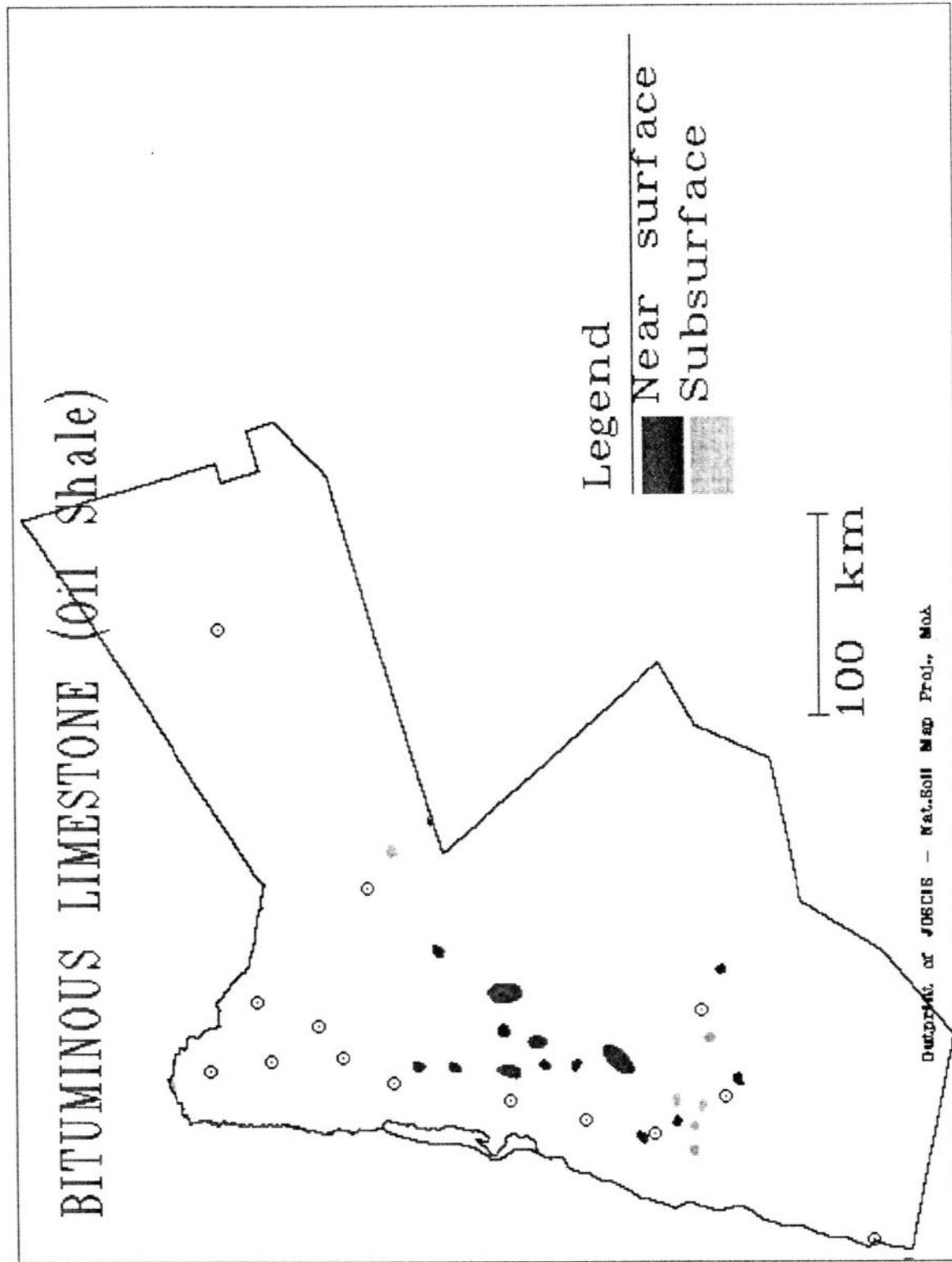
Remarks:

SINGLE MAP ANALYSIS

Map : bitltot - BITUMINOUS LIMESTONE (Oil Shale)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Near surface	80.07	80.07	757.082
2	Subsurface	19.93	100.00	188.430
Total of 2 classes		100.00		945.512





Full name: Hydrocarbon
Short name: CARBTOT
Digitized features: Hydrocarbon prospectivities

Source (authority): Natural Resource Authority: Abu-Ajamieh, M.M. + Bender, F.K. +
Eicher, R.N.: 'Natural Resources in Jordan, Inventory -
Evaluation - Development Program'; December 1988

Source map(s): Text map, fig.11
Source map projection: Palestine Grid
Source map scale: 1:4160000, enlarged to 1:2080000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 4
Colour of units: 5,2,1,14
Dead Sea: -

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
Date of digitization: April 1993

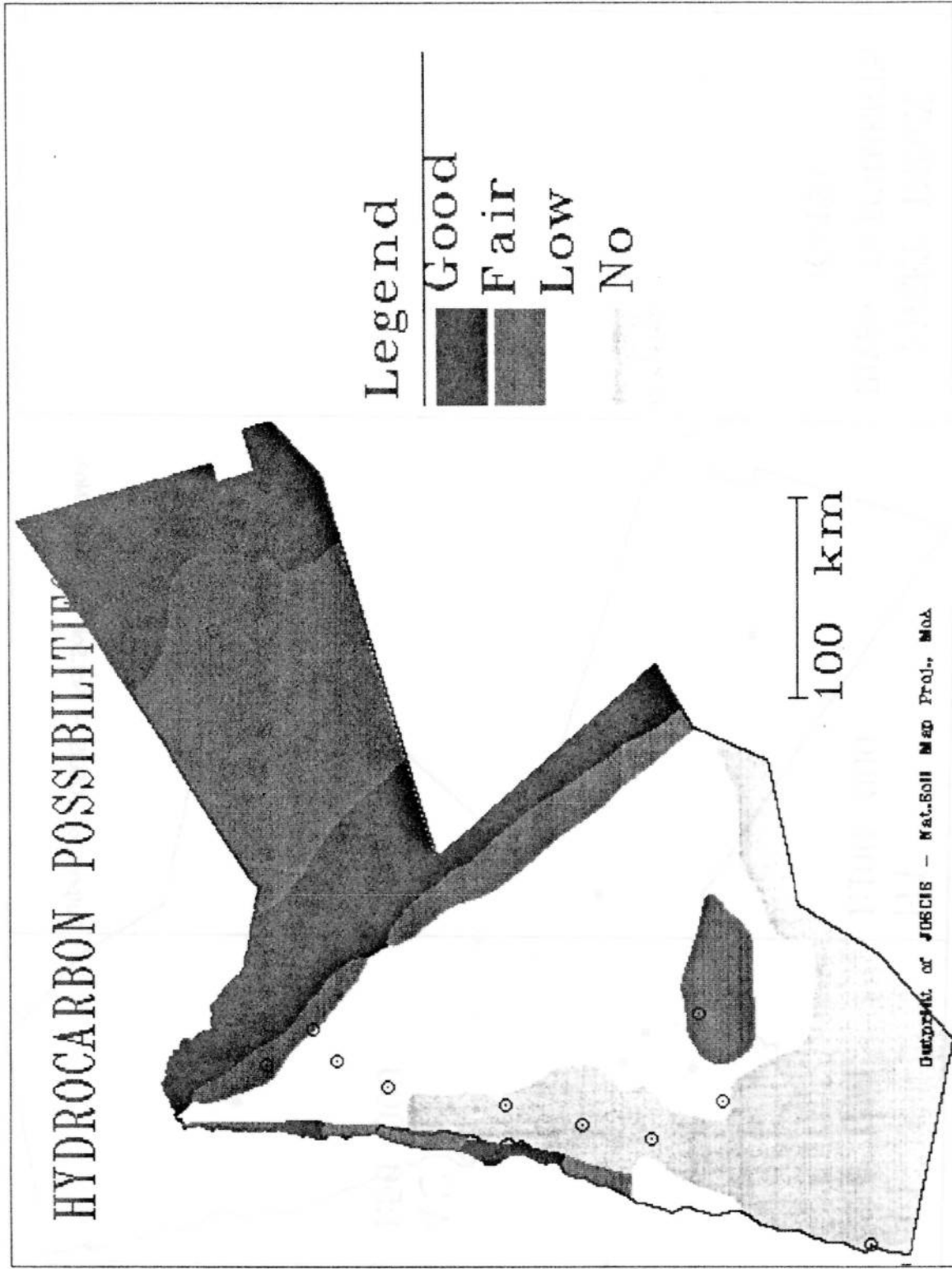
Remarks:

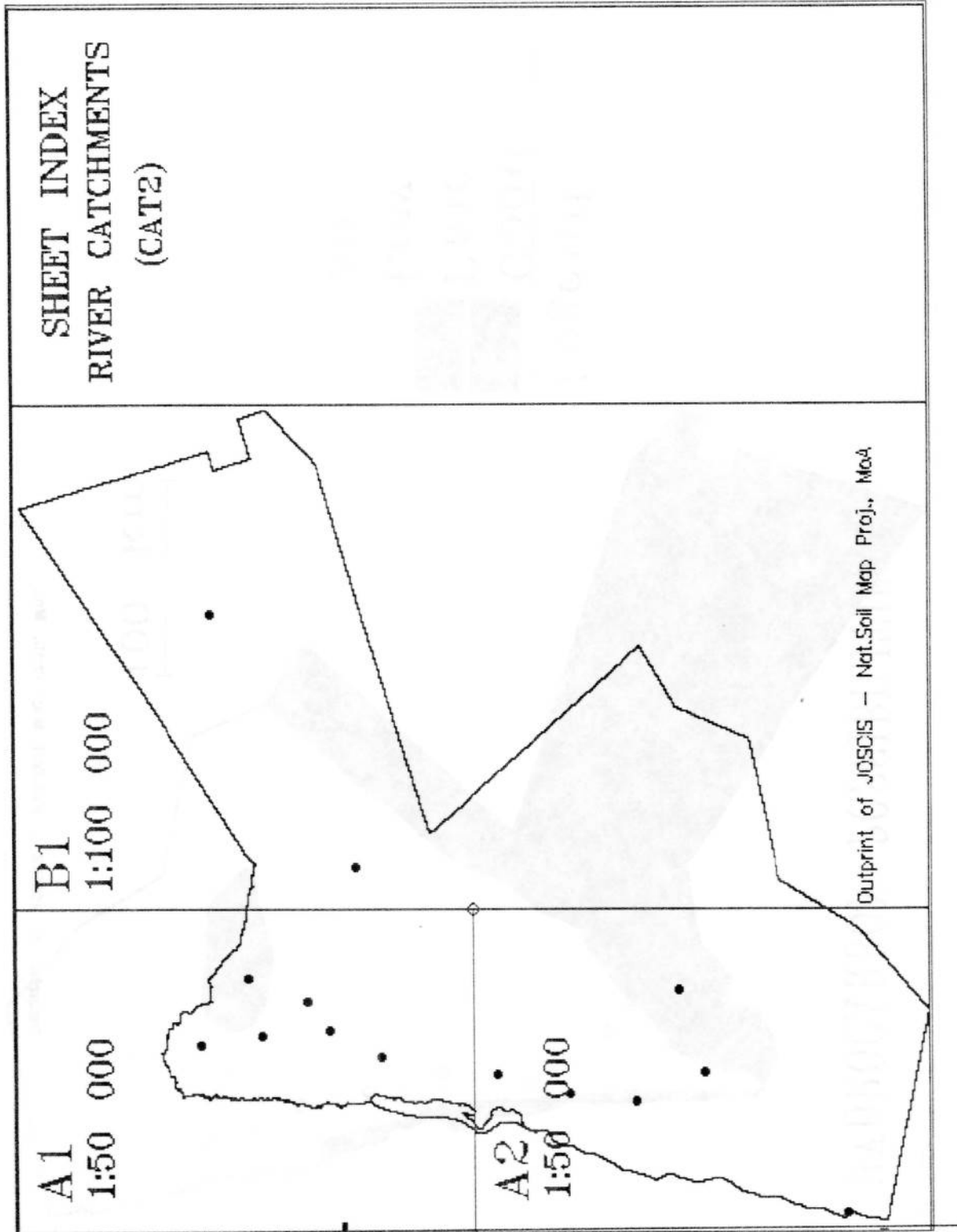
SINGLE MAP ANALYSIS

Map : carbtot - HYDROCARBON POSSIBILITIES

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Good	22.20	22.20	19798.7
2	Fair	25.79	47.99	23002.3
3	Low	30.44	78.43	27153.4
4	No	21.57	100.00	19235.7
Total of 4 classes		100.00		89190.1





Full name: Catchments
Short name: CAT2TOT
Digitized features: Watershed catchments

Source (authority): Water Authority - National Water Master Plan
Source map(s):
Source map projection: Palestine Grid
Source map scale: 1:500,000

Sheet index: 'Catchment' index (see page G 5.2-28)
1.columns (A...B)
2.rows (1...2)

Sheets: A 1,2
B 2

in total: 3 sheets
joining sequence: B1 - A1 - A2 (A1 must be over B1)

Number of units: 85
Colour of units: 1...,last:13
Dead Sea: Mapping unit 85 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
Date of digitization: Mid 1990

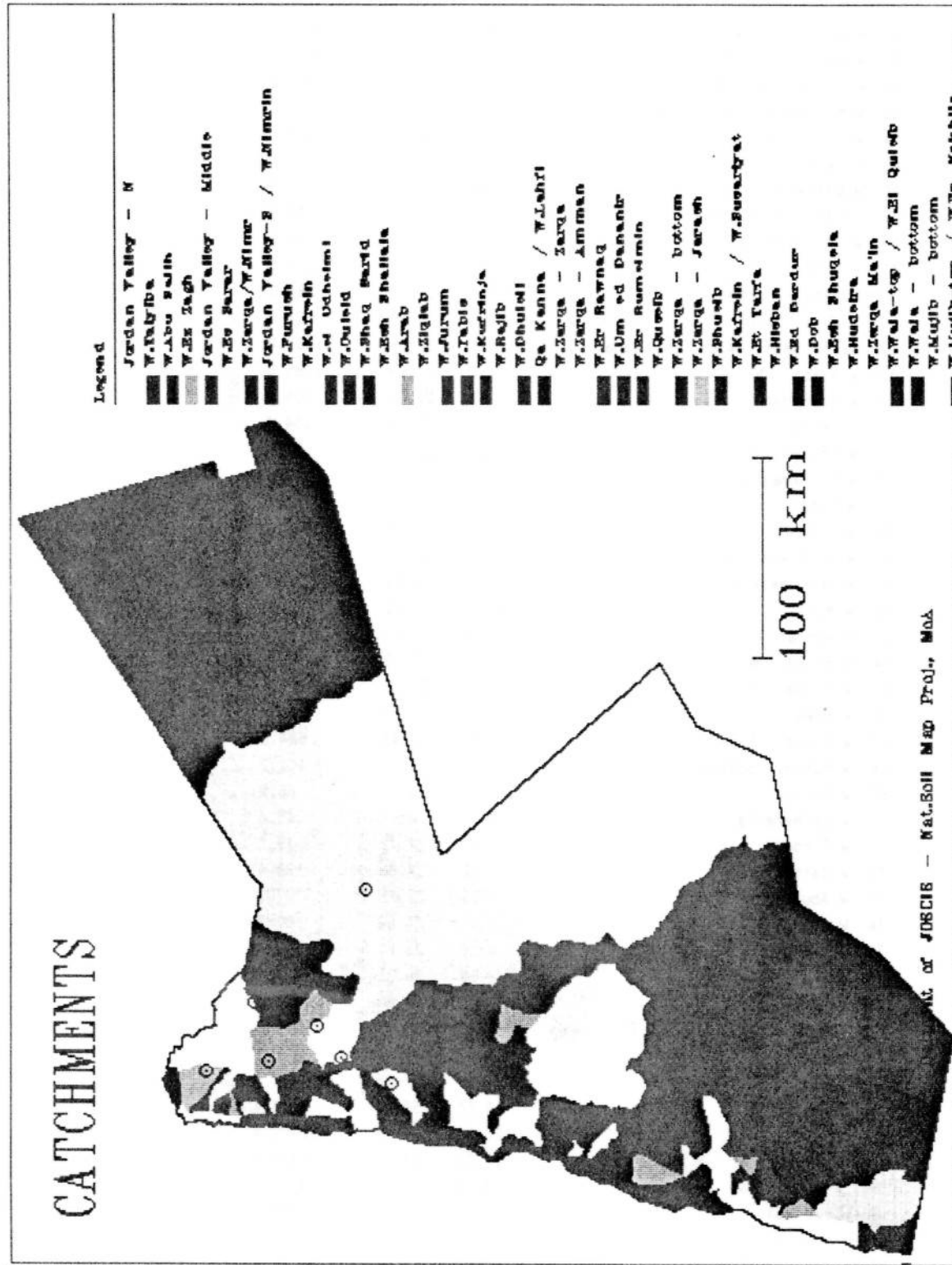
Remarks:

SINGLE MAP ANALYSIS

Map : cat2tot - CATCHMENTS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Jordan Valley - N	0.18	0.18	157.4
2	W.Taiyiba	0.11	0.28	96.6
3	W.Abu Salih	0.05	0.34	48.8
4	W.Ez Zagh	0.04	0.37	31.3
5	Jordan Valley - Middle	0.23	0.61	207.3
6	W.Es Sarar	0.07	0.68	62.4
7	W.Zarqa/W.Nimr	0.10	0.78	91.5
8	Jordan Valley-S / W.Nimrin	0.22	1.00	192.6
9	W.Furush	0.17	1.16	150.0
10	W.Kafrein	0.18	1.34	156.4
11	W.eI Udheimi	0.06	1.40	52.8
12	W.Ouleid	0.07	1.47	65.9
13	W.Shaq Barid	0.09	1.57	84.4
14	W.Esh Shallala	1.35	2.92	1203.9
15	W.Arab	0.31	3.23	278.1
16	W.Ziqlab	0.13	3.35	111.8
17	W.Jurum	0.03	3.38	22.9
18	W.Yabis	0.14	3.52	126.9
19	W.Kufrinja	0.12	3.65	110.2
20	W.Rajib	0.10	3.74	86.8
21	W.Dhuleil	1.47	5.21	1312.9
22	Qa Kanna / W.Lahfi	0.56	5.78	500.6
23	W.Zarqa - Zarqa	0.53	6.31	472.8
24	W.Zarqa - Amman	0.11	6.41	96.0
25	W.Er Rawnaq	0.09	6.50	78.5
26	W.Um ed Dananir	0.04	6.54	34.6
27	W.Er Rumeimin	0.04	6.58	37.1
28	W.Quseib	0.03	6.61	23.1
29	W.Zarqa - bottom	0.28	6.89	252.4
30	W.Zarqa - Jarash	0.97	7.86	868.2
31	W.Shueib	0.21	8.07	185.8
32	W.Kafrein / W.Susariyat	0.19	8.26	169.2
33	W.Et Tarfa	0.07	8.33	64.8
34	W.Hisban	0.02	8.36	21.6
35	W.Ed Dardur	0.25	8.61	226.7
36	W.Dob	0.12	8.74	110.3
37	W.Esh Shuqeia	0.36	9.10	323.7
38	W.Hudeira	0.45	9.55	401.8
39	W.Zerqa Ma'in	0.32	9.87	284.0



40	W.Wala-top / W.El Quleib	2.06	11.93	1835.0
41	W.Wala - bottom	0.28	12.21	252.3
42	W.Mujib - bottom	0.18	12.39	159.2
43	W.Mujib-top / W.En Nakhila	1.46	13.85	1303.6
44	W.Es Sultani	0.58	14.43	518.3
45	W.Swaqa	0.52	14.95	464.4
46	W.Qatrana	0.24	15.19	215.3
47	Qa El Hafira / W.el Jinz	1.51	16.70	1344.8
48	W.Es Sakhniya	0.59	17.29	530.6
49	W.Karak	0.18	17.47	157.8
50	W.Hasa - bottom	0.44	17.91	388.3
51	W.Hasa - top	0.67	18.58	601.0
52	Qa El Hasa / W.Ed Dumeitaha	1.78	20.36	1585.0
53	W.Araba - N	1.33	21.69	1185.8
54	W.El Fidan	0.12	21.81	106.8
55	W.Feifa	0.17	21.98	154.4
56	W.Khuneizira	0.03	22.02	31.1
57	W.El Hamayide	0.19	22.21	172.5
58	W.Dahal	0.11	22.32	101.0
59	W.Fidan	0.32	22.65	289.2
60	W.El Buweirida	0.27	22.92	244.9
61	W.Abu Sakakih	0.29	23.21	257.2
62	W.Musa	0.10	23.31	88.2
63	W.Ash'ar	0.03	23.33	23.2
64	W.El Qa - N	0.06	23.39	52.2
65	W.El Qa - S	0.21	23.60	186.1
66	W.Huwar	0.05	23.65	46.2
67	W.Araba - S	0.77	24.42	684.3
68	W.Yutum - bottom	0.11	24.53	101.2
69	W.Es Sik	0.08	24.61	66.9
70	W.En Neheila	0.05	24.66	45.8
71	W.Turban	0.06	24.72	49.7
72	W.Darba	0.12	24.83	103.4
73	W.Abu Burqa	0.09	24.92	77.1
74	W.Dilagha	0.07	24.99	63.5
75	W.Rakiya	0.22	25.21	197.1
76	W.Yutum - top	1.10	26.31	984.1
77	Qa Disi	1.64	27.95	1462.3
78	Sahil Abu Suwana / W.El Hiswa	2.23	30.18	1984.8
79	Azraq	13.67	43.84	12188.1
80	Qa Jafr	13.50	57.35	12042.3
81	W.Jurdhan	0.24	57.59	214.4
82	W.Hammad	20.21	77.79	18022.4
83	W.Sirhan	17.01	94.80	15170.9
84	W.Mudawwara	4.60	99.41	4105.5
85	Dead Sea	0.59	100.00	529.9
-----				-----
Total of 85 classes		100.00		89190.0

Full name: Dead Sea
Short name: DEADSEA
Digitized features: Delineation of Dead Sea (around 1960)

Source (authority): RJGC (date: 1960's)
Source map(s): Topographic map
Source map projection: Palestine Grid
Source map scale: 1:250,000

Sheet index: 'Old' 250000 topo sheet index
1.columns (A...F)
2.rows (1...5)

Sheets: B3

in total: 1 sheet

Number of units: 1
Colour of units: 13
Dead Sea: yes

Level codes: not used (only '1')
Feature codes: only '1'
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Gerhard Bechtold
Date of digitization: November/December 1989

Remarks: Processed from altitude map ('altxtot': mapping unit 23)

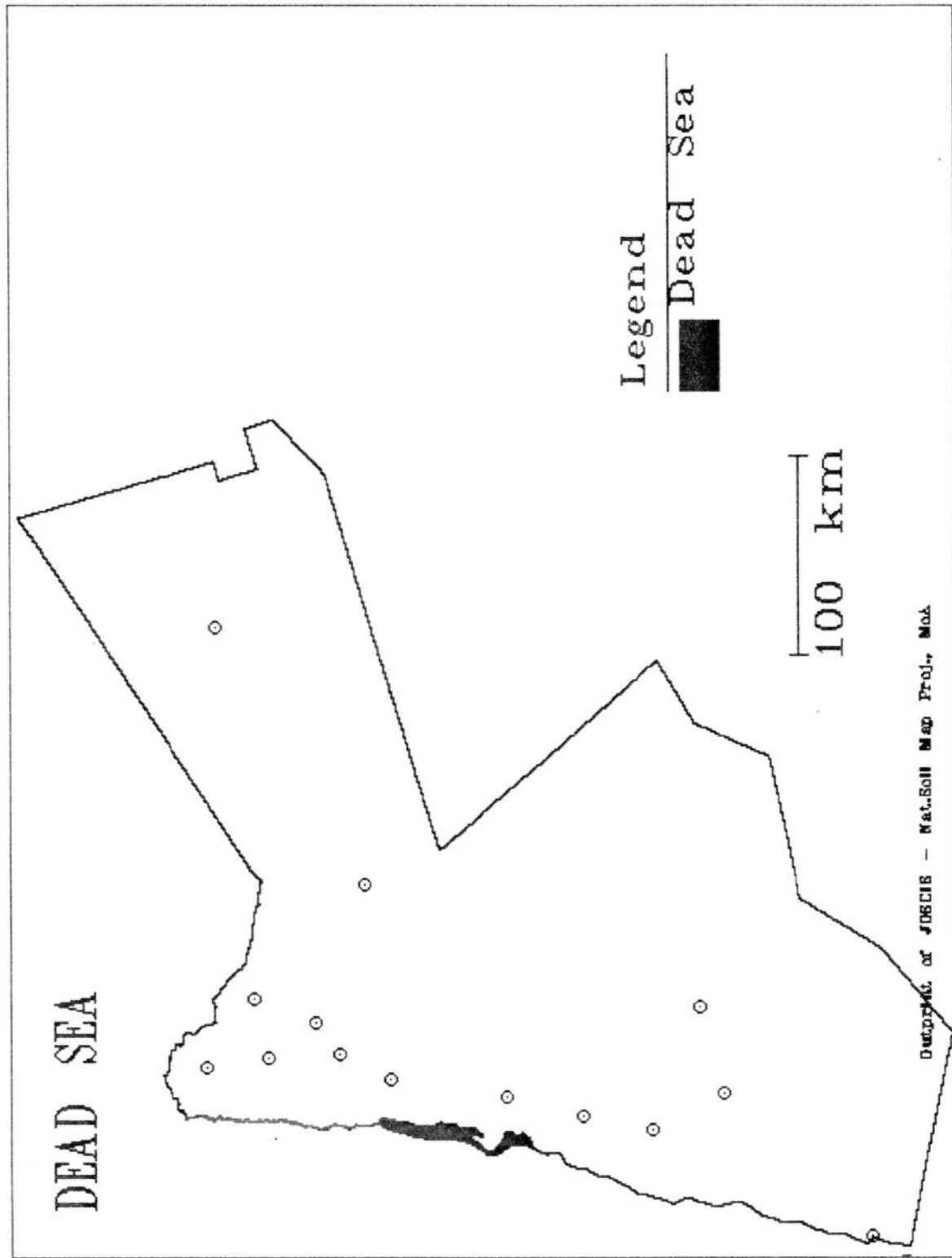
Boundary on Dead Sea in Northern part follows half distance to
Eastern shoreline
Boundary on Dead Sea in Southern part follows Armistic
Demarcation Line of 3/4/1949
Boundary at Red Sea follows shoreline

SINGLE MAP ANALYSIS

Map : deadsea - DEAD SEA

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Dead Sea	100.00	100.00	529.874
Total of 1 classes		100.00		529.874





Full name: Mean dewfall
Short name: DEWMTOT
Digitized features: Mean dewfall (in mm p.a.)

Source (authority): Dryland Farming Project
Source map(s): -
Source map projection: Palestine Grid
Source map scale: 1:1,000,000

Sheet index: -
Sheets: AA
in total: 1 sheet

Number of units: 8
Colour of units: 1...8, last: 8
Dead Sea: Mapping unit 8 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
Date of digitization: 1991

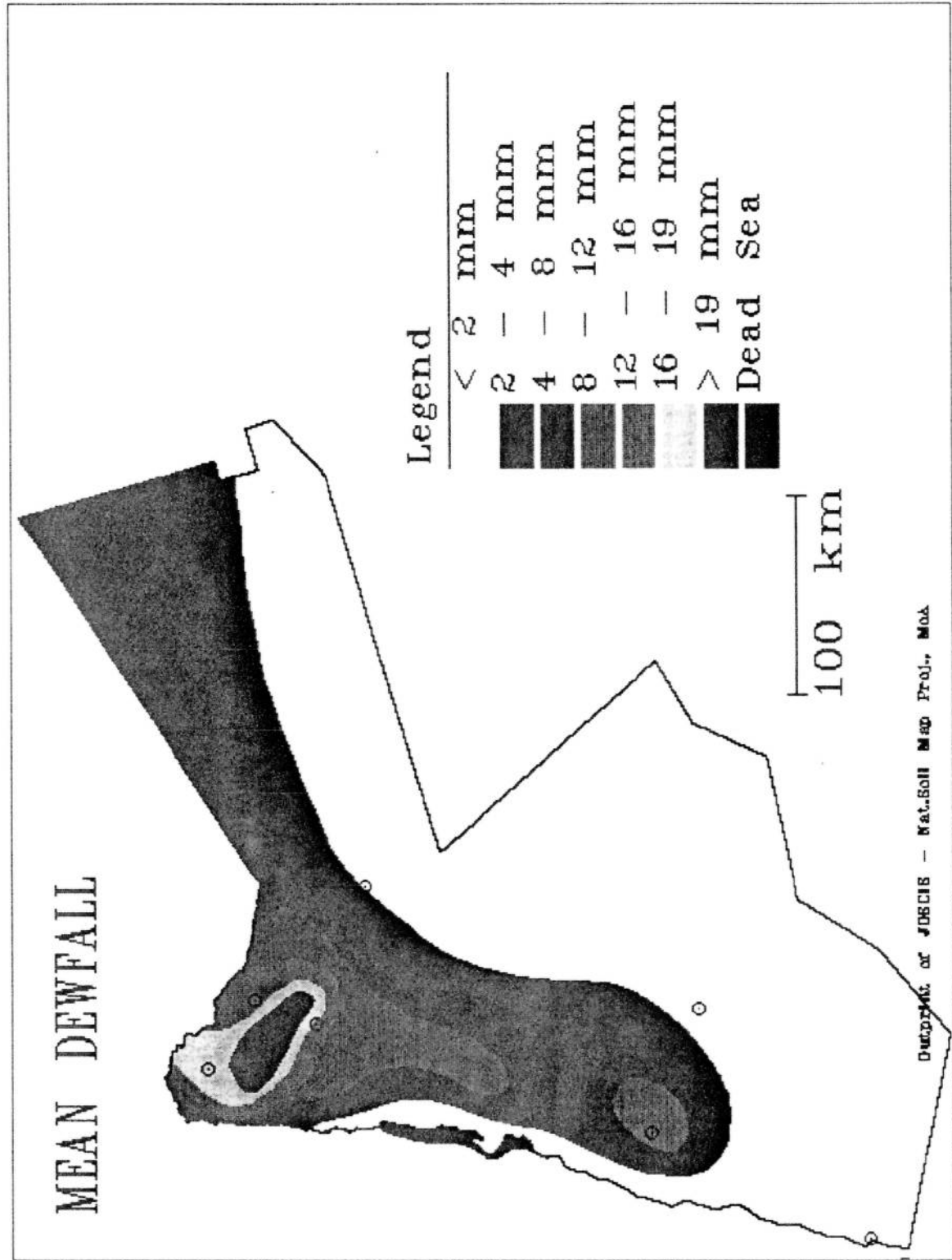
Remarks:

SINGLE MAP ANALYSIS

Map : dewmtot - MEAN DEWFALL

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	< 2 mm	56.32	56.32	50231.0
2	2 - 4 mm	25.03	81.35	22320.9
3	4 - 8 mm	6.74	88.09	6011.3
4	8 - 12 mm	6.29	94.38	5613.3
5	12 - 16 mm	2.15	96.53	1922.0
6	16 - 19 mm	1.72	98.25	1534.1
7	> 19 mm	1.15	99.41	1027.7
8	Dead Sea	0.59	100.00	529.9
Total of 8 classes		100.00		89190.1





Symbol	Description
[Symbol]	Water
[Symbol]	Forest
[Symbol]	Open Land
[Symbol]	Urban
[Symbol]	Highway
[Symbol]	Railroad
[Symbol]	Boundary

1:100,000

Full name: Drainage basins
Short name: DRAITOT
Digitized features: Drainage basins and river catchments

Source (authority): Water Authority - National Water Master Plan
Source map(s): SW-1
Source map projection: Palestine Grid
Source map scale: 1:1,000,000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 35
Colour of units: 1...35, last: 11
Dead Sea: Mapping unit 35 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
Date of digitization: Mid 1990

Remarks: This map is aggregated to form:

DRAITOT5

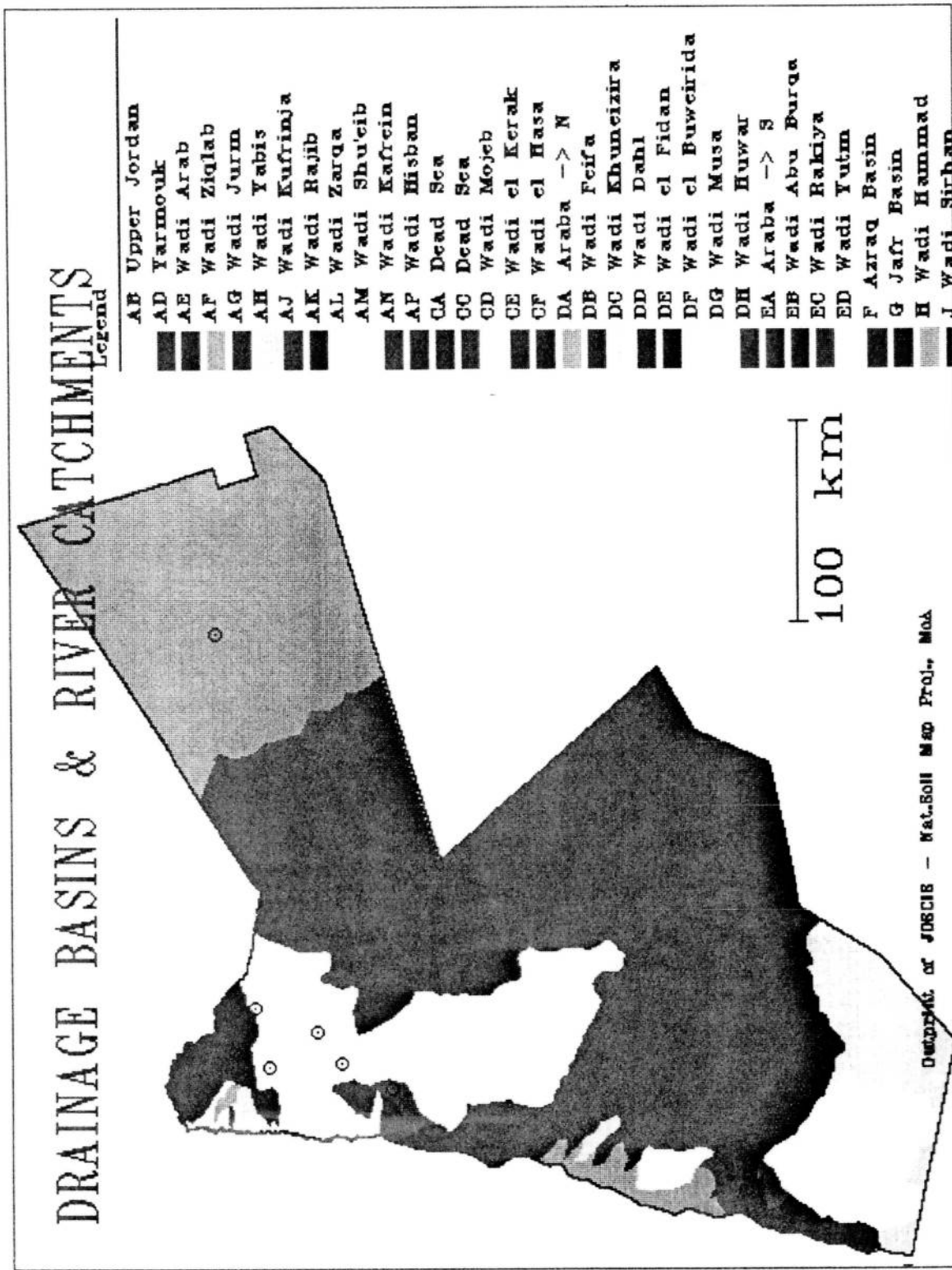
This map is to be replaced with 'cat2tot' map (see page G 5.2-45)

SINGLE MAP ANALYSIS

Map : draitot - DRAINAGE BASINS & RIVER CATCHMENTS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	AB Upper Jordan	1.12	1.12	998.6
2	AD Yarmouk	1.64	2.76	1462.5
3	AE Wadi Arab	0.31	3.07	278.8
4	AF Wadi Ziqlab	0.12	3.19	108.5
5	AG Wadi Jurm	0.03	3.22	24.7
6	AH Wadi Yabis	0.13	3.36	119.9
7	AJ Wadi Kufrinja	0.12	3.48	108.4
8	AK Wadi Rajib	0.10	3.57	86.8
9	AL Wadi Zarqa	4.04	7.61	3599.3
10	AM Wadi Shu'eib	0.21	7.82	184.8
11	AN Wadi Kafrein	0.19	8.01	170.0
12	AP Wadi Hisban	0.09	8.10	83.7
13	CA Dead Sea	1.04	9.15	931.0
14	CC Dead Sea	0.31	9.46	279.0
15	CD Wadi Mojob	7.52	16.98	6708.1
16	CE Wadi el Kerak	0.19	17.17	171.9
17	CF Wadi el Hasa	2.85	20.02	2544.0
18	DA Araba -> N	1.40	21.42	1244.8
19	DB Wadi Feifa	0.16	21.58	145.2
20	DC Wadi Khuneizira	0.21	21.79	184.3
21	DD Wadi Dahl	0.13	21.92	112.3
22	DE Wadi el Fidan	0.32	22.23	284.4
23	DF Wadi el Buweirida	0.53	22.76	469.3
24	DG Wadi Musa	0.15	22.91	134.5
25	DH Wadi Huwar	0.26	23.17	231.5
26	EA Araba -> S	1.20	24.37	1073.3
27	EB Wadi Abu Burqa	0.14	24.51	124.9
28	EC Wadi Rakiya	0.23	24.74	203.8
29	ED Wadi Yutm	4.90	29.64	4369.0
30	F Azraq Basin	13.54	43.19	12080.3
31	G Jafr Basin	13.79	56.97	12297.9
32	H Wadi Hammad	20.20	77.18	18020.1
33	J Wadi Sirhan	17.59	94.77	15689.0
34	K SE Desert	4.64	99.41	4135.5
35	Dead Sea	0.59	100.00	529.9
Total of 35 classes		100.00		89190.1





Full name: Major drainage basins
 Short name: DRAITOT5
 Digitized features: Dominant drainage basins of Jordan

Source (authority): Water Authority - National Water Master Plan
 Source map(s): SW - 1
 Source map projection: Palestine Grid
 Source map scale: 1:1,000,000

Sheet index: same as / derived from 'draitot'
 Sheets: same as / derived from 'draitot'

Number of units: 10 (totally 12, but mapping units 2 and 9 do not occur in Jordan)
 Colour of units: 1,-,3,14,5, 6,7,8,-,10, 13,12
 Dead Sea: Mapping unit 12 (transferred from 'altxtot' map)

Level codes: not used (only '1')
 Feature codes: mapping units
 Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
 Date of digitization: Mid 1990

Remarks: Derived from 'draitot' map (see page G 5.2-41),
 using the highest level of codes

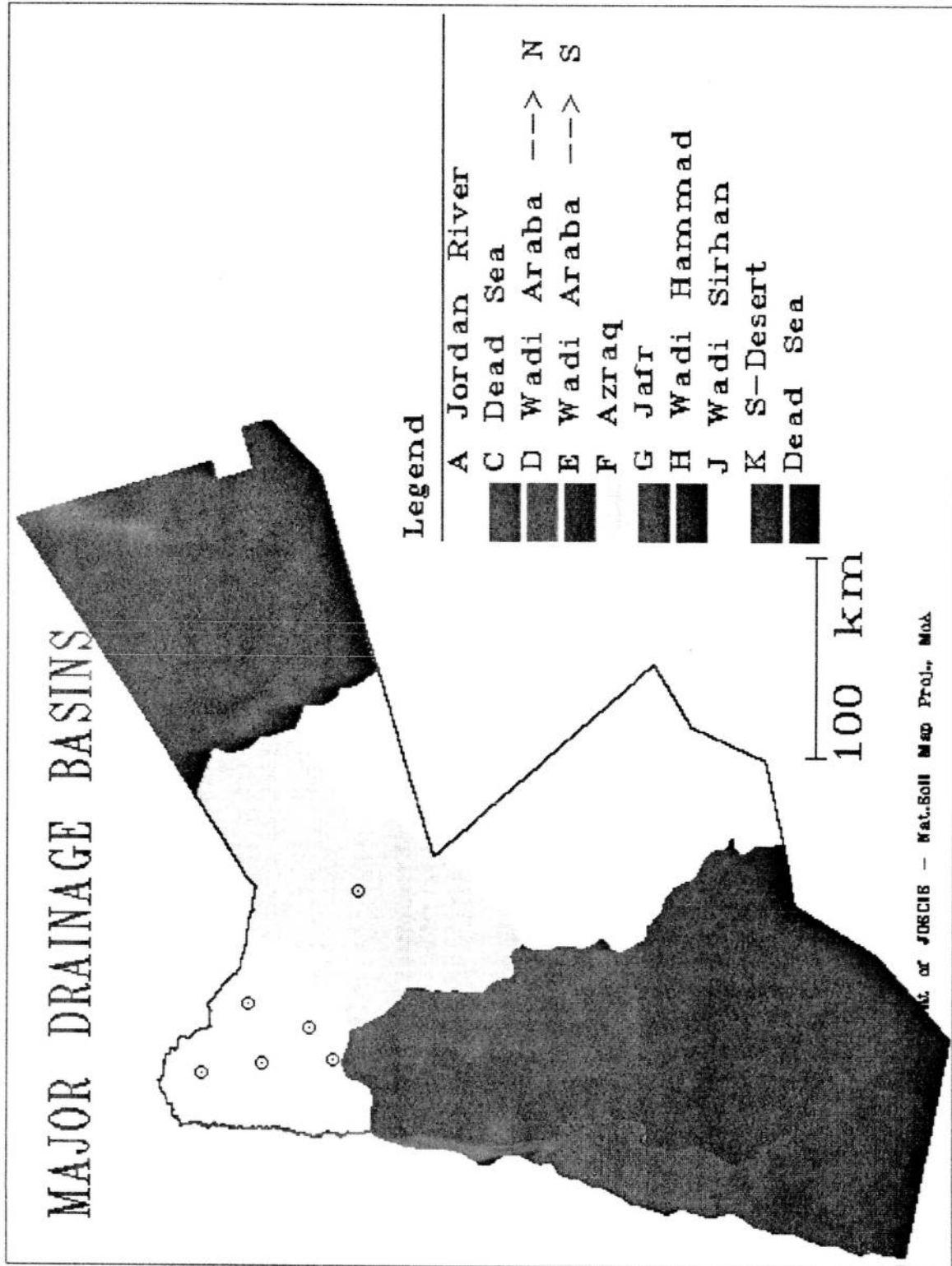
1	-	12	-->	1
13	-	17	-->	3
18	-	25	-->	4
26	-	29	-->	5
30			-->	6
31			-->	7
32			-->	8
33			-->	10
34			-->	11
35			-->	12

SINGLE MAP ANALYSIS

Map : draipot5 - MAJOR DRAINAGE BASINS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	A Jordan River	8.10	8.10	7226.0
3	C Dead Sea	11.92	20.02	10634.0
4	D Wadi Araba --> N	3.15	23.17	2806.4
5	E Wadi Araba --> S	6.47	29.64	5771.0
6	F Azraq	13.54	43.19	12080.3
7	G Jafr	13.79	56.97	12297.9
8	H Wadi Hammad	20.20	77.18	18020.1
10	J Wadi Sirhan	17.59	94.77	15689.0
11	K S-Desert	4.64	99.41	4135.5
12	Dead Sea	0.59	100.00	529.9
Total of 10 classes		100.00		89190.1





Full name: Existing study areas
Short name: EXS1TOT
Digitized features: Study areas of soil surveys, prior to National Soil Map Project

Source (authority): Forestry Department, Ministry of Agriculture
Source map(s): Compiled by National Soil Map Project
Source map projection: Palestine Grid
Source map scale: approx.1:500,000

Sheet index: -
Sheets: AA
in total: 1 sheet

Number of units: 6
Colour of units: 10,6,1,11,3, 7
Dead Sea: -

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
Date of digitization: Mid 1992

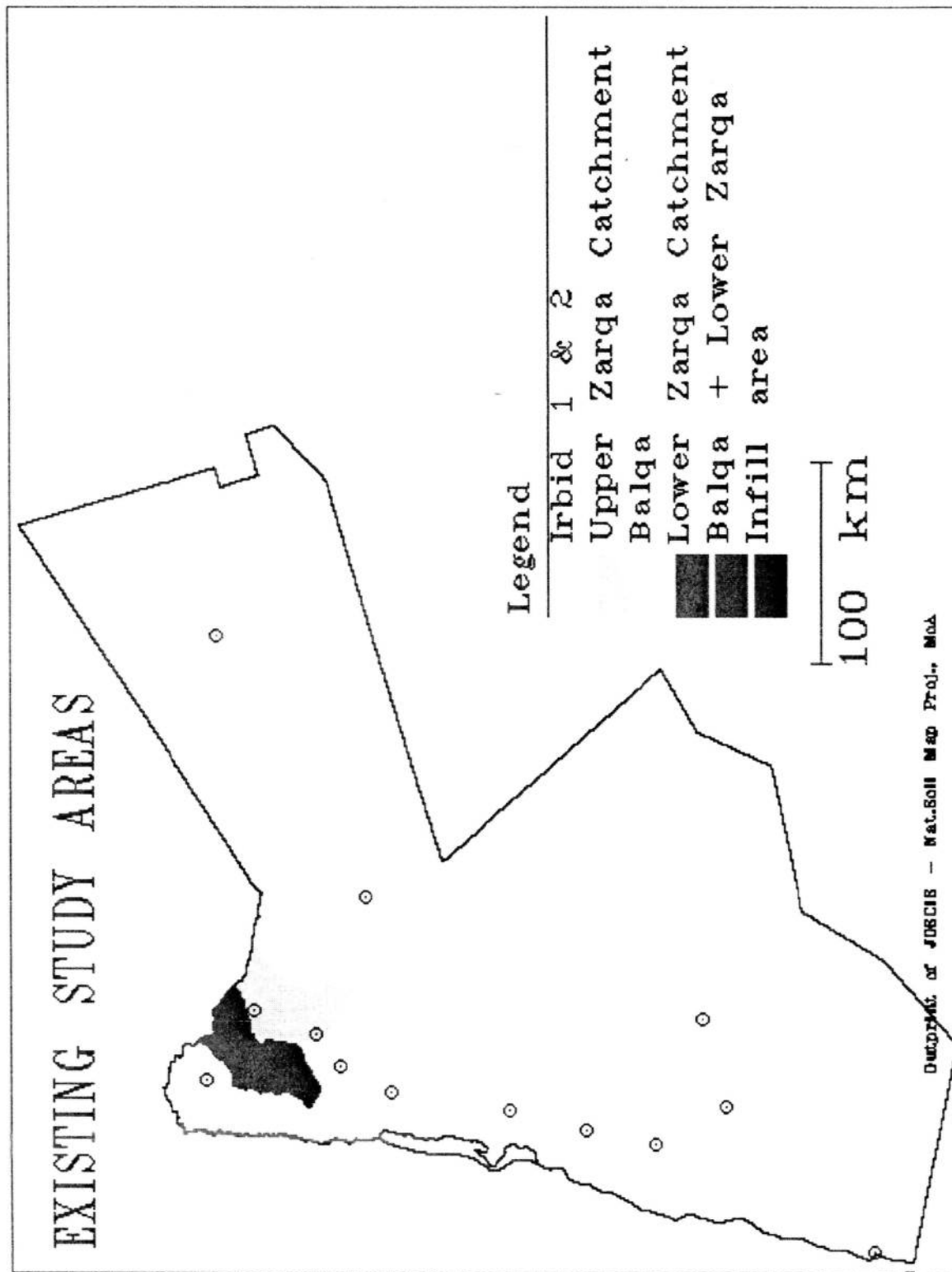
Remarks: Mapping unit no.6: 'Infill area' was to be surveyed by the National Soil Map Project, Level II, and is therefore part of Level II-area, see also page G 5.2-161

SINGLE MAP ANALYSIS

Map : exsitot - EXISTING STUDY AREAS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Irbid 1 & 2	15.65	15.65	666.79
2	Upper Zarqa Catchment	37.43	53.07	1594.68
3	Balqa	9.60	62.67	408.94
4	Lower Zarqa Catchment	14.20	76.87	605.07
5	Balqa + Lower Zarqa	4.15	81.02	176.67
6	Infill area	18.98	100.00	808.83
Total of 6 classes		100.00		4260.97





Full name: Forestry units
 Short name: FORETOT
 Digitized features: Forestry units with topology about forest type, species, density, height, site class

Source (authority): Forestry Department, Ministry of Agriculture
 Source map(s): Forest
 Source map projection: Palestine Grid
 Source map scale: 1:25,000

Sheet index: 25000 scale index
 1.columns (A...E)
 2.rows (1...9,A...K)

Sheets: A 2...K
 B 1...H
 C 1...F
 D 2...B
 E 3..6
 X 4,6

in total: 57 sheets

joining sequence:

A 2...5,D,F,G,L,I,H,J,K
 B 1...9,B...H
 C C1...C4,X4,C5,C6,X6,C7...C9,CA...CF
 D 2...8,B
 E 3...6

Number of units: 35 (totally 68, but 33 units do not occur)
 Colour of units: 1..., last: 13
 Dead Sea: -

Level codes: site class mapping units
 Feature codes: mapping units of type, species, density, height
 Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
 Date of digitization: 1991/92

Remarks: This map is aggregated to form following maps:
 FORETOT5 (see also page G 5.2-57)
 FORETOTA (see also page G 5.2-61)
 FORETOTB (see also page G 5.2-65)
 FORETOTD (see also page G 5.2-69)
 FORETOTE (see also page G 5.2-73)

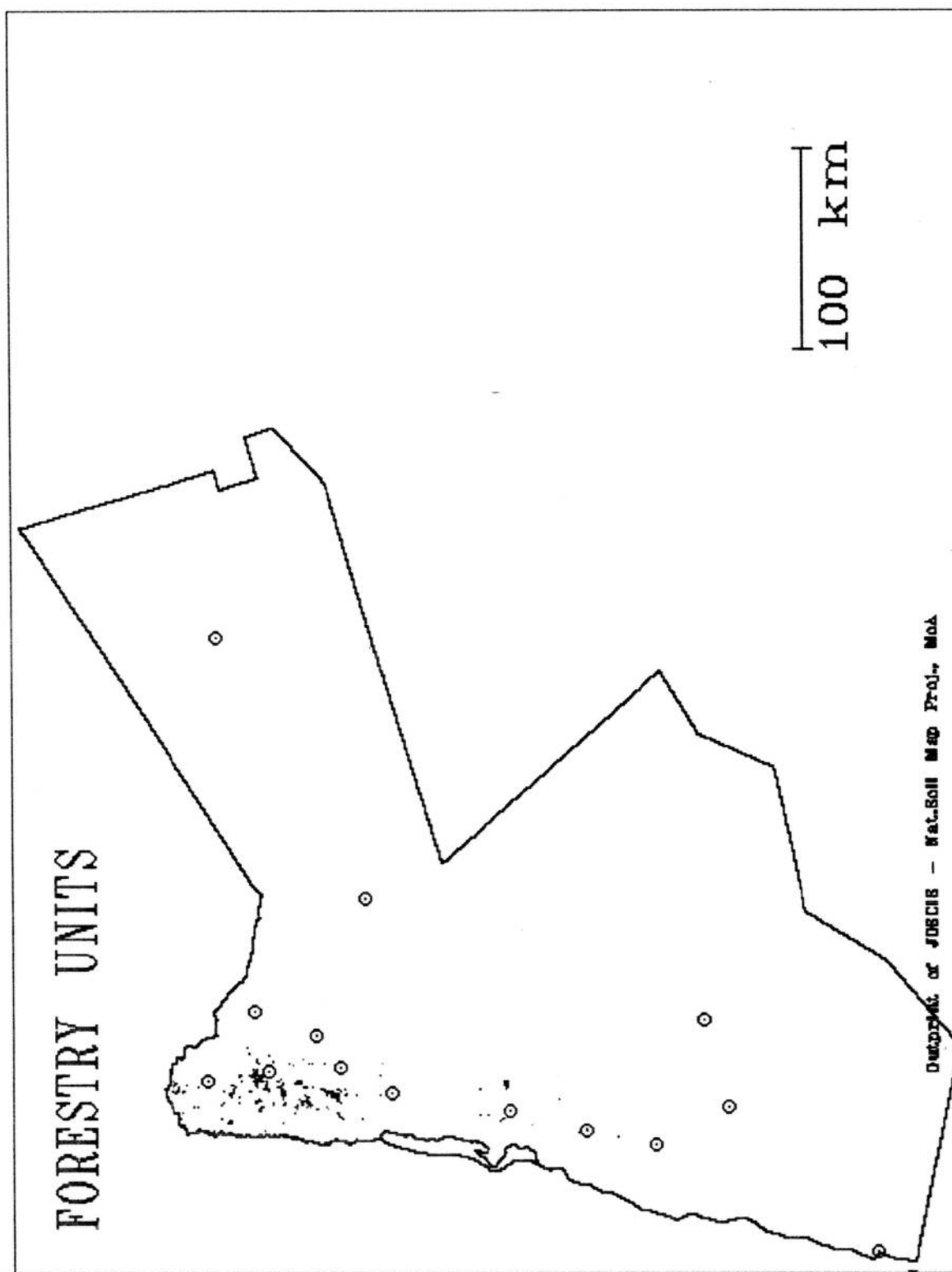
Information about species (letters: A,P,C,Q), density (first digit of a two digit - code, example '1' in '17'), and height (second digit of a two digit - code, example '7' in '17') were grouped into classes before digitization

SINGLE MAP ANALYSIS

Map : foretot - FORESTRY UNITS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Natural Forest	43.41	43.41	574.28
2	Brush Wood	4.71	48.12	62.29
3	Orchard	26.20	74.32	346.57
4	Olive Grove	13.44	87.75	177.79
5	Vineyard	1.48	89.23	19.56
6	Grass Land	0.27	89.51	3.60
11	A 17-19	0.06	89.56	0.77
13	A 27-29	0.15	89.71	1.93
15	A 37-39	0.06	89.77	0.75
17	A 47-49	0.11	89.88	1.49
20	P 11-13	0.14	90.02	1.89
21	P 14-16	2.34	92.36	30.90
22	P 17-19	0.71	93.07	9.40
23	P 24-26	1.46	94.53	19.38
24	P 27-29	1.23	95.76	16.24
25	P 34-36	0.32	96.08	4.25
26	P 37-39	0.76	96.85	10.12
28	P 47-49	0.22	97.06	2.86
31	PA 14-16	0.03	97.09	0.34
32	PA 17-19	0.33	97.41	4.30
34	PA 27-29	1.04	98.45	13.70
35	PA 31-33	0.02	98.47	0.26
36	PA 34-36	0.10	98.57	1.37
37	PA 37-39	0.59	99.16	7.75
39	PA 47-49	0.26	99.41	3.40
42	PC 27-29	0.12	99.53	1.52
44	PC 47-49	0.02	99.54	0.21
48	PAC 17-19	0.10	99.64	1.31
49	PAC 24-26	0.02	99.66	0.24
50	PAC 27-29	0.06	99.73	0.85
51	PAC 37-39	0.12	99.84	1.53
55	PP 17-19	0.09	99.93	1.14
60	PQ 14-16	0.06	99.99	0.75
65	PAE 34-36	0.01	99.99	0.10
68	AC 34-36	0.01	100.00	0.10
Total of 35 classes		100.00		1322.93





Full name: Forest: Site Class
Short name: FORETOT5
Digitized features: Site classes of afforested areas (derived from 'Forestry Unit' map)

Source (authority): Forestry Department, Ministry of Agriculture
Source map(s): Forest
Source map projection: Palestine Grid
Source map scale: 1:25,000

Sheet index: 25000 scale index
1.columns (A...E)
2.rows (1...9,A...K)

Sheets: same as / derived from 'foretot' map

in total: 57 sheets
joining sequence: same as / derived from 'foretot' map

Number of units: 5 (totally 6, but mapping unit 4 does not occur)
Colour of units: 5,4,3,-,7, 13
Dead Sea: Mapping unit 6 (transferred from 'altxtot' map)

Level codes: mapping units
Feature codes: - (not used for this map)
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
Date of digitization: 1991/92

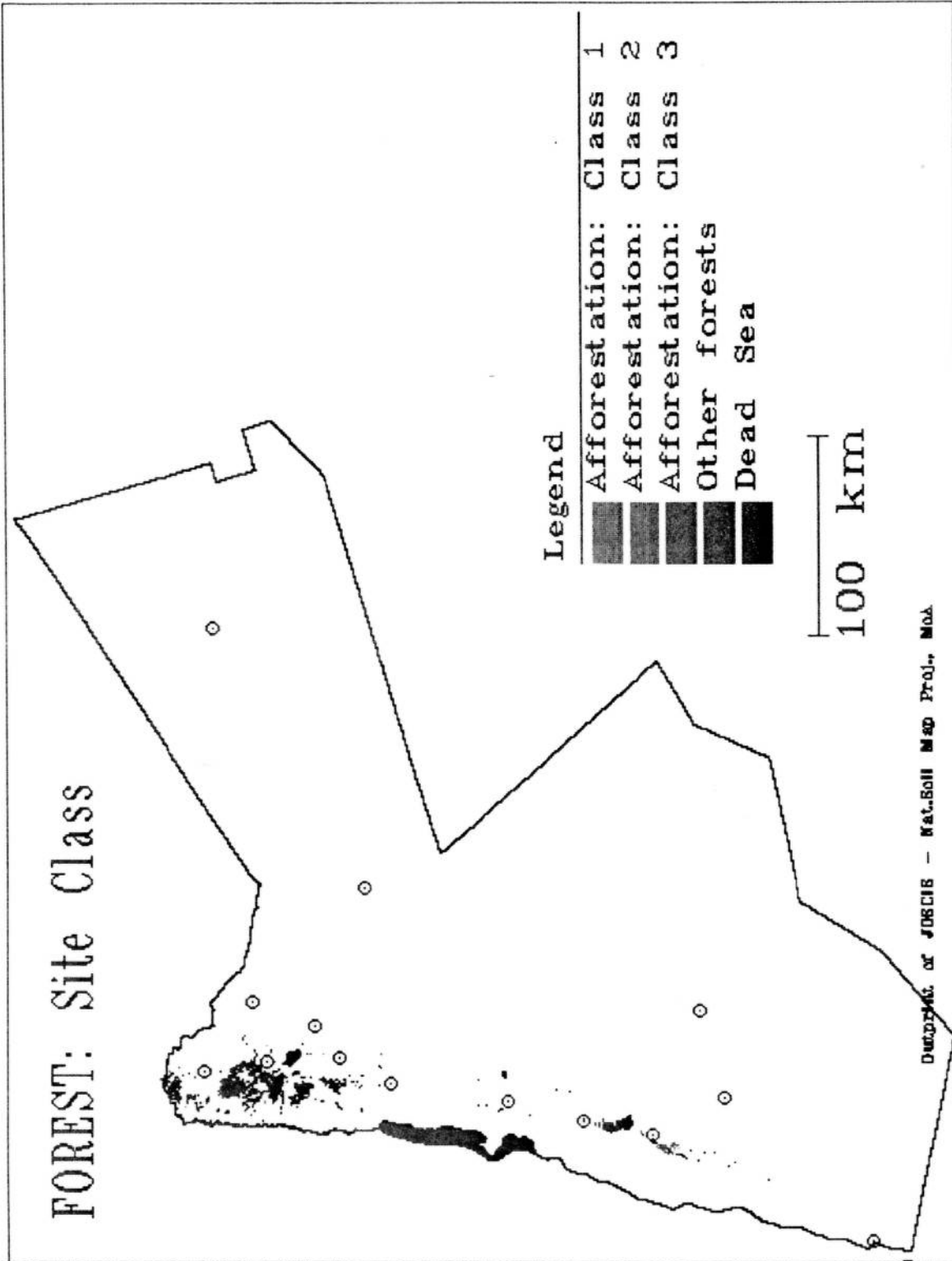
Remarks: Derived from 'foretot' map (see page G 5.2-53), using the level code

SINGLE MAP ANALYSIS

Map : foretot5 - FOREST: Site Class

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Afforestation: Class 1	2.24	2.24	41.17
2	Afforestation: Class 2	1.16	3.40	21.39
3	Afforestation: Class 3	6.18	9.58	113.83
5	Other forests	61.65	71.23	1135.53
6	Dead Sea	28.77	100.00	529.87
Total of 5 classes		100.00		1841.80





Full name: Forest
 Short name: FORETOTA
 Digitized features: Forest types (derived from 'Forestry Unit' map)

Source (authority): Forestry Department, Ministry of Agriculture
 Source map(s): Forest
 Source map projection: Palestine Grid
 Source map scale: 1:25,000

Sheet index: 25000 scale index
 1.columns (A...E)
 2.rows (1...9,A...K)

Sheets: same as / derived from 'foretot' map

 in total: 57 sheets
 joining sequence: same as / derived from 'foretot' map

Number of units: 5
 Colour of units: 7,12,1,6,3
 Dead Sea: -

Level codes: not used for this map
 Feature codes: mapping units of 'foretot' map, then aggregated
 Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
 Date of digitization: 1991/92

Remarks: Derived from 'foretot' map, using following reference table:

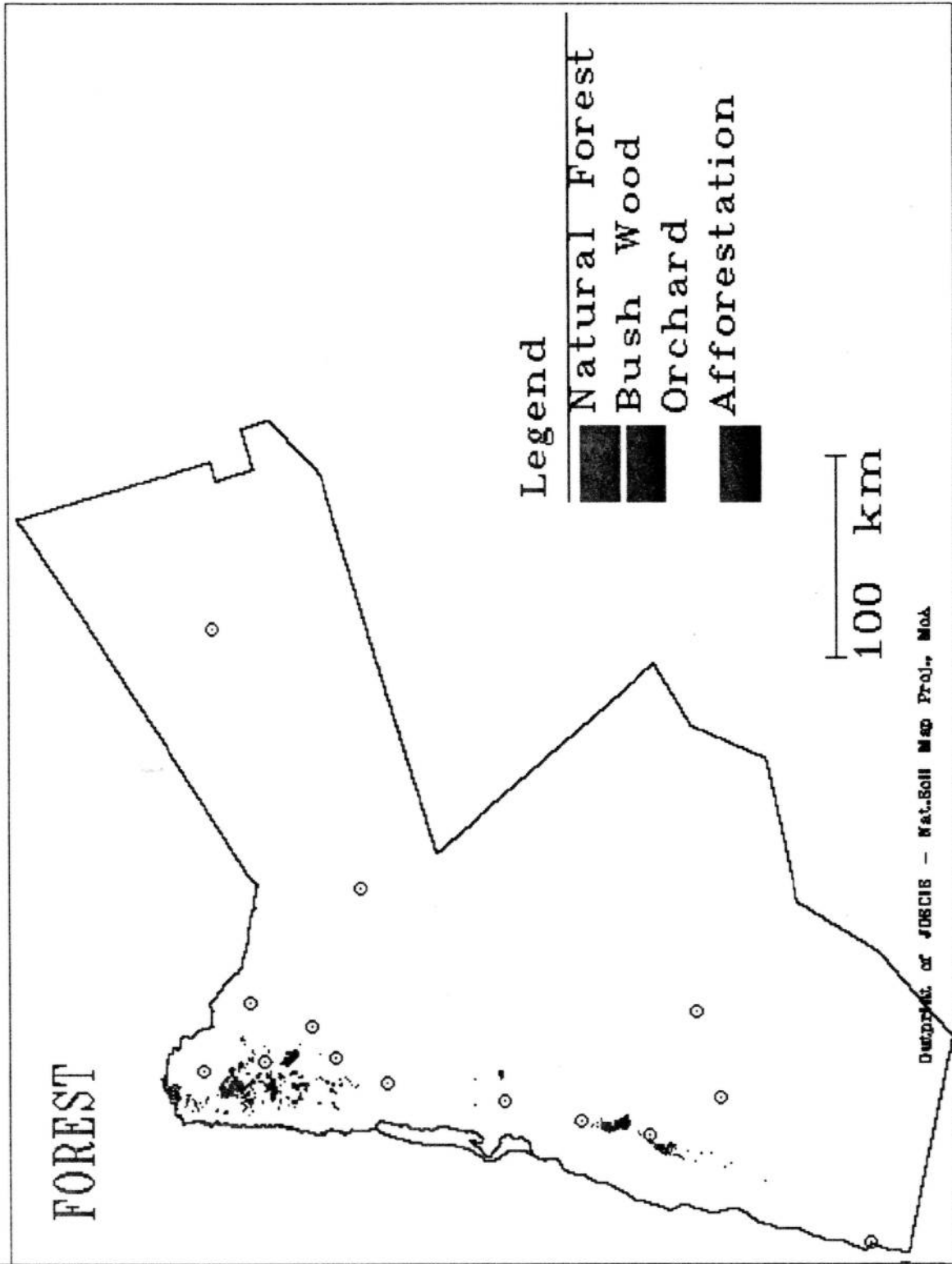
1	-->	1	
2	-->	2	
3 - 5	-->	3	Orchard, olive, and vine are grouped together
6	-->	4	
11 - 68	-->	5	all afforested land

SINGLE MAP ANALYSIS

Map : foretota - FOREST

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Natural Forest	43.41	43.41	574.28
2	Bush Wood	4.71	48.12	62.29
3	Orchard	41.11	89.23	543.92
4	Grass Land	0.27	89.51	3.60
5	Afforestation	10.49	100.00	138.84
Total of 5 classes		100.00		1322.93





Full name: Forest: Species
Short name: FORETOTB
Digitized features: Dominant species of afforested areas
 (derived from 'Forestry Unit' map)

Source (authority): Forestry Department, Ministry of Agriculture
Source map(s): Forest
Source map projection: Palestine Grid
Source map scale: 1:25,000

Sheet index: 25000 scale index
 1.columns (A...E)
 2.rows (1...9,A...K)

Sheets: same as / derived from 'foretot' map
 in total: 57 sheets
 joining sequence: same as / derived from 'foretot' map

Number of units: 8
Colour of units: 7,12,1,2,3, 4,5,9
Dead Sea: -

Level codes: not used for this map
Feature codes: mapping units of 'foretot' map, then aggregated
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
Date of digitization: 1991/92

Remarks: Derived from 'foretot' map, using following reference table:

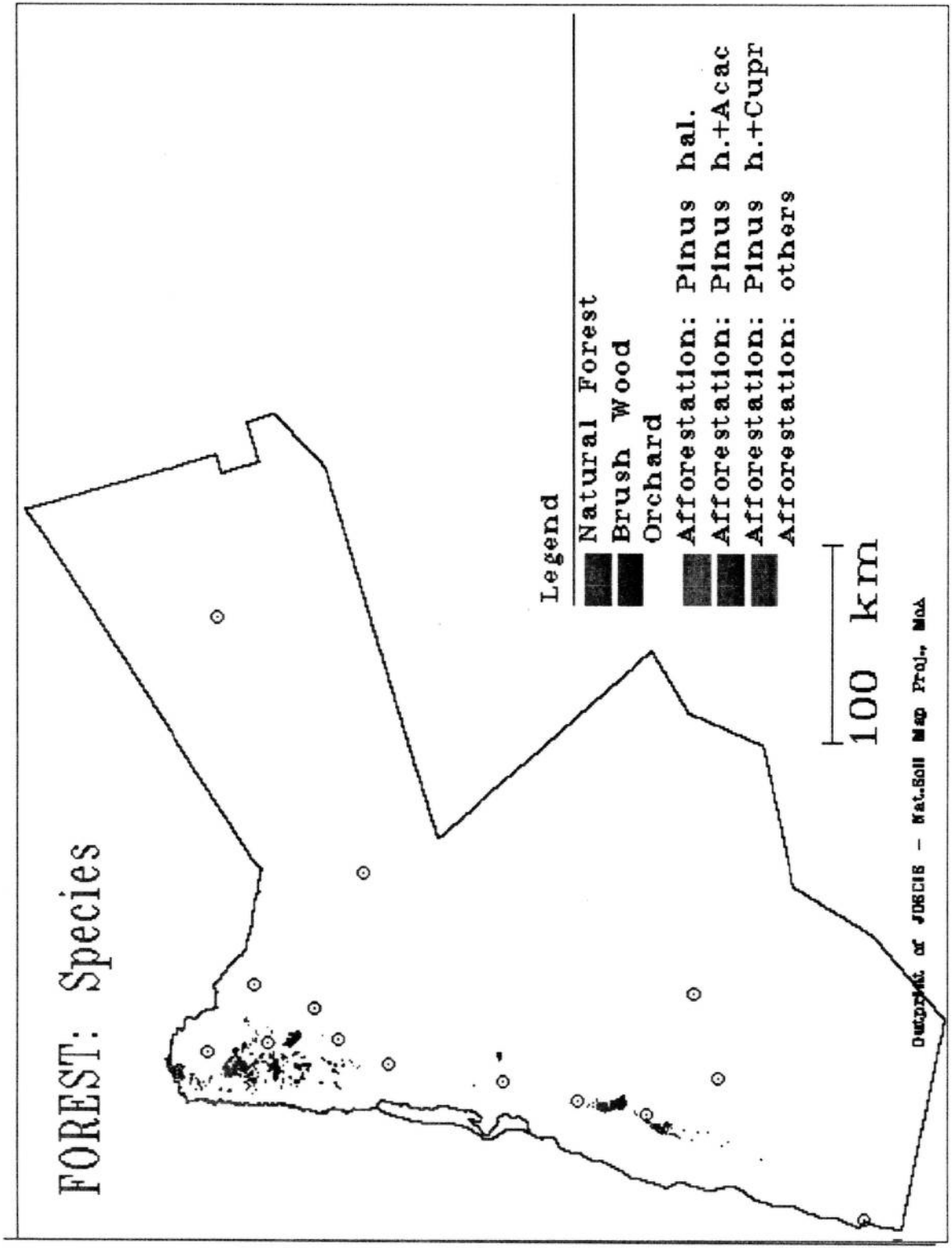
1	-->	1	
2	-->	2	
3 - 6	-->	3	Orchard, olive, and vine and grass land are grouped together
11 - 17	-->	4	afforested land with A: Acacia
20 - 28	-->	5	afforested land with P: Pinus
31 - 39	-->	6	afforested land with P + A: Pinus + Acacia
42 - 44	-->	7	afforested land with P + C: Pinus +
48 - 68	-->	8	afforested land with any other species / combinations

SINGLE MAP ANALYSIS

Map : foretotb - FOREST: Species

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Natural Forest	43.41	43.41	574.28
2	Brush Wood	4.71	48.12	62.29
3	Orchard	41.39	89.51	547.52
4	Afforestation: Acacia	0.37	89.88	4.94
5	Afforestation: Pinus hal.	7.18	97.06	95.03
6	Afforestation: Pinus h.+Acac	2.35	99.41	31.12
7	Afforestation: Pinus h.+Cupr	0.13	99.54	1.73
8	Afforestation: others	0.46	100.00	6.02
Total of 8 classes		100.00		1322.93





Full name: Forest: Density
 Short name: FORETOTD
 Digitized features: Density of afforested areas (derived from 'Forestry Unit' map)

Source (authority): Forestry Department, Ministry of Agriculture
 Source map(s): Forest
 Source map projection: Palestine Grid
 Source map scale: 1:25,000

Sheet index: 25000 scale index
 1.columns (A...E)
 2.rows (1...9,A...K)

Sheets: same as / derived from 'foretot' map
 in total: 57 sheets
 joining sequence: same as / derived from 'foretot' map

Number of units: 7
 Colour of units: 7,12,1,5,4, 3,2
 Dead Sea: -

Level codes: not used for this map
 Feature codes: mapping units of 'foretot' map, then aggregated
 Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
 Date of digitization: 1991/92

Remarks: Derived from 'foretot' map, using following reference table:

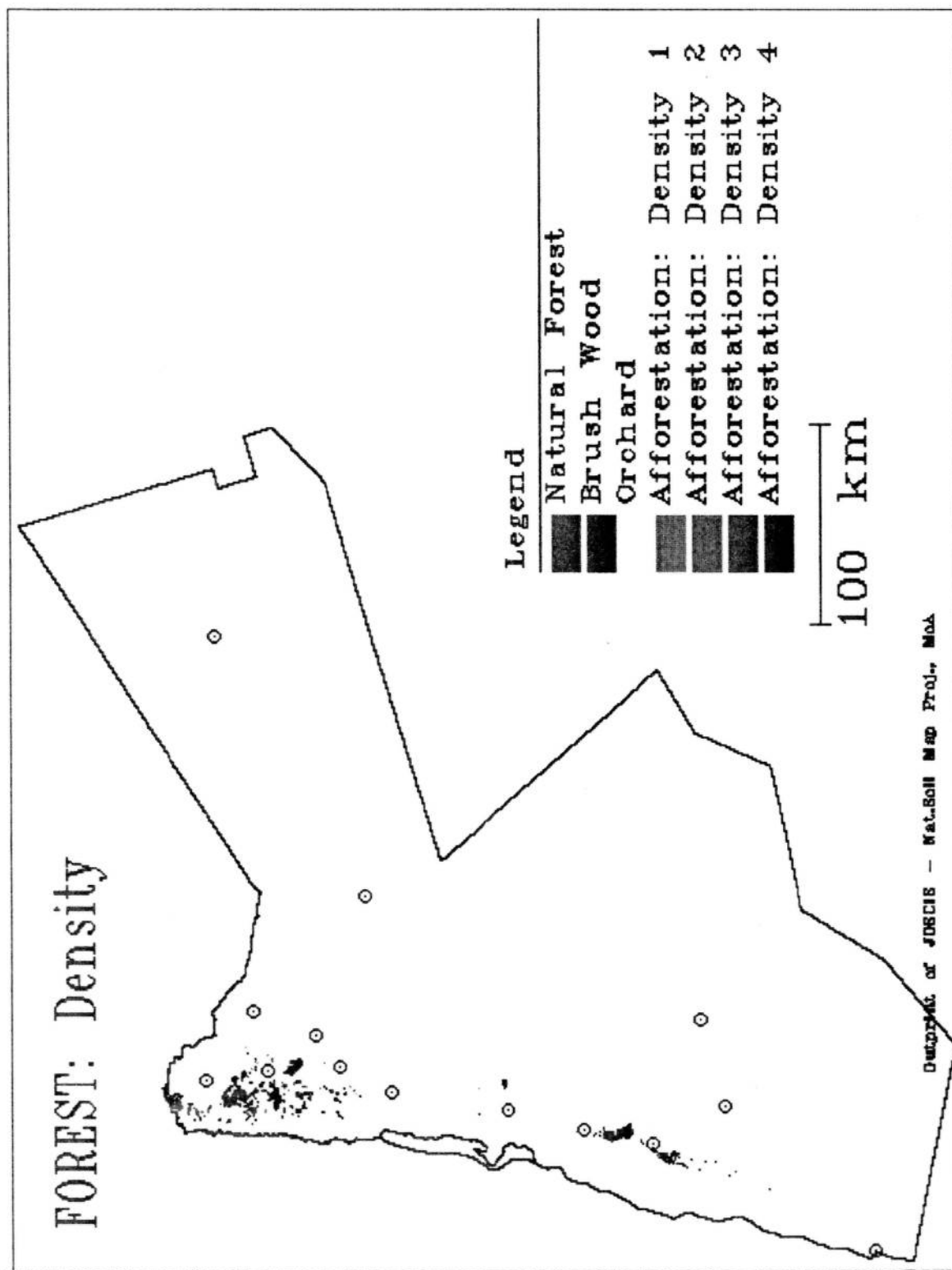
1	-->	1	
2	-->	2	
3 - 6	-->	3	Orchard, olive, and vine and grass land are grouped together
11, 20-22, 31-32, 48, 55-60	-->	4	afforested land with code 10-19
13, 23, 24, 34, 42, 49-50	-->	5	afforested land with code 20-29
15, 25, 26, 34, 35 -37, 51, 65-68	-->	6	afforested land with code 30-39
17, 28, 39, 44	-->	7	afforested land with code 40-49

SINGLE MAP ANALYSIS

Map : foretotd - FOREST: Density

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Natural Forest	43.41	43.41	574.28
2	Brush Wood	4.71	48.12	62.29
3	Orchard	41.39	89.51	547.52
4	Afforestation: Density 1	3.84	93.35	50.80
5	Afforestation: Density 2	4.07	97.42	53.85
6	Afforestation: Density 3	1.98	99.40	26.23
7	Afforestation: Density 4	0.60	100.00	7.96
Total of 7 classes		100.00		1322.93





Full name: Forest: Height
 Short name: FORETOTE
 Digitized features: Density of afforested areas (derived from 'Forestry Unit' map)

Source (authority): Forestry Department, Ministry of Agriculture
 Source map(s): Forest
 Source map projection: Palestine Grid
 Source map scale: 1:25,000

Sheet index: 25000 scale index
 1.columns (A...E)
 2.rows (1...9,A...K)

Sheets: same as / derived from 'foretot' map
 in total: 57 sheets
 joining sequence: same as / derived from 'foretot' map

Number of units: 6
 Colour of units: 7,12,1,5,4, 3
 Dead Sea: Mapping unit 6 (transferred from 'altxtot' map)

Level codes: not used for this map
 Feature codes: mapping units of 'foretot' map, then aggregated
 Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
 Date of digitization: 1991/92

Remarks: Derived from 'foretot' map, using following reference table:

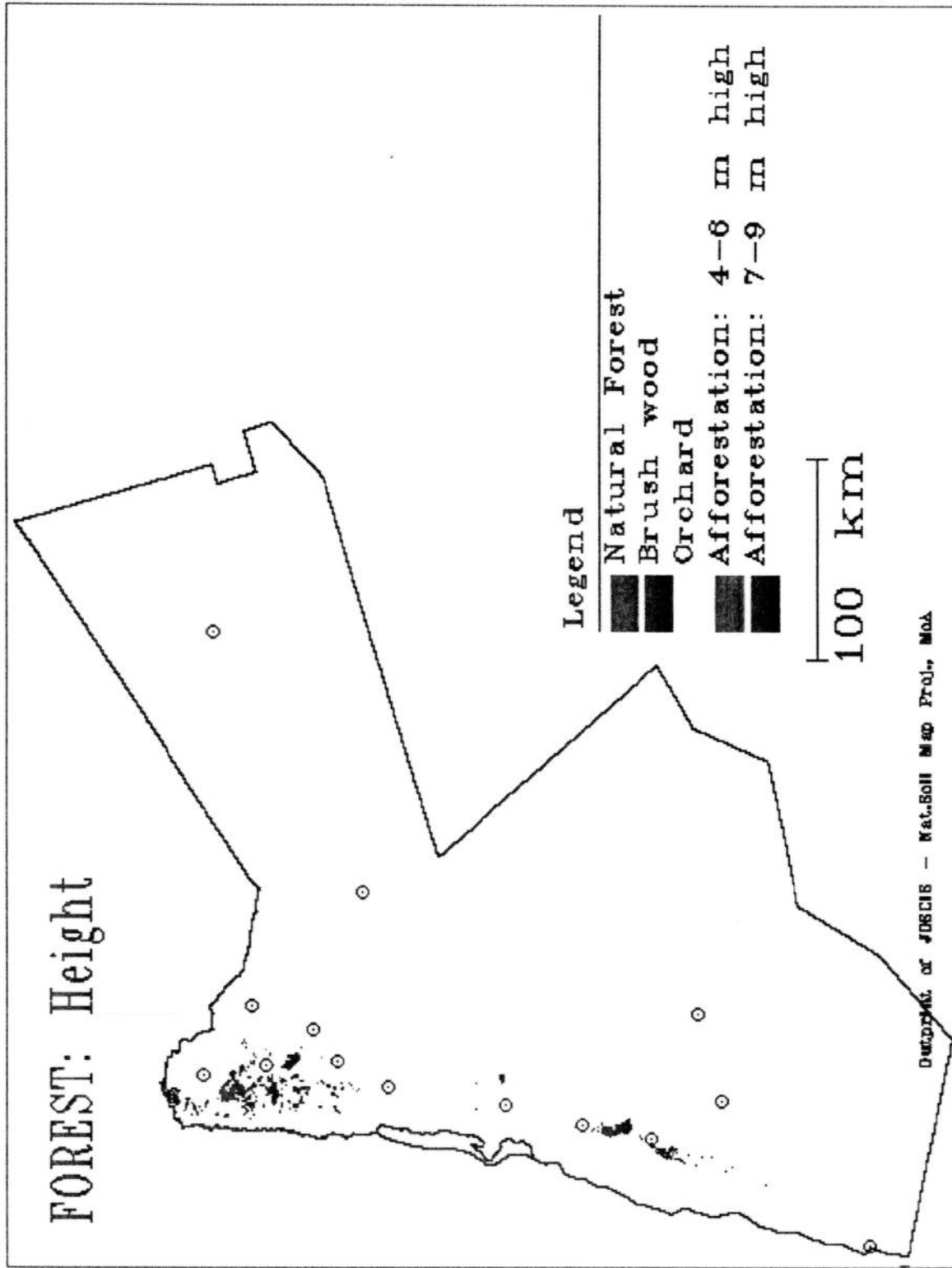
1	-->	1	
2	-->	2	
3 - 6	-->	3	Orchard, olive, and vine and grass land are grouped together afforested land with code ...1-...3
20 , 35 21 , 23 , 25, 31 , 36 , 49, 60 - 68	-->	4	
11 - 17 , 22 , 24 , 26 , 28 , 32 , 34 , 37 - 48 , 50 - 55	-->	5	afforested land with code ...4-...6
	-->	6	afforested land with code ...7-...9

SINGLE MAP ANALYSIS

Map : foretote - FOREST: Height

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Natural Forest	43.41	43.41	574.28
2	Brush wood	4.71	48.12	62.29
3	Orchard	41.39	89.51	547.52
4	Afforestation: 1-3 m high	0.16	89.67	2.15
5	Afforestation: 4-6 m high	4.34	94.01	57.43
6	Afforestation: 7-9 m high	5.99	100.00	79.26
Total of 6 classes		100.00		1322.93





Full name: Ground frost period
Short name: FST1TOT
Digitized features: Ground frost period (mean days p.a.)

Source (authority): Dryland Farming Project
Source map(s): -
Source map projection: Palestine Grid
Source map scale: 1:1,000,000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 9
Colour of units: 6,5,7,8,4, 3,2,1,13
Dead Sea: Mapping unit 9 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Muhanned Kalalkeh
Date of digitization: Mid 1990

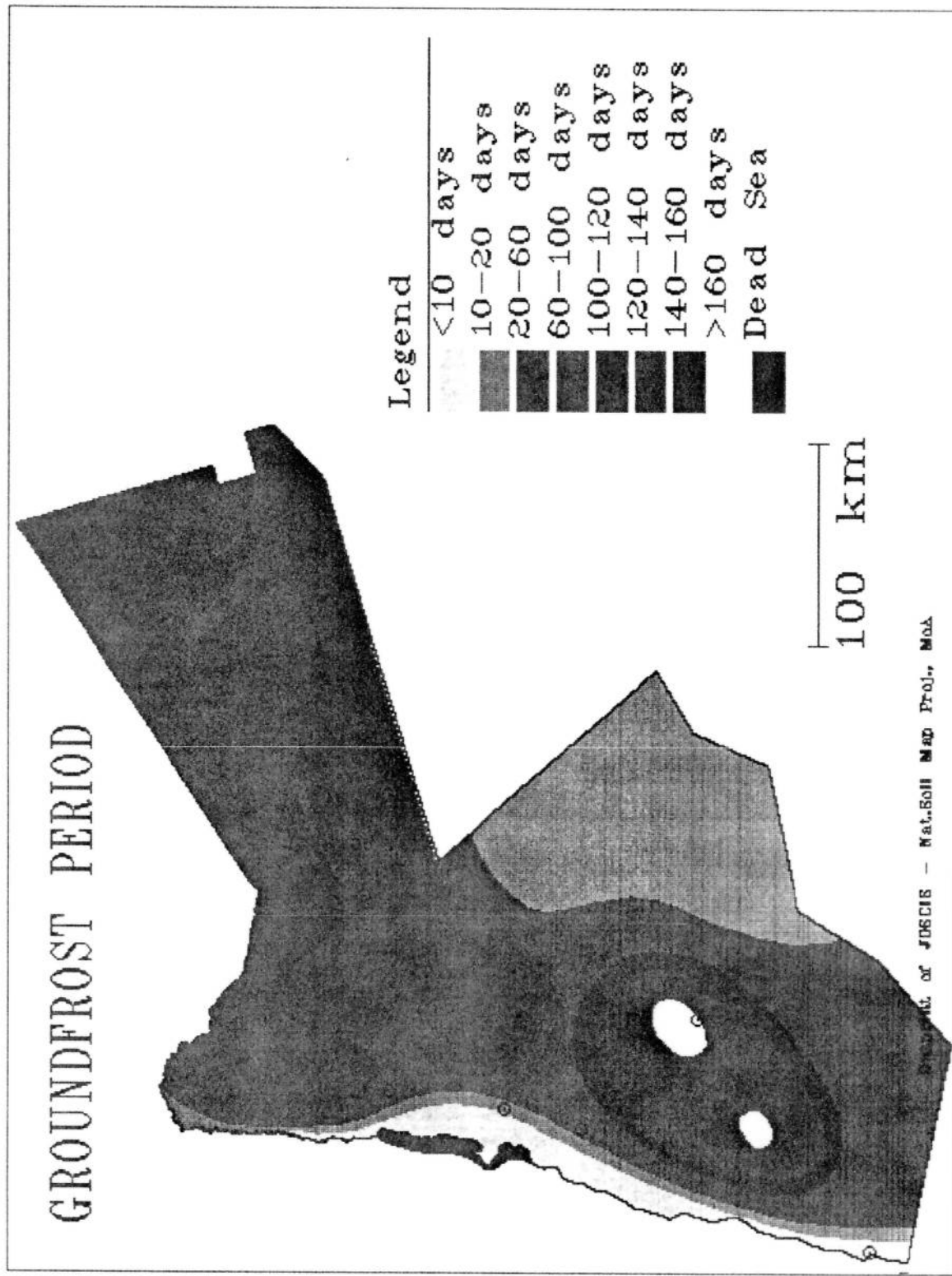
Remarks:

SINGLE MAP ANALYSIS

Map : fst1tot - GROUND FROST PERIOD

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	<10 days	3.46	3.46	3084.5
2	10-20 days	16.83	20.29	15014.4
3	20-60 days	26.89	47.18	23983.2
4	60-100 days	16.33	63.51	14561.3
5	100-120 days	13.65	77.16	12171.3
6	120-140 days	15.81	92.97	14103.6
7	140-160 days	5.61	98.57	4999.7
8	>160 days	0.83	99.41	742.2
9	Dead Sea	0.59	100.00	529.9
Total of 9 classes		100.00		89190.1



Full name: Geology
 Short name: GEL1TOT
 Digitized features: Geology

Source (authority): Natural Resource Agency, Bender 1968, Agrar- und Hydrotechnik
 Source map(s): Geological Map of Jordan
 Source map projection: Palestine Grid
 Source map scale: 1:250,000

Sheet index: 'Geology-index' (see page G 5.2-88)
 1.columns (A...C)
 2.rows (1...9,A...D)
 but sheets A4/5, A6/7, A8/9, AA/B, AC/D, B1/2, C2/3,
 and C5/4 are longitudinally divided

Sheets: A 1...9,A...D
 B 1...8
 C 1...4

in total: 25 sheets
 joining sequence: A 1...9,A...D
 B 1...3,5,6,7,8
 C 1,2,3,5,4

Number of units: 55 (totally 66, but mapping units 23, 24, 28, 31, 34, 36, 37, 40, 53, 63,
 65 do not occur in Jordan)

Colour of units: 1..., last: 13
 Dead Sea: Mapping unit 66 (transferred from 'altxtot' map)

Level codes: not used (only '1')
 Feature codes: mapping units
 Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
 Date of digitization: End 1991

Remarks: This map is aggregated to form following maps:
 GEL1TOT5 (see page G 5.2-85)
 GEL1TOT6 (see page G 5.2-89)
 GEL1TOT7 (see page G 5.2-93)

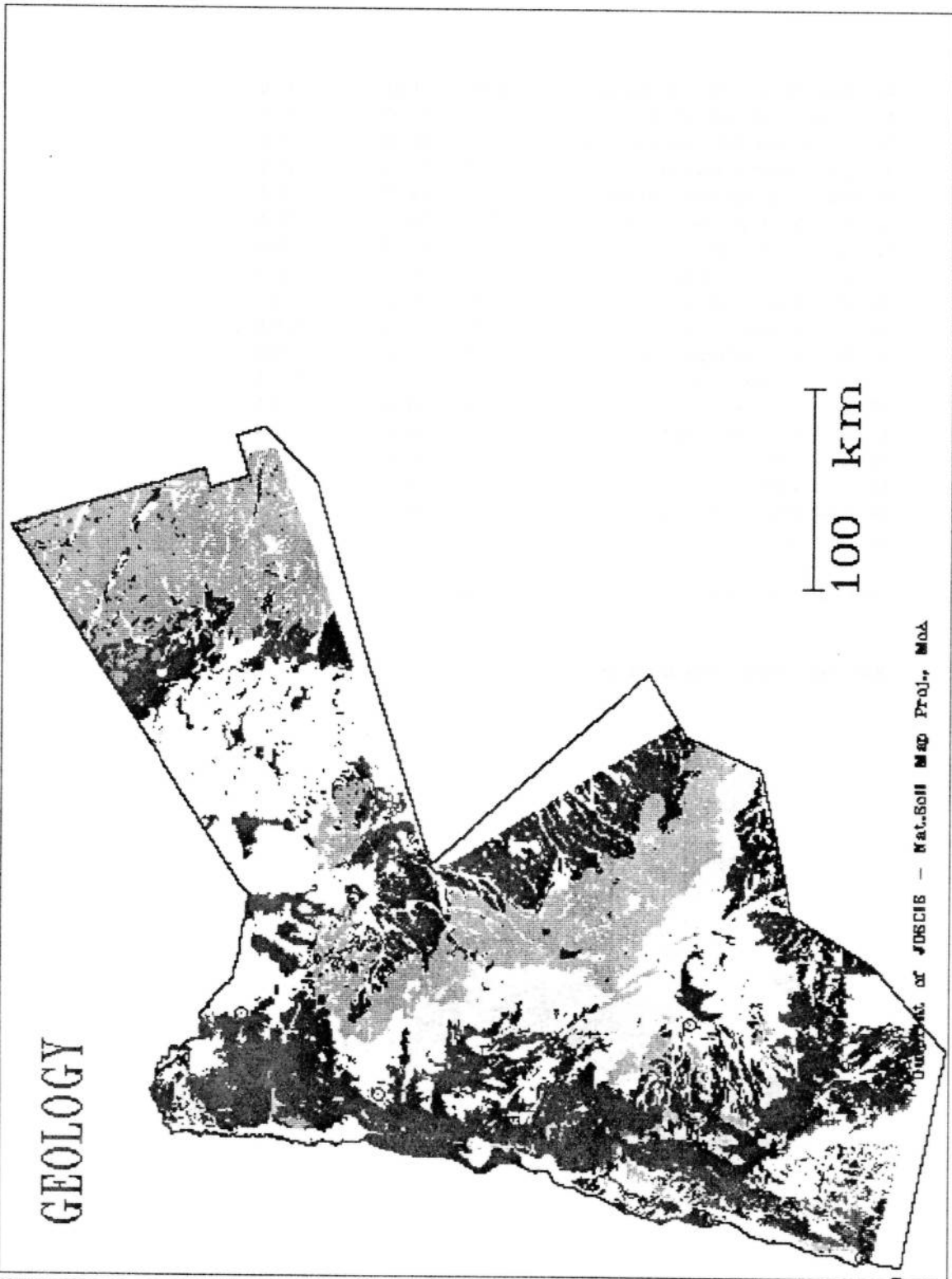
Parts of Jordan are not covered by the geological survey due to the
 different international boundary of Jordan at that time.

SINGLE MAP ANALYSIS

Map : gelltot - GEOLOGY

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	q5 Fluv.deposits,sand,loess	23.19	23.19	19432.7
2	q5 Travert,marl,conglom	0.04	23.23	29.9
3	q4 Qa (clay)	2.85	26.09	2391.9
4	q3 Talus,fans	0.60	26.68	500.2
5	B6 Basalt (upper)	1.44	28.12	1203.6
6	B't Basalt-tuffs	0.17	28.29	143.9
7	B'd Basalt dykes,effusions	0.03	28.32	27.9
8	q2 Fluv.gravels (Lisan)	6.75	35.08	5657.5
9	q2 Lac.LSt,sandy marls (Lis)	1.22	36.30	1022.8
10	B5 Basalt (middle)	7.29	43.58	6104.1
11	B Basalts, dolerites	0.21	43.79	176.7
12	q1 SSt,calc.SSt,conglom,LSt	0.12	43.92	101.6
13	tt LSt,marls,cherts(Shalla)	0.48	44.40	401.7
14	tt4 Conglom,SSt,marls (Dana)	0.94	45.34	789.0
15	B4-1 Basalt (lower)	3.56	48.89	2978.9
16	tt3 White LSt,marls,cherts	0.13	49.03	111.4
17	tt2 LSt w/cherts,marls	4.34	53.37	3636.9
18	tt1 LSt w/chert beds (Rijam)	19.56	72.93	16388.9
19	c2+tt LSt,marls,chalk	0.15	73.08	125.1
20	c2 Chalky marls,bit.LSt(Mwq)	5.93	79.01	4966.0
21	c2 LSt,marl,chalky LSt	0.10	79.11	83.7
22	c2 LSt,marls,cherts,phosphor	6.56	85.67	5496.4
25	c2 Chalky/sandy LSt(Sir,Fuh)	3.77	89.44	3159.3
26	c2 Nod.LSt,clays,marls(Naur)	1.53	90.97	1281.7
27	c1+2 Varicol/silic.SSt (Krnrb)	1.55	92.52	1299.3
29	c2 LSt,marls,cherts	0.09	92.61	75.3
30	c1 Arg.SSt,sandy dolom(Krnrb)	0.95	93.55	793.3
32	j Calc.SSt,LSt	0.10	93.66	86.2
33	t Calc.SSt,LSt (Irna)	0.04	93.70	33.8
35	s Sandy-arg.rocks (Khusha)	0.00	93.70	0.7
38	s2 Marine SSt (Khusha)	0.68	94.38	572.9
39	o5+s1 Fine-SSt,s.shales (Mdw)	0.99	95.37	829.1
41	o4 Fine-SSt,s.shales (Dubyd)	0.31	95.68	257.1
42	o3 Fine-SSt,Grapt-SSt (Hisw)	0.23	95.91	193.3
43	o2 Brownish SSt (Sahm)	0.64	96.55	537.4
44	o1 Mass.,whitish SSt (Disi)	0.35	96.90	295.9
45	cb Massive,brownish SSt(Ishr)	0.85	97.76	713.5



46	cb2+1	Micac.Fine-SSt (Kushb)	0.05	97.81	41.6
47	cb2+1	Dolom.,Lst,shales (Burj)	0.09	97.90	79.2
48	cb1	Arkose-SSt,conglom(Salib)	0.18	98.08	154.1
49	pra	Slates,greYWackes	0.02	98.10	17.1
50	pra	Conglomerates (Saramuj)	0.00	98.11	2.1
51	P	Quartzporphyryclastics	0.11	98.22	94.4
52	Pp	Porphyrite	0.01	98.23	9.8
54	G	Eruptive rocks	0.10	98.33	82.0
55	oGa	Alkaligranite	0.02	98.35	15.0
56	Ga	Aplitegranite	0.49	98.83	406.8
57	PG	Plagioklasgranite	0.09	98.92	75.8
58	Gd	Granodiorite	0.40	99.33	338.5
59	Dr	Diorite	0.00	99.33	0.5
60	Gb	Hornblende-Gabbro	0.00	99.33	2.4
61	gn	Gneiss	0.00	99.33	0.2
62	-	Water	0.01	99.34	6.1
64	S3+2	Argill.SSt (Khusha)	0.02	99.36	14.9
66	-	Dead Sea	0.64	100.00	540.2
-----			-----	-----	-----
Total of 55 classes			100.00		83780.3

MAP SHEET INDEX: Page G 5.2-88

Full name: Geology (generalized)
 Short name: GEL1TOT5
 Digitized features: Geology, generalized for parent material determining soil formation
 Source (authority): Natural Resource Agency, Bender 1968, Agrar- und Hydrotechnik
 Source map(s): Geological Map of Jordan
 Source map projection: Palestine Grid
 Source map scale: 1:250,000

Sheet index: 'Geology-index' (see page G 5.2-88)
 1.columns (A...C)
 2.rows (1...9,A...D)
 but sheets A4/5, A6/7, A8/9, AA/B, AC/D, B1/2, C2/3,
 and C5/4 are longitudinally divided

Sheets: same as / derived from 'gelltot'
 in total: 25 sheets
 joining sequence: same as / derived from 'gelltot'

Number of units: 8
 Colour of units: 6,5,10,8,2, 14,13,14
 Dead Sea: Mapping unit 7 (transferred from 'altxtot' map),
 with other water bodies

Level codes: not used (only '1')
 Feature codes: mapping units of 'gelltot' map, then aggregated
 Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
 Date of digitization: End 1991
 Remarks: Derived from 'gelltot' map (see page G 5.2-81),
 using following reference table:

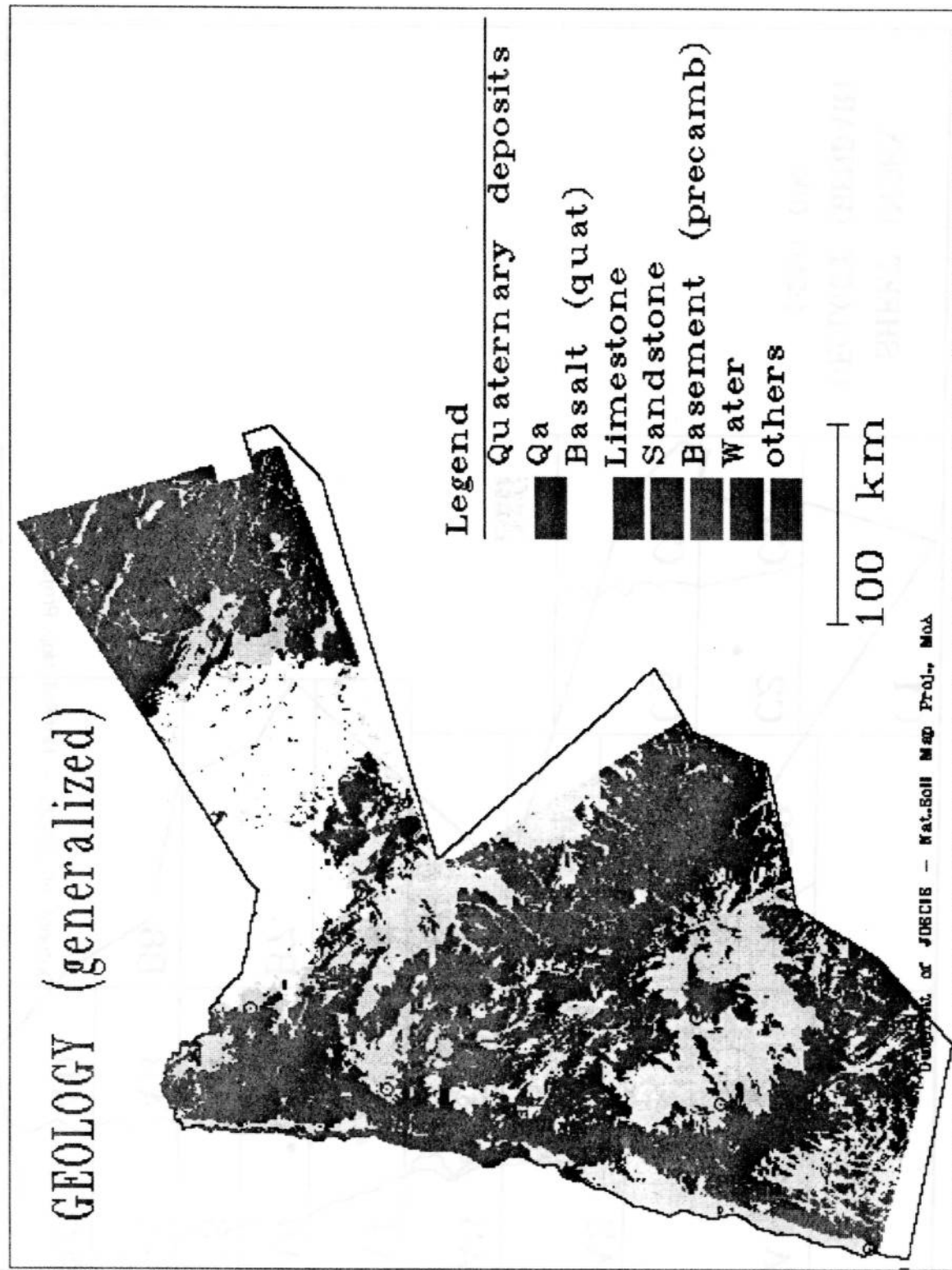
1, 4, 8	-->	1
3	-->	2
5 - 7, 10, 11, 15	-->	3
2, 9, 13, 16 - 26, 29	-->	4
12, 14, 27, 30 - 48, 64	-->	5
51 - 61	-->	6
62, 66	-->	7
49, 50	-->	8

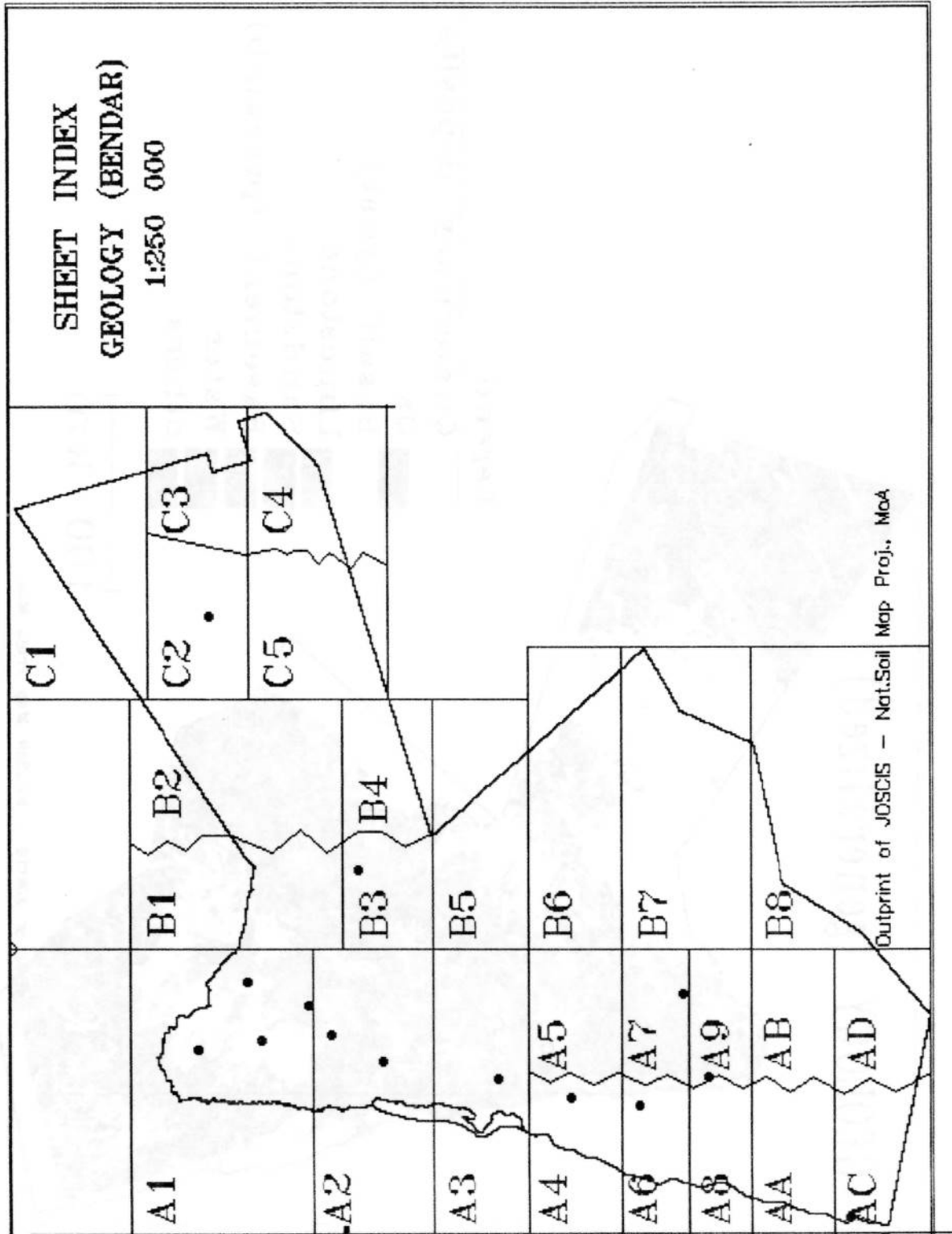
SINGLE MAP ANALYSIS

Map : gelltot5 - GEOLOGY (generalized)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Quaternary deposits	30.54	30.54	25590.4
2	Qa	2.85	33.40	2391.9
3	Basalt (quat)	12.69	46.09	10635.2
4	Limestone	43.90	89.99	36779.1
5	Sandstone	8.11	98.10	6792.9
6	Basement (precamb)	1.22	99.33	1025.3
7	Water	0.65	99.98	546.3
8	others	0.02	100.00	19.2
Total of 8 classes		100.00		83780.3





Full name: Quaternary Geology
 Short name: GEL1TOT6
 Digitized features: Geology, generalized for: Quaternary geology
 Source (authority): Natural Resource Agency, Bender 1968, Agrar- und Hydrotechnik
 Source map(s): Geological Map of Jordan
 Source map projection: Palestine Grid
 Source map scale: 1:250,000

Sheet index: 'Geology-index' (see page G 5.2-88)
 1.columns (A...C)
 2.rows (1...9,A...D)
 but sheets A4/5, A6/7, A8/9, AA/B, AC/D, B1/2, C2/3, C5/4 are longitudinally divided

Sheets: same as / derived from 'gel1tot'
 in total: 25 sheets
 joining sequence: same as / derived from 'gel1tot'

Number of units: 7
 Colour of units: 6,8,14,5,4, 3,2
 Dead Sea: -

Level codes: not used (only '1')
 Feature codes: mapping units of 'gel1tot' map, then aggregated
 Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
 Date of digitization: End 1991

Remarks: Derived from 'gel1tot' map (see page G 5.2-81),
 using following reference table:

1	-->	1
2	-->	2
3	-->	3
4	-->	4
8	-->	5
9	-->	6
12	-->	7

all others not transferred

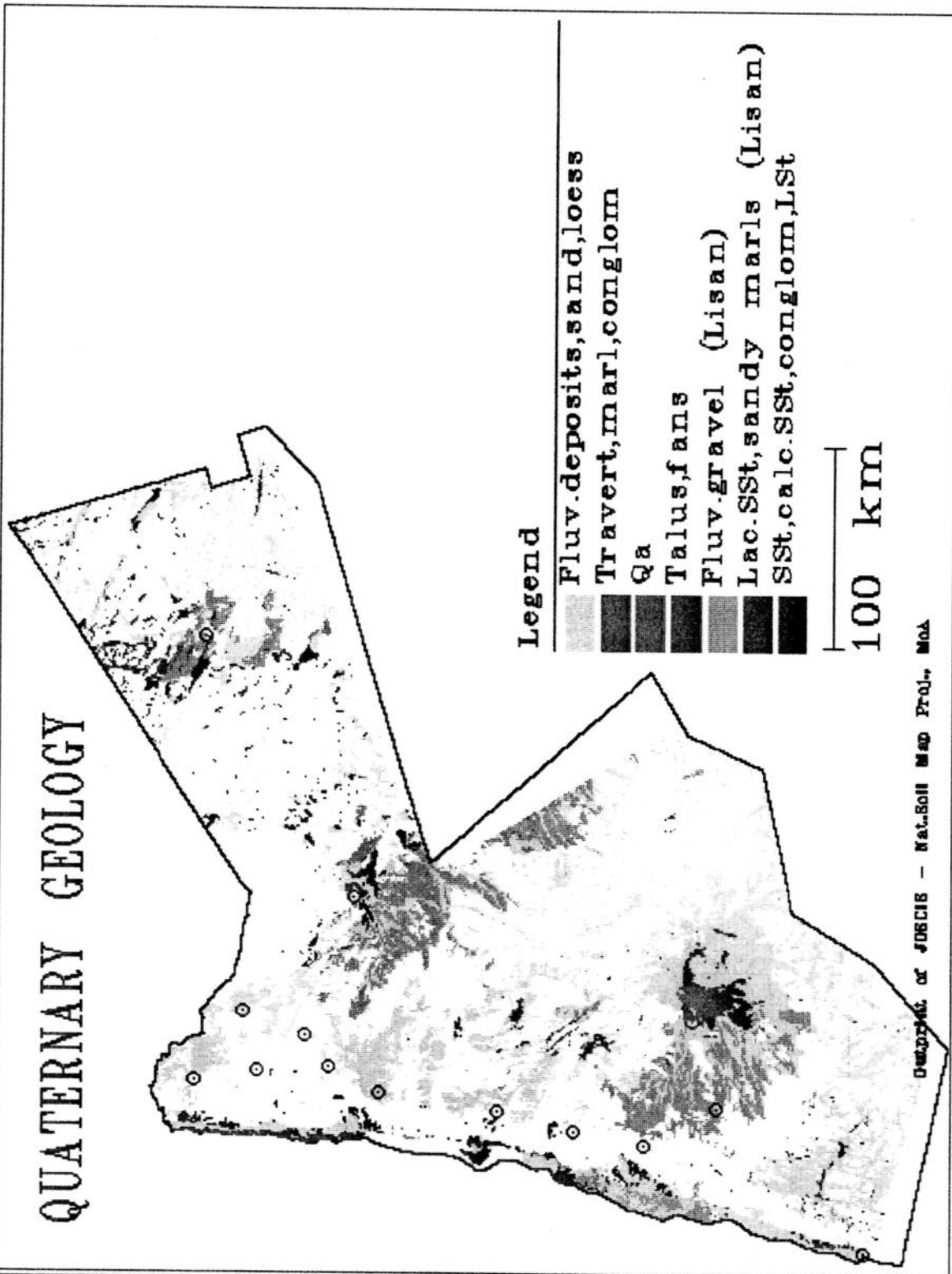
Only Quaternary strata of the geological map were transferred.

SINGLE MAP ANALYSIS

Map : gelltot6 - QUATERNARY GEOLOGY

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Fluv.deposits,sand,loess	66.70	66.70	19432.7
2	Travert,marl,conglom	0.10	66.80	29.9
3	Qa	8.21	75.01	2391.9
4	Talus,fans	1.72	76.72	500.2
5	Fluv.gravel (Lisan)	19.42	96.14	5657.5
6	Lac.SSt,sandy marls (Lisan)	3.51	99.65	1022.8
7	SSt,calc.SSt,conglom,LSt	0.35	100.00	101.6
Total of 7 classes		100.00		29136.6





Full name: Geology (aggregated)
 Short name: GEL1TOT7
 Digitized features: Geology, aggregated, with differentiation old - recent quaternary
 (similar to Geology - generalized)

Source (authority): Natural Resource Agency, Bender 1968, Agrar- und Hydrotechnik
 Source map(s): Geological Map of Jordan
 Source map projection: Palestine Grid
 Source map scale: 1:250,000

Sheet index: 'Geology-index'
 1.columns (A...C)
 2.rows (1...9,A...D)
 but sheets A4/5, A6/7, A8/9, AA/B, AC/D, B1/2, C2/3,
 C5/4 are longitudinally divided

Sheets: same as / derived from 'gelltot'

 in total: 25 sheets
 joining sequence: same as / derived from 'gelltot'

Number of units: 9
 Colour of units: 6,5,4,10,8, 2,14,13,14
 Dead Sea: Mapping unit 8 (transferred from 'altxtot' map)
 with other water bodies

Level codes: not used (only '1')
 Feature codes: mapping units of 'gelltot' map, then aggregated
 Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
 Date of digitization: End 1991
 Remarks: Derived from 'gelltot' map, using following reference table:

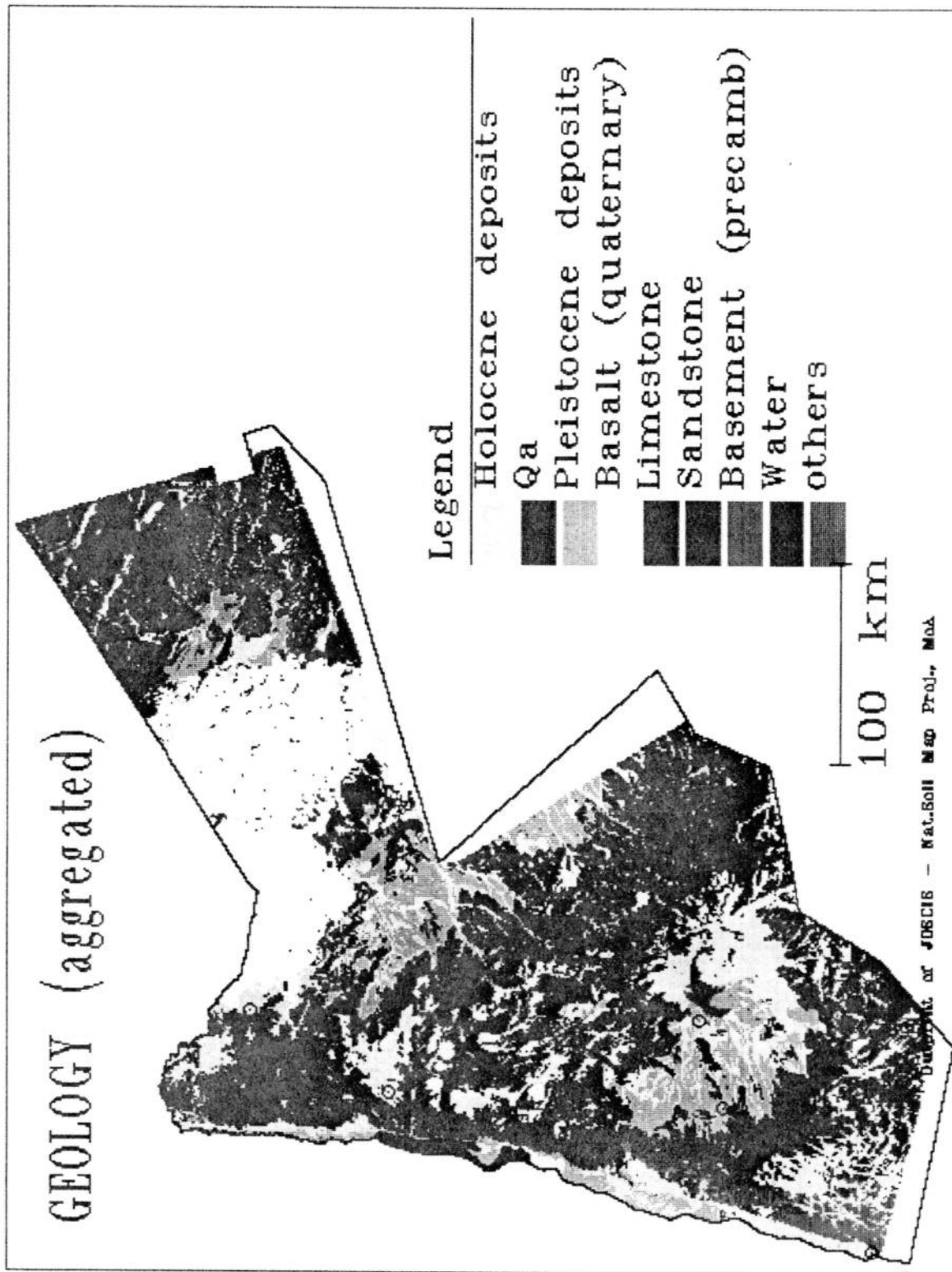
1, 4	-->	1
3	-->	2
7 - 9	-->	3
5, 6, 10, 11, 15	-->	4
2, 13, 16 - 26, 29	-->	5
12, 14, 27, 30 - 48, 64	-->	6
51 - 61	-->	7
62, 66	-->	8
49 - 50	-->	9

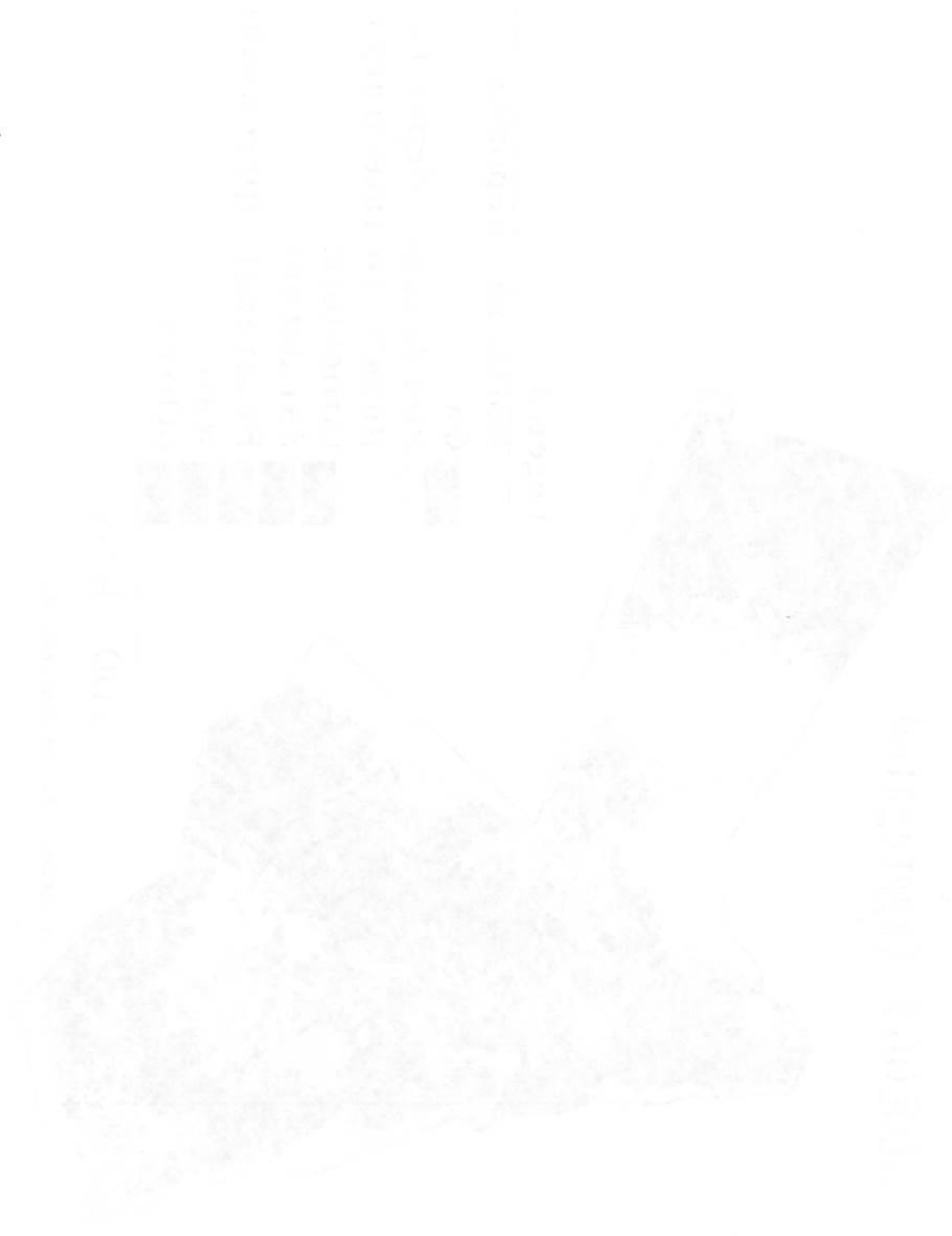
SINGLE MAP ANALYSIS

Map : gelltot7 - GEOLOGY (aggregated)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Holocene deposits	23.79	23.79	19932.9
2	Qa	2.85	26.65	2391.9
3	Pleistocene deposits	7.97	34.62	6680.3
4	Basalt (quaternary)	12.69	47.31	10635.2
5	Limestone	42.68	89.99	35756.4
6	Sandstone	8.11	98.10	6792.9
7	Basement (precamb)	1.22	99.33	1025.3
8	Water	0.65	99.98	546.3
9	others	0.02	100.00	19.2
Total of 9 classes		100.00		83780.3





Legend

- Water
- Forest
- Urban
- Road
- Railroad
- Other

Scale: 1:50,000

North Arrow

Full name: Governorate (1.version)
Short name: GOV1TOT
Digitized features: Governorates of Jordan

Source (authority): Royal Jordanian
Source map(s): Road map
Source map projection: Palestine Grid
Source map scale: 1:750,000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 9
Colour of units: 11,2,3,4,5, 6,7,8,13
Legend 'gov1tot' is referred to by all 'gov?tot' maps

Dead Sea: Mapping unit 9 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Ali K.Odeh
Date of digitization: Mid 1990

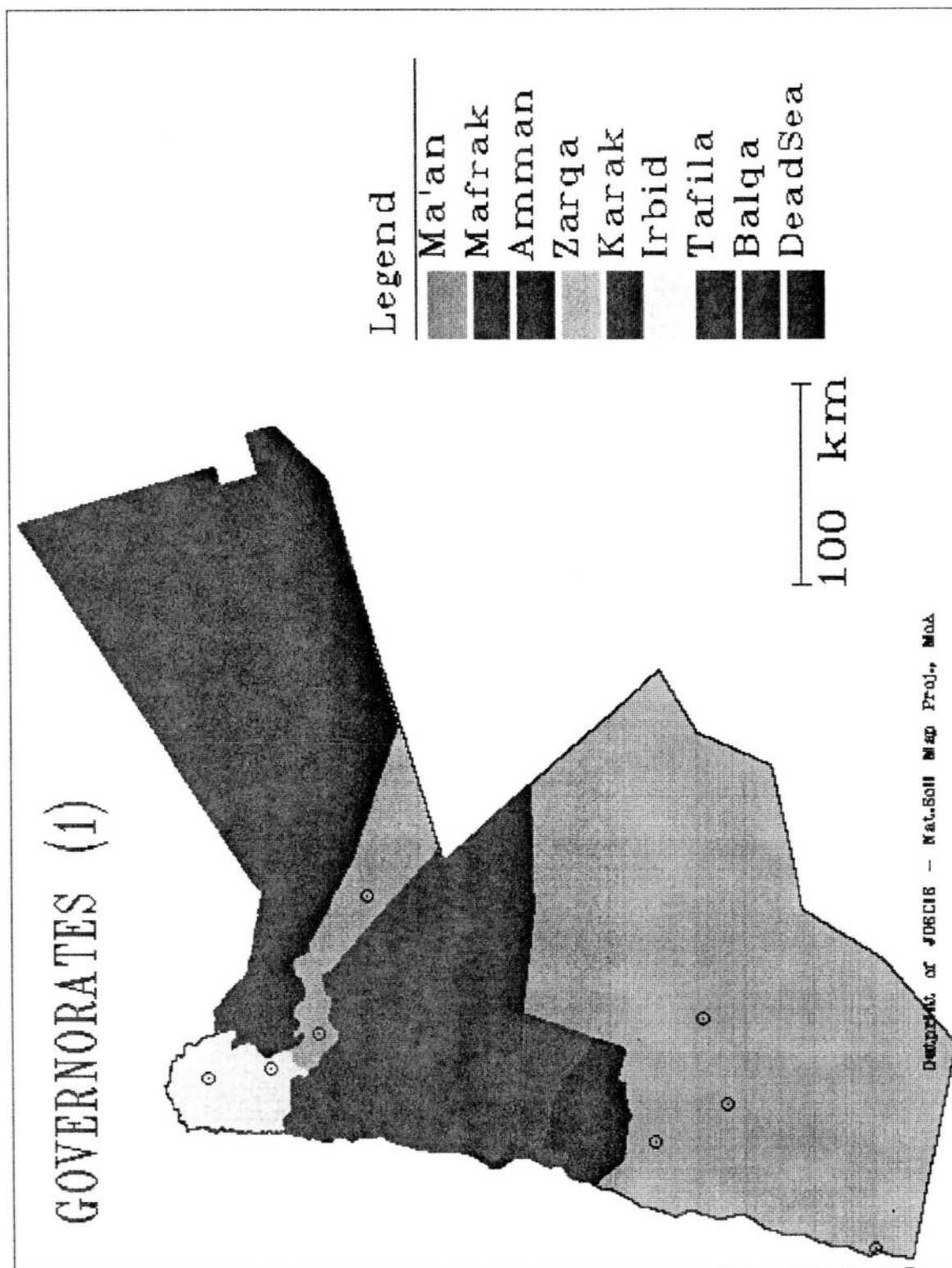
Remarks: The four versions of the Governorates of Jordan are of different sources and reflect the differences in administrative boundary assessments

SINGLE MAP ANALYSIS

Map : govltot - GOVERNORATES (1)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Ma'an	42.38	42.38	37797.8
2	Mafrak	30.15	72.53	26894.1
3	Amman	12.74	85.27	11362.1
4	Zarqa	4.14	89.41	3693.5
5	Karak	3.41	92.83	3044.5
6	Irbid	2.86	95.68	2548.0
7	Tafila	2.43	98.11	2164.4
8	Balqa	1.30	99.41	1156.0
9	DeadSea	0.59	100.00	529.9
Total of 9 classes		100.00		89190.1





Full name: Governorate (2.version)
 Short name: GOV2TOT
 Digitized features: Governorates of Jordan

Source (authority): Royal Jordanian Geographic Centre
 Source map(s): Governorate Map
 Source map projection: Palestine Grid
 Source map scale: (different scales)

Sheet index: -
 Sheets: A 1...5,8,,A,B
 B 1,2,5,8
 in total: 13 sheet
 joining sequence: A1-A2-AA-AB-B1-A3-A5-A4-B5-A8-B8-AB-B2,
 then joined with 'gov1tot' for Eastern part of Jordan

Number of units: 9
 Colour of units: 11,2,3,4,5, 6,7,8,13
 Legend refers to 'gov1tot'

Dead Sea: Mapping unit 9 (transferred from 'altxtot' map)

Level codes: not used (only '1')
 Feature codes: mapping units
 Covering entire Jordan: yes (no area with feature code:0)

Digitizer: Gerhard Bechtold
 Date of digitization:

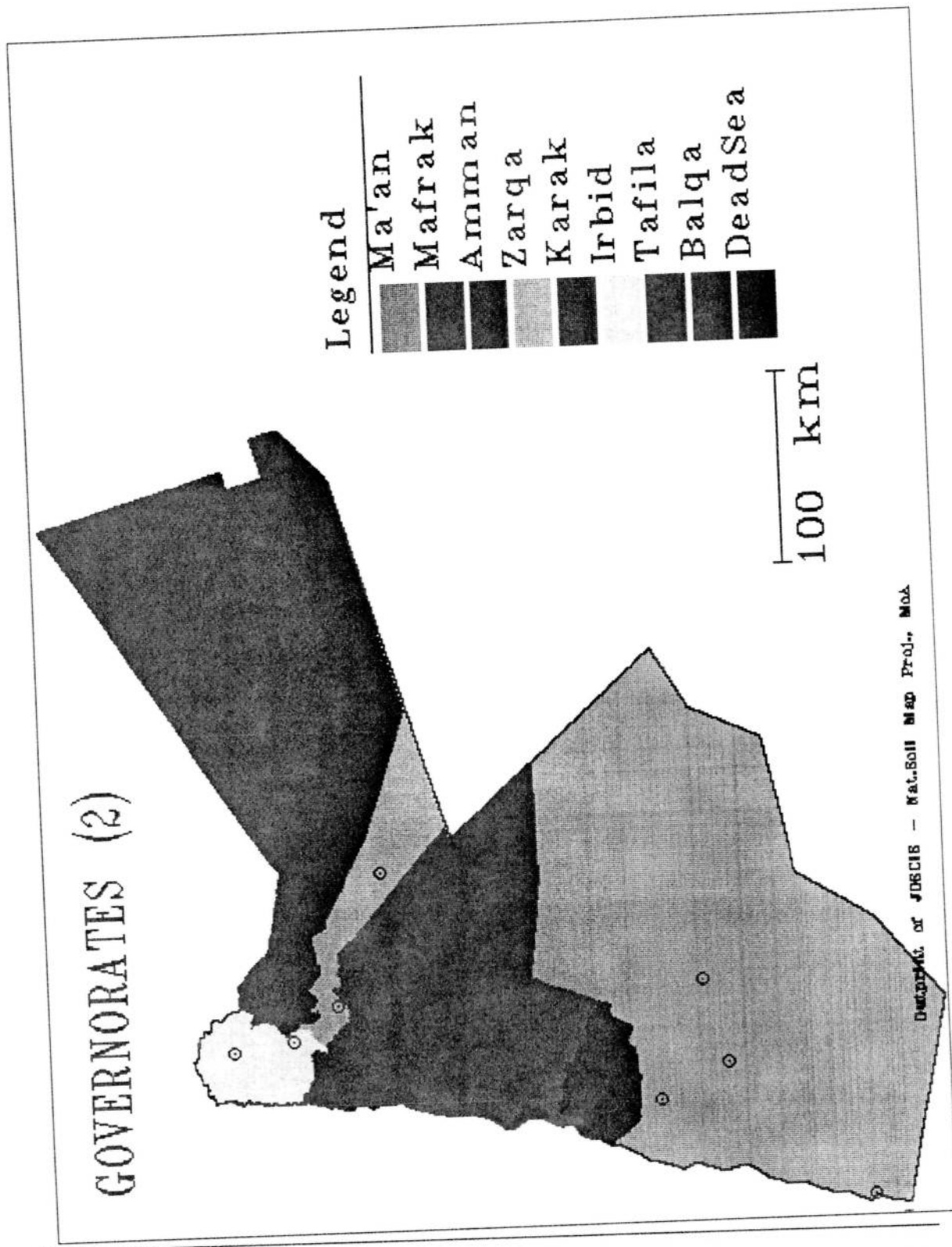
Remarks: The four versions of the Governorates of Jordan are of different sources and reflect the differences in administrative boundary assessments

SINGLE MAP ANALYSIS

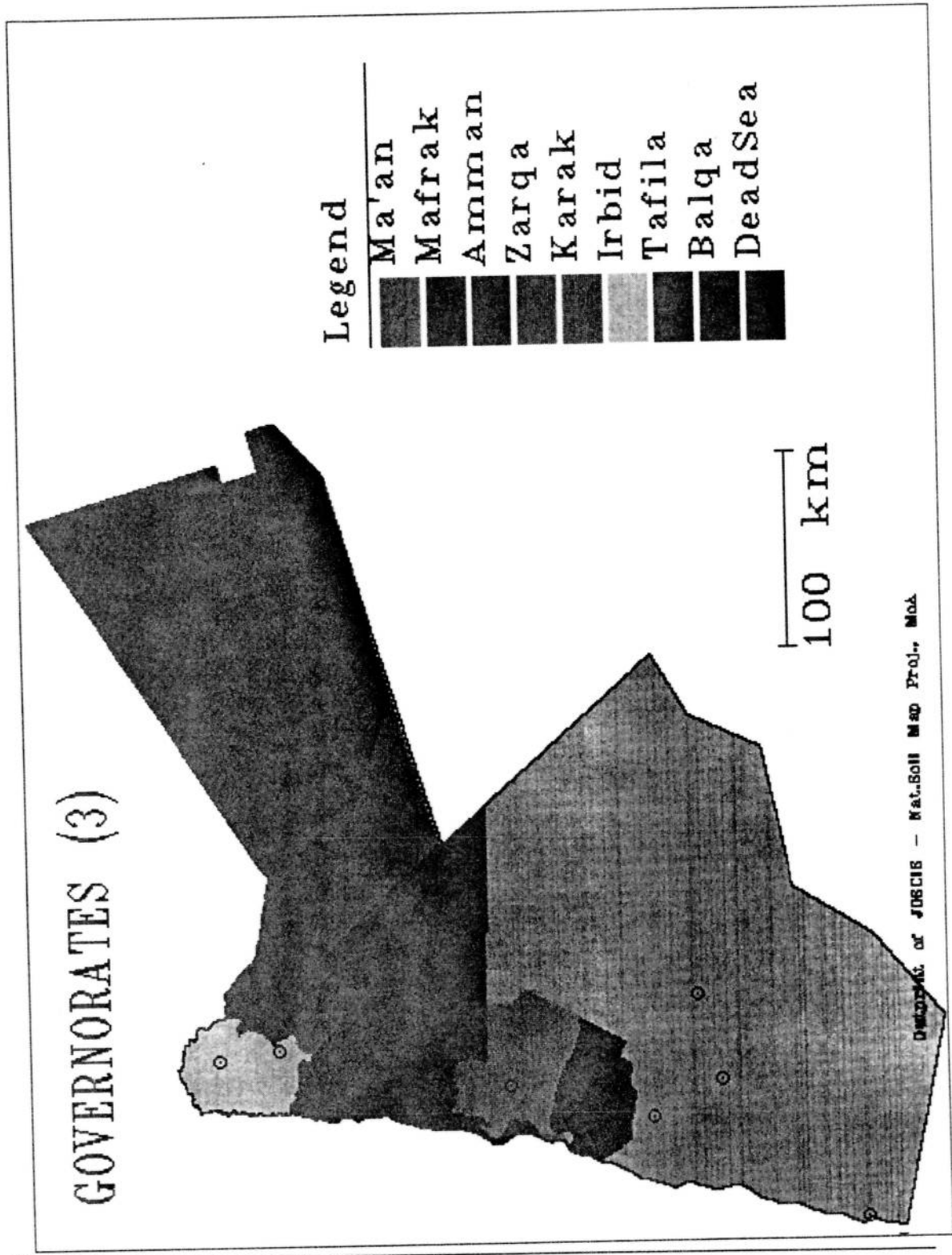
Map : gov2tot - GOVERNORATES (2)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Ma'an	42.21	42.21	37646.8
2	Mafraq	30.18	72.39	26920.7
3	Amman	12.97	85.36	11568.1
4	Zarqa	4.08	89.44	3634.5
5	Karak	3.57	93.01	3182.0
6	Irbid	2.69	95.70	2403.1
7	Tafila	2.47	98.17	2200.3
8	Balqa	1.24	99.41	1104.8
9	DeadSea	0.59	100.00	529.9
Total of 9 classes		100.00		89190.1









Full name: Governorate (4.version)
 Short name: GOV4TOT
 Digitized features: Governorates of Jordan

Source (authority): Royal Jordanian Geographic Centre
 Source map(s): Village index with listing of villages and their coordinates,
 not in map form

Source map projection: -
 Source map scale: -

Sheet index: -
 Sheets: -

Number of units: 9
 Colour of units: 11,2,3,4,5, 6,7,8,13 (legend refers to gov1tot)
 Legend refers to 'gov1tot'
 Dead Sea: Mapping unit 9 (transferred from 'altxtot' map)

Level codes: -
 Feature codes: -
 Covering entire Jordan: yes (no area with feature code:0)

Digitizer: Entered by Muhanned Kalaldehy, processed by Gerhard Bechtold
 Date of digitization: May 1993

Remarks: Derived from 'villtot' map, which is based on village index (in file
 gen_vill.dbf) of Royal Jordanian Geographic Centre.
 'Villtot' map is an example of a 'voronoi' map, derived from
 (village) point data (see Section G 3.8 of this Volume).
 These units were then aggregated to form the 'gov4tot' map
 (see Section G 3.7 of this Volume).

Various village units, which were given a wrong administrative code
 or wrong coordinates, appear as foreign unit in a Govern-
 orate (for example, large unit Northeast of Disi)

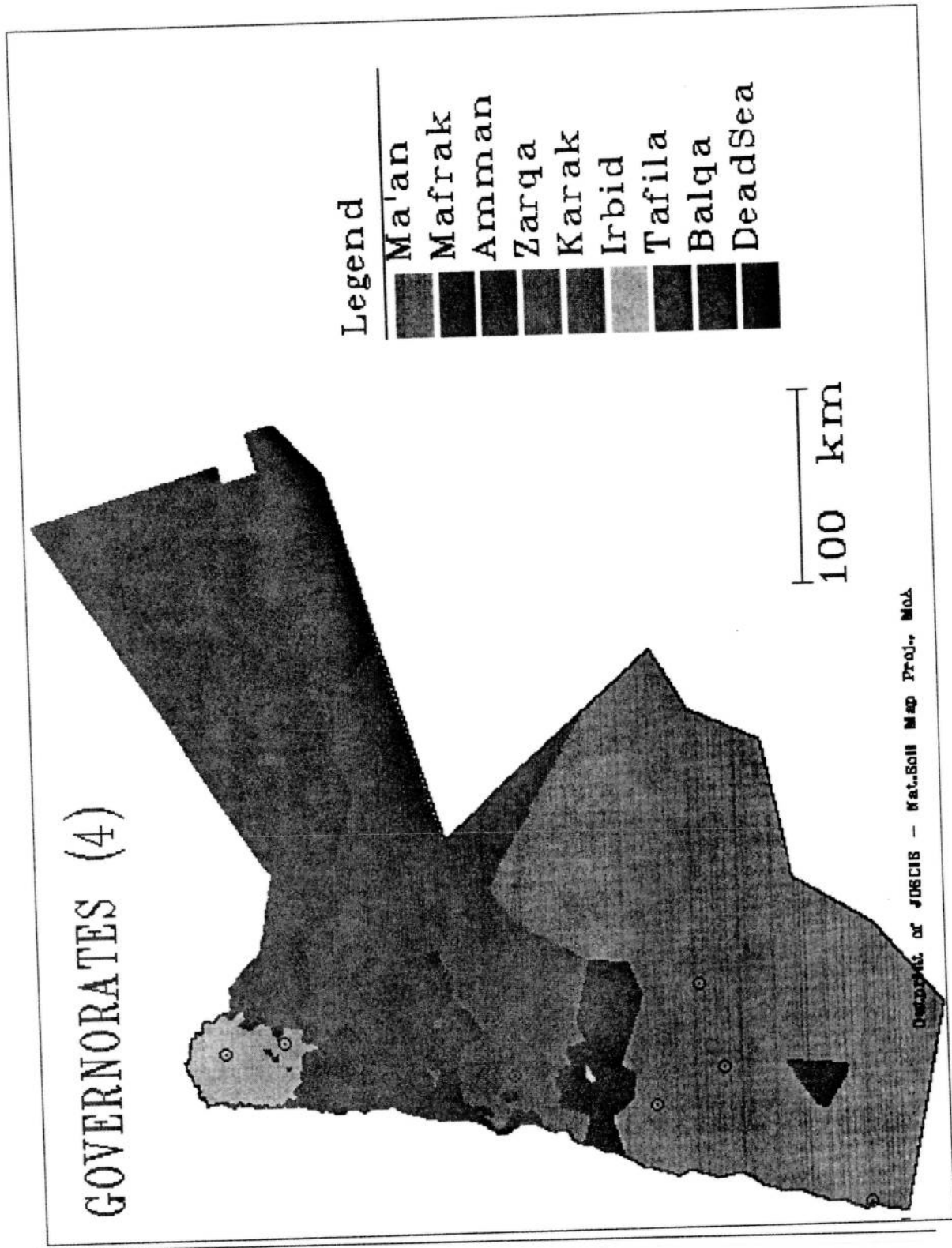
The four versions of the Governorates of Jordan are of different
 sources and reflect the differences in administrative bound-
 ary assessments

SINGLE MAP ANALYSIS

Map : gov4tot - GOVERNORATES (4)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Ma'an	40.69	40.69	36289.3
2	Mafrak	27.97	68.66	24948.7
3	Amman	4.61	73.27	4108.8
4	Zarqa	11.71	84.98	10446.1
5	Karak	7.01	91.99	6256.3
6	Irbid	2.59	94.58	2308.0
7	Tafila	3.54	98.12	3159.4
8	Balqa	1.28	99.41	1143.5
9	DeadSea	0.59	100.00	529.9
Total of 9 classes		100.00		89190.1





Full name: Groundwater Exploration
Short name: GRW1TOT
Digitized features: Groundwater Exploration, as of 1980 approximately

Source (authority): Water Authority - National Water Master Plan
Source map(s): HG - 5.5
Source map projection: Palestine Grid
Source map scale: 1:1,000,000

Sheet index: -
Sheets: AA
in total: 1 sheet

Number of units: 5 (totally 6, but mapping unit 5 does not occur)
Colour of units: 2,4,9,8,14, 13
Dead Sea: Mapping unit 6 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
Date of digitization: 1990

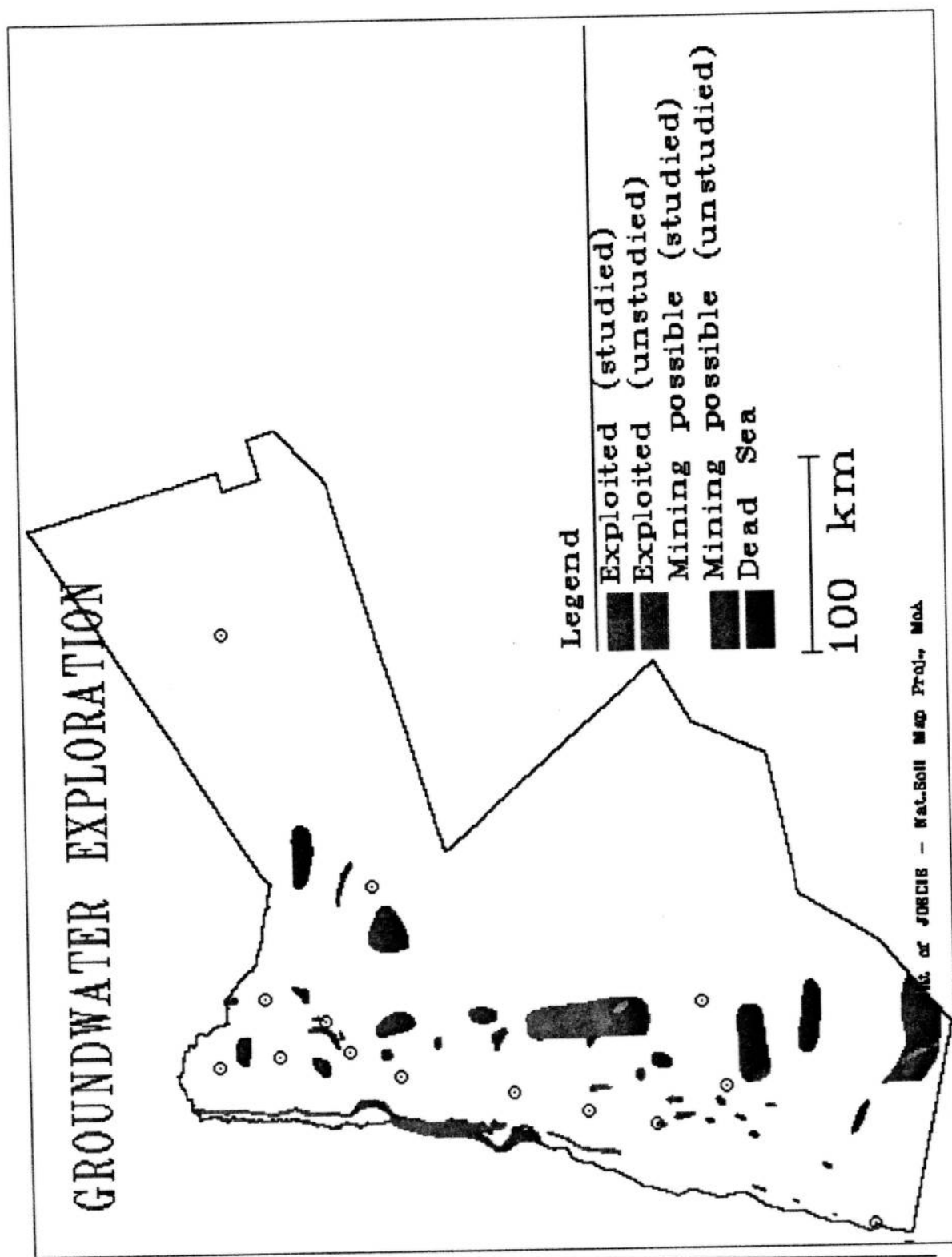
Remarks:

SINGLE MAP ANALYSIS

Map : grwitot - GROUNDWATER EXPLORATION

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Exploited (studied)	8.39	8.39	516.90
2	Exploited (unstudied)	14.85	23.24	915.23
3	Mining possible (studied)	7.08	30.32	436.38
4	Mining possible (unstudied)	61.08	91.40	3764.28
6	Dead Sea	8.60	100.00	529.87
Total of 5 classes		100.00		6162.66





Full name: Groundwater Balance
Short name: GRWBTOT
Digitized features: Groundwater Balance Areas

Source (authority): National Water Master Plan, Water Authority
Source map(s): HG - 4.1.2
Source map projection: Palestine Grid
Source map scale: 1:1,000,000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 71
Colour of units: 1..., last: 13
Dead Sea: Mapping unit 71 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: (Training exercise)
Date of digitization: Early 1990

Remarks: This map is aggregated to form following map:

GRWBTOT5 (see page G 5.2-121)

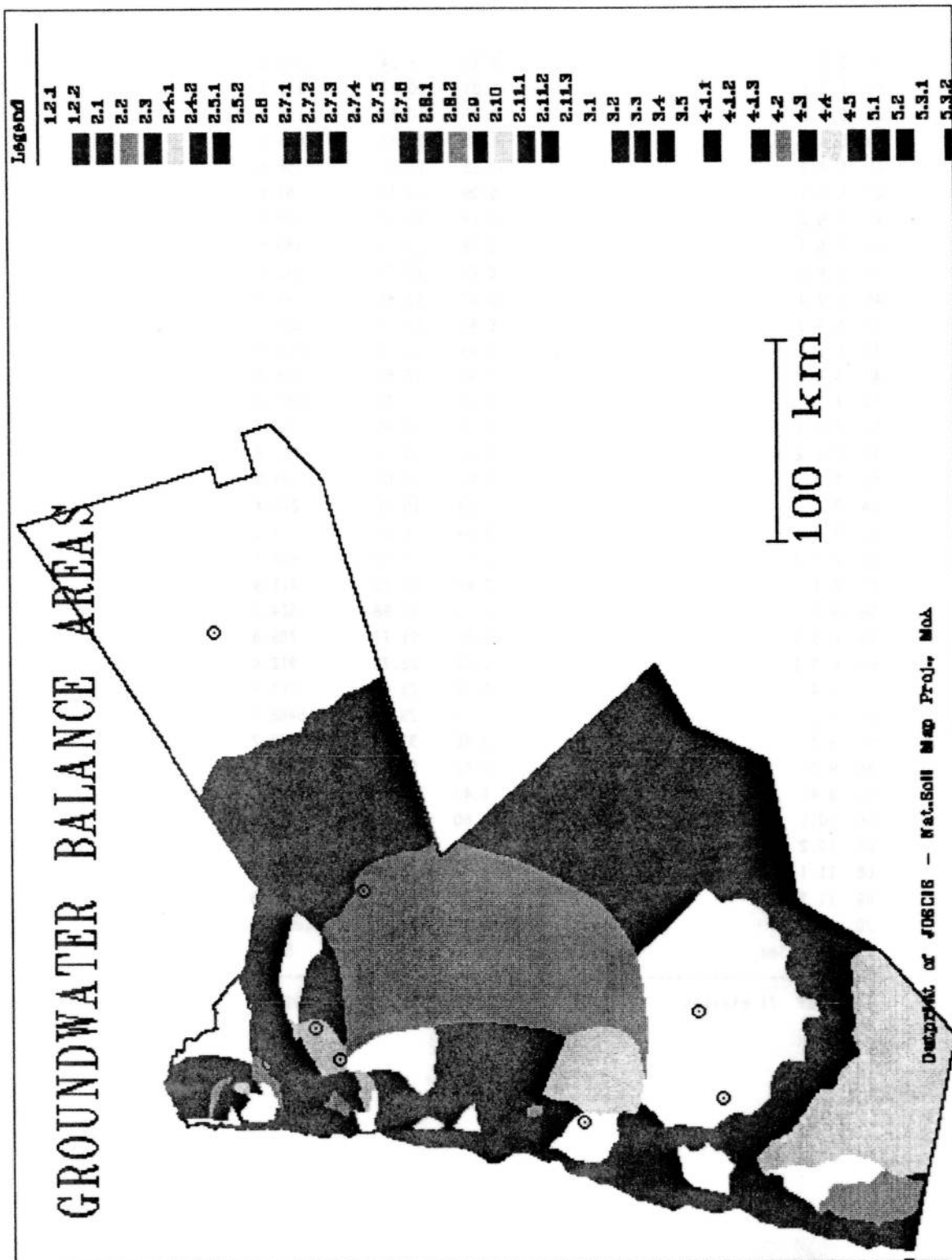
SINGLE MAP ANALYSIS

Map : grwbtot - GROUNDWATER BALANCE AREAS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)

1	1.2.1	0.94	0.94	840.4
2	1.2.2	0.57	1.51	510.0
3	2.1	0.23	1.74	204.0
4	2.2	0.08	1.82	73.0
5	2.3	0.08	1.91	72.7
6	2.4.1	0.05	1.95	41.7
7	2.4.2	0.08	2.04	73.9
8	2.5.1	0.03	2.07	28.8
9	2.5.2	0.09	2.16	80.2
10	2.6	0.09	2.25	84.5
11	2.7.1	0.01	2.26	10.3
12	2.7.2	0.12	2.38	105.8
13	2.7.3	0.09	2.47	77.7
14	2.7.4	0.02	2.49	19.1
15	2.7.5	0.09	2.58	80.5
16	2.7.6	0.02	2.60	19.4
17	2.8.1	0.11	2.71	94.3
18	2.8.2	0.10	2.81	92.5
19	2.9	0.24	3.05	213.3
20	2.10	0.13	3.18	117.5
21	2.11.1	0.09	3.27	76.9
22	2.11.2	0.18	3.45	159.2
23	2.11.3	0.06	3.51	52.6
24	3.1	0.12	3.62	102.8
25	3.2	0.13	3.75	114.5
26	3.3	0.12	3.87	108.5
27	3.4	0.11	3.98	99.4
28	3.5	0.10	4.08	85.2
29	4.1.1	1.19	5.27	1065.7
30	4.1.2	0.72	6.00	643.3
31	4.1.3	0.85	6.85	762.1
32	4.2	0.17	7.02	153.6
33	4.3	0.19	7.21	167.5
34	4.4	0.57	7.78	511.6
35	4.5	0.97	8.76	868.5
36	5.1	0.27	9.03	239.4



37	5.2	0.31	9.34	278.0
38	5.3.1	1.03	10.37	919.7
39	5.3.2	0.22	10.59	193.9
40	5.4.1	2.25	12.83	2003.0
41	5.4.2	0.23	13.07	208.6
42	5.5.1	0.09	13.16	83.6
43	5.5.2	0.14	13.30	126.2
44	5.6.1	0.18	13.48	159.9
45	5.6.2	0.27	13.75	241.8
46	5.7.1	0.05	13.80	42.4
47	5.7.2	0.40	14.20	357.1
48	5.8.1	1.93	16.13	1724.4
49	5.8.2	0.37	16.50	328.3
50	7.1	1.23	17.73	1093.4
51	7.2.1	0.07	17.80	62.4
52	7.2.2	0.62	18.42	551.7
53	7.3	0.67	19.09	598.9
54	7.4	0.23	19.32	207.4
55	7.5.1	0.04	19.36	39.0
56	7.5.2	0.56	19.92	499.8
57	8.1	0.46	20.39	413.9
58	8.2	0.59	20.98	524.5
59	8.3.1	0.80	21.77	709.8
60	8.3.2	1.02	22.79	912.6
61	8.4	0.74	23.54	661.9
62	9.1	6.13	29.67	5468.9
63	9.2	3.88	33.55	3458.2
64	9.3	1.62	35.17	1444.8
65	9.4	8.43	43.59	7515.1
66	10.1	13.60	57.19	12127.9
67	10.2	7.56	64.75	6743.6
68	11.1	12.57	77.32	11214.4
69	11.2	1.73	79.05	1540.6
70	12	20.35	99.41	18153.9
71	Dead Sea	0.59	100.00	529.9

Total of 71 classes		100.00		89190.1

Full name: Groundwater Balance - aggregated
 Short name: GRWBTOT5
 Digitized features: Major Groundwater Balance Areas

Source (authority): National Water Master Plan, Water Authority
 Source map(s): HG - 4.1.2
 Source map projection: Palestine Grid
 Source map scale: 1:1,000,000

Sheet index: -
 Sheets: same as / derived from 'grwbtot'
 in total: 1 sheet

Number of units: 13 (totally 12, but mapping unit 6 does not occur)
 Colour of units: 1..., last: 13
 Dead Sea: Mapping unit 13 (transferred from 'altxtot' map)

Level codes: not used (only '1')
 Feature codes: mapping units
 Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: (Training exercise)
 Date of digitization: Early 1990

Remarks: Derived from 'grwbtot' map (see page G 5.2-117),
 using following reference table:

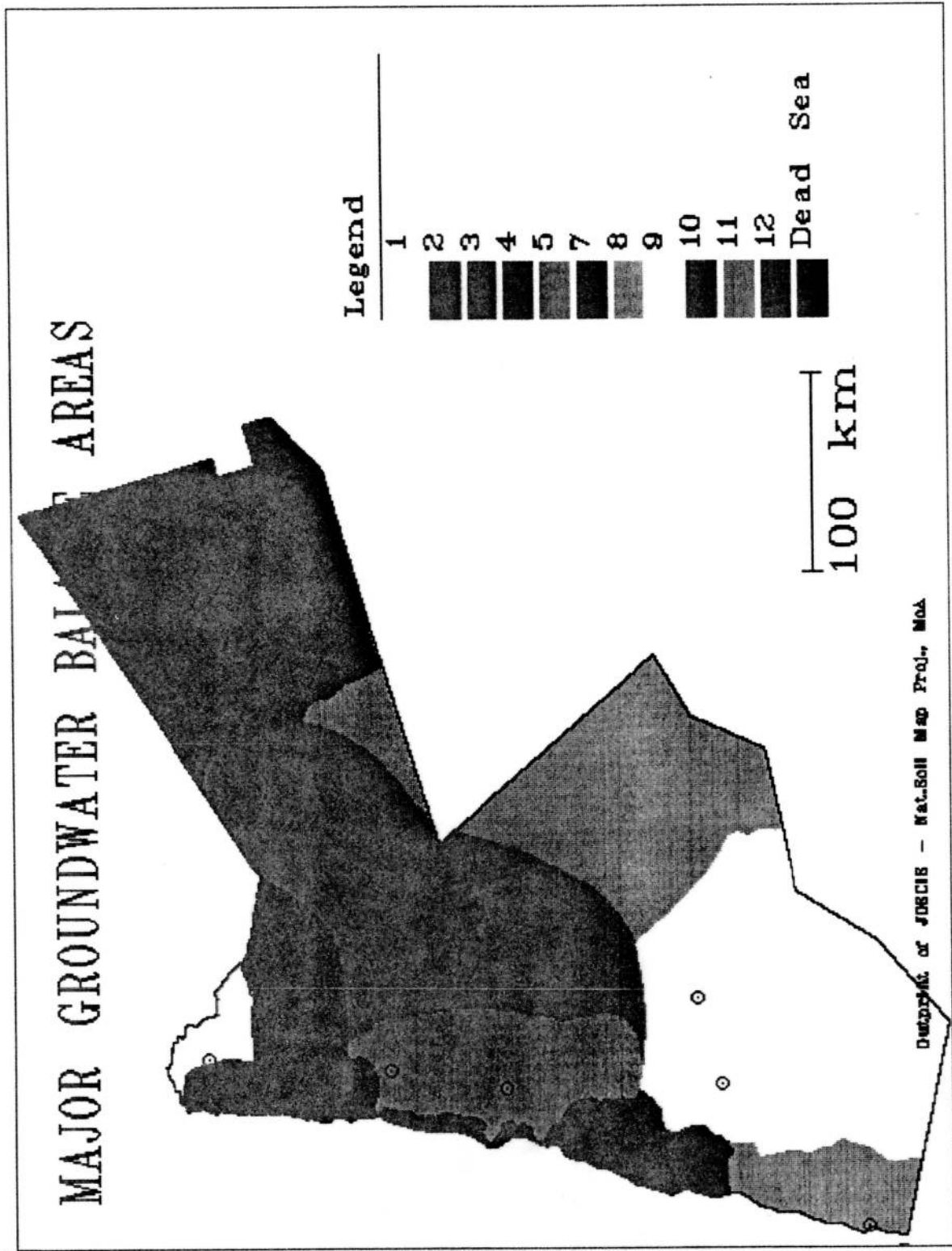
1	-	2	-->	1
3	-	23	-->	2
24	-	28	-->	3
29	-	35	-->	4
36	-	49	-->	5
50	-	56	-->	7
57	-	61	-->	8
62	-	65	-->	9
66	-	67	-->	10
68	-	69	-->	11
70			-->	12
71			-->	13

SINGLE MAP ANALYSIS

Map : grwbtot5 - MAJOR GROUNDWATER BALANCE AREAS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	1	1.51	1.51	1350.4
2	2	1.99	3.51	1778.1
3	3	0.57	4.08	510.3
4	4	4.68	8.76	4172.2
5	5	7.74	16.50	6906.2
7	7	3.42	19.92	3052.6
8	8	3.61	23.54	3222.7
9	9	20.05	43.59	17887.1
10	10	21.16	64.75	18871.5
11	11	14.30	79.05	12755.1
12	12	20.35	99.41	18153.9
13	Dead Sea	0.59	100.00	529.9
Total of 12 classes		100.00		89190.1





Full name: Irrigated areas (1977)
Short name: IRR1TOT
Digitized features: Irrigated areas, as of 1977

Source (authority): Water Authority - National Water Master Plan
Source map(s): -
Source map projection: Palestine Grid
Source map scale: 1:1,000,000

Sheet index: -
Sheets: AA + BB

in total: 2 sheets
joining sequence: AA - BB

Number of units: 3
Colour of units: 13,4,7
Dead Sea: -

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Kalaldeh
Date of digitization: January 1993

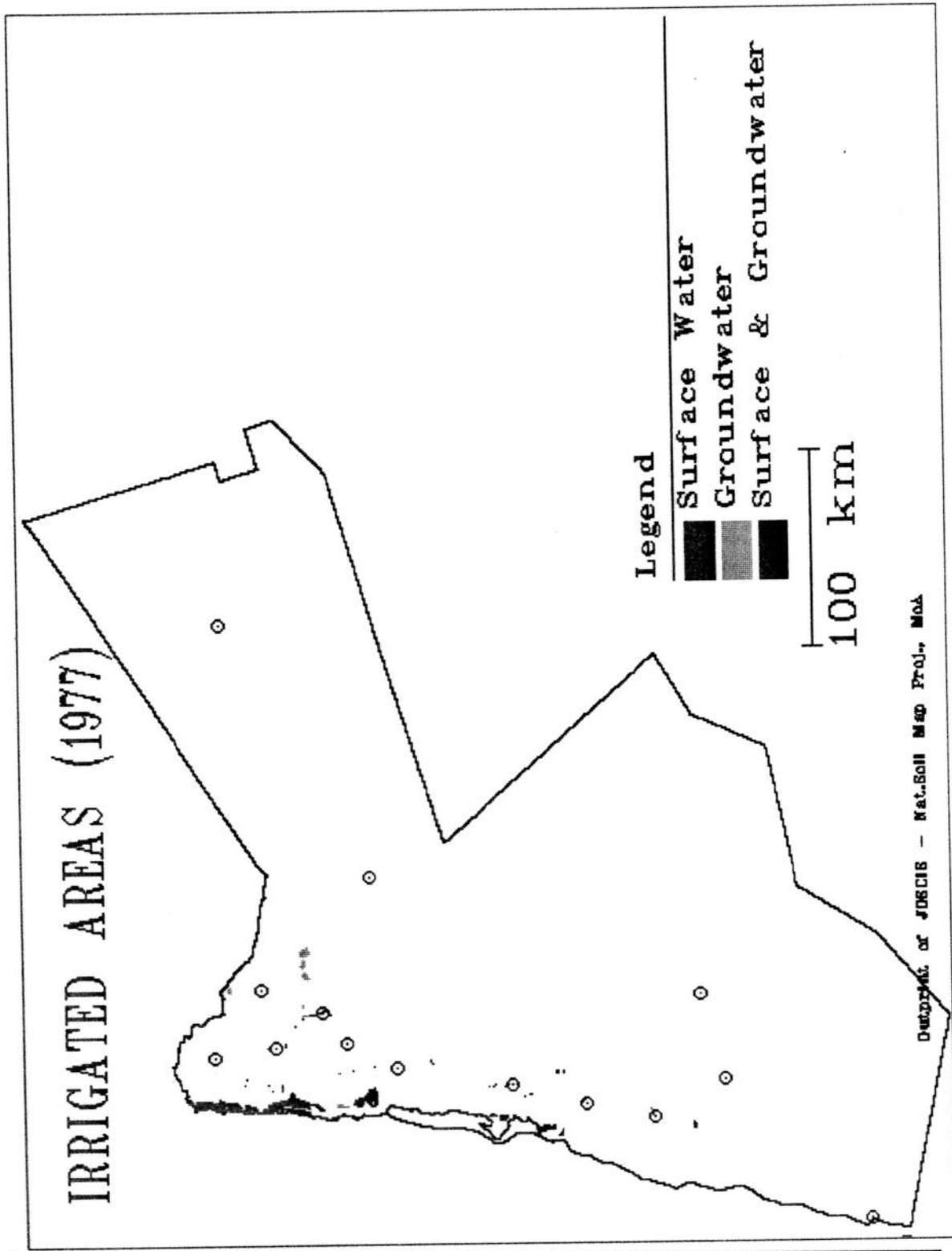
Remarks:

SINGLE MAP ANALYSIS

Map : irr1tot - IRRIGATED AREAS (1977)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Surface Water	70.00	70.00	361.883
2	Groundwater	13.84	83.83	71.535
3	Surface & Groundwater	16.17	100.00	83.579
Total of 3 classes		100.00		516.997





Full name: Landsat image frames
Short name: IMAGTOT
Digitized features: Coverage of frames of Landsat MSS images,
supplied and preprocessed by HTS

Source (authority): EOSAT
Source map(s): -
Source map projection: corrected to JTM
Source map scale: -

Sheet index: - (see page G 5.3-15)
Sheets: -

Number of units: 7
Colour of units: 1...7, last:7
Dead Sea: -

Level codes: -
Feature codes: -
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: -
Date of digitization: compiled in June 1993, based on coordinates

Remarks:

Margins of sheets:

Northing: 30.5⁰, 32.0⁰, 31.375⁰
Easting: 36.375⁰, 38.0⁰

Processing procedure in SPANS:

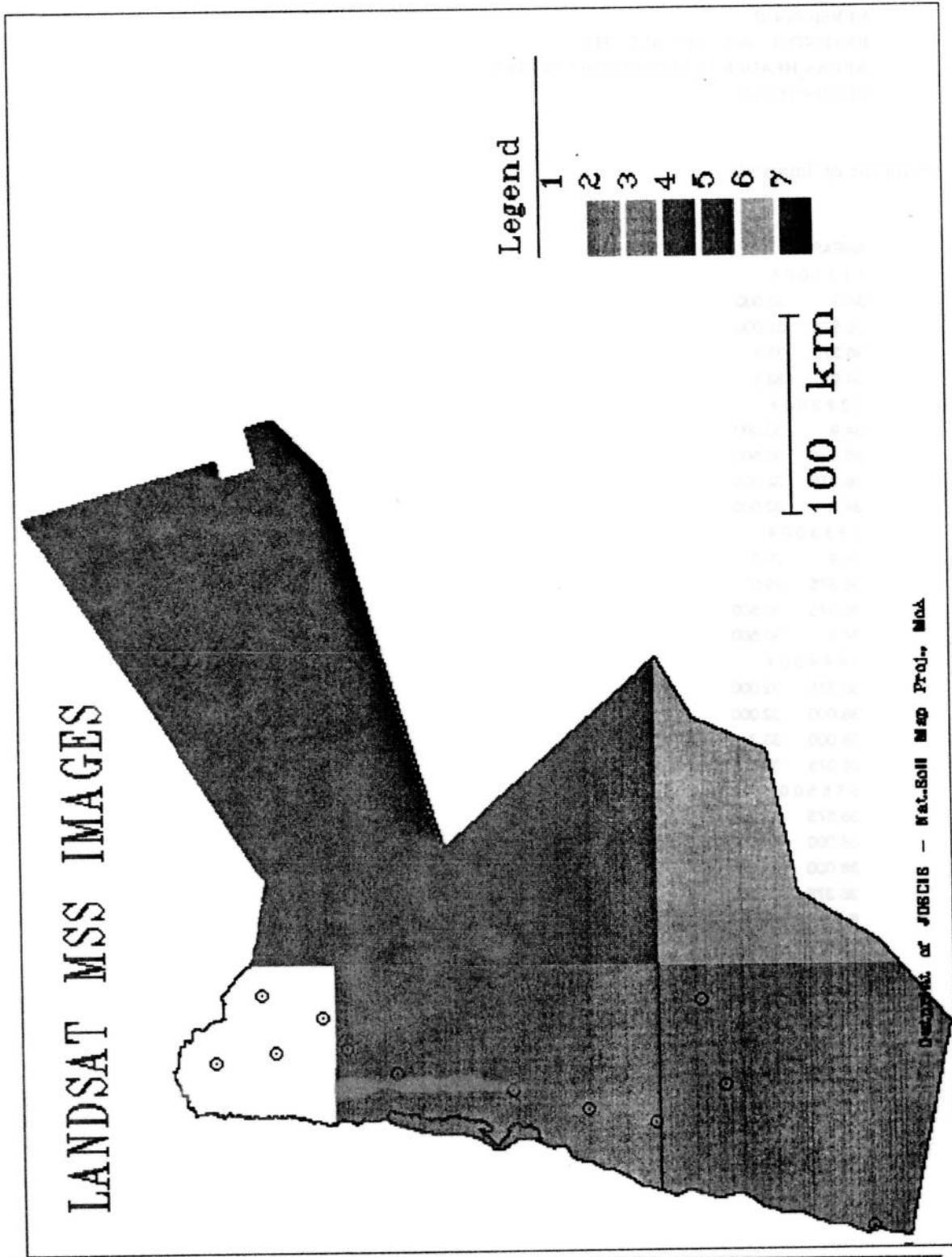
Definition of VEC and VEH files as listed below (with Q editor)
Transform - Import - Vector
Transform - Data Types - Polygons to Map

SINGLE MAP ANALYSIS

Map : imagtot - LANDSAT MSS IMAGES

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	1	5.90	5.90	5264.7
2	2	17.02	22.93	15182.5
3	3	19.21	42.14	17136.2
4	4	10.58	52.72	9433.0
5	5	21.43	74.14	19112.8
6	6	10.16	84.31	9064.8
7	7	15.69	100.00	13995.7
Total of 7 classes		100.00		89189.6



Vector header file of 'imagtot':

```
FILE_TYPE P O U 3 1
VERSION 4.02
EXTENTS 1 24.9 29.0 41.5 33.5
AREAS_HEADER 7 1 1 0.0 0.0 0.0 0.0 7 3 4 7 5 6 0
PROJECTION 0
```

Vector file of 'imagtot':

```
AREAS
1 1 1 1 0 0 4
34.9 32.000
36.375 32.000
36.375 33.3
34.9 33.3
2 2 2 2 0 0 4
34.9 30.500
36.375 30.500
36.375 32.000
34.9 32.000
3 3 3 3 0 0 4
34.9 29.0
36.375 29.0
36.375 30.500
34.9 30.500
4 4 4 4 0 0 4
36.375 32.000
38.000 32.000
38.000 33.3
36.375 33.3
5 5 5 5 0 0 4
36.375 30.500
38.000 30.500
38.000 32.000
36.375 32.000
6 6 6 6 0 0 4
36.375 29.2
38.000 29.2
38.000 30.500
36.375 30.500
7 7 7 7 0 0 4
38.000 31.750
39.500 31.750
39.500 33.5
38.000 33.5
```

Full name: Landsat MSS images, Band 1 (yellow-red, visible)
Short name: MSS1TOT
Digitized features: Landsat MSS image, band 1 (yellow-red, visible),
classification scheme 6: equally distributed in 13 classes

Source (authority): EOSAT
Source map(s): Digital data
Source map projection: corrected to JTM
Source map scale: raster size 70 x 70 m

Sheet index: - (see page G 5.3-15)
Sheets: 1...7

in total: 7 sheets
joining sequence: 1...7

Number of units: 13
Colour of units: 1...13, last:13
Dead Sea: -

Level codes: -
Feature codes: -
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: -
Date of digitization: compiled June 1993

Remarks: Map 'mss1tot' is split in two: mss1_w' and 'mss1_e' covering the Western and Eastern part of Jordan, because the entire map 'mss1tot' can not be displayed and processed with the present memory setup.

Browse file 'mss1tot' for entire Jordan exists.

Additionally, there is a browse file 'mss1tott' with the same information (image enhancements) as above, but covering Jordan **and** the adjacent border areas.

Statistics for Raster : sheet2

Number of rows : 2745
 Number of columns : 2594
 Horizontal pixel length (m) : 75.09
 Vertical pixel length (m) : 75.07
 Sampling interval and (type) : 1 90000 (-2)
 Sampling ratio : 1.000
 Number of sampled pixels : 7120530

Statistics of sampled pixels

Band	1	2	3
Mean	105.53	103.48	103.48
Stand. deviation	67.32	65.97	63.28
Minimum	0	0	0
Maximum	255	255	255
Min of all pixels	0	0	0
Max of all pixels	255	255	255

Variance-covariance matrix

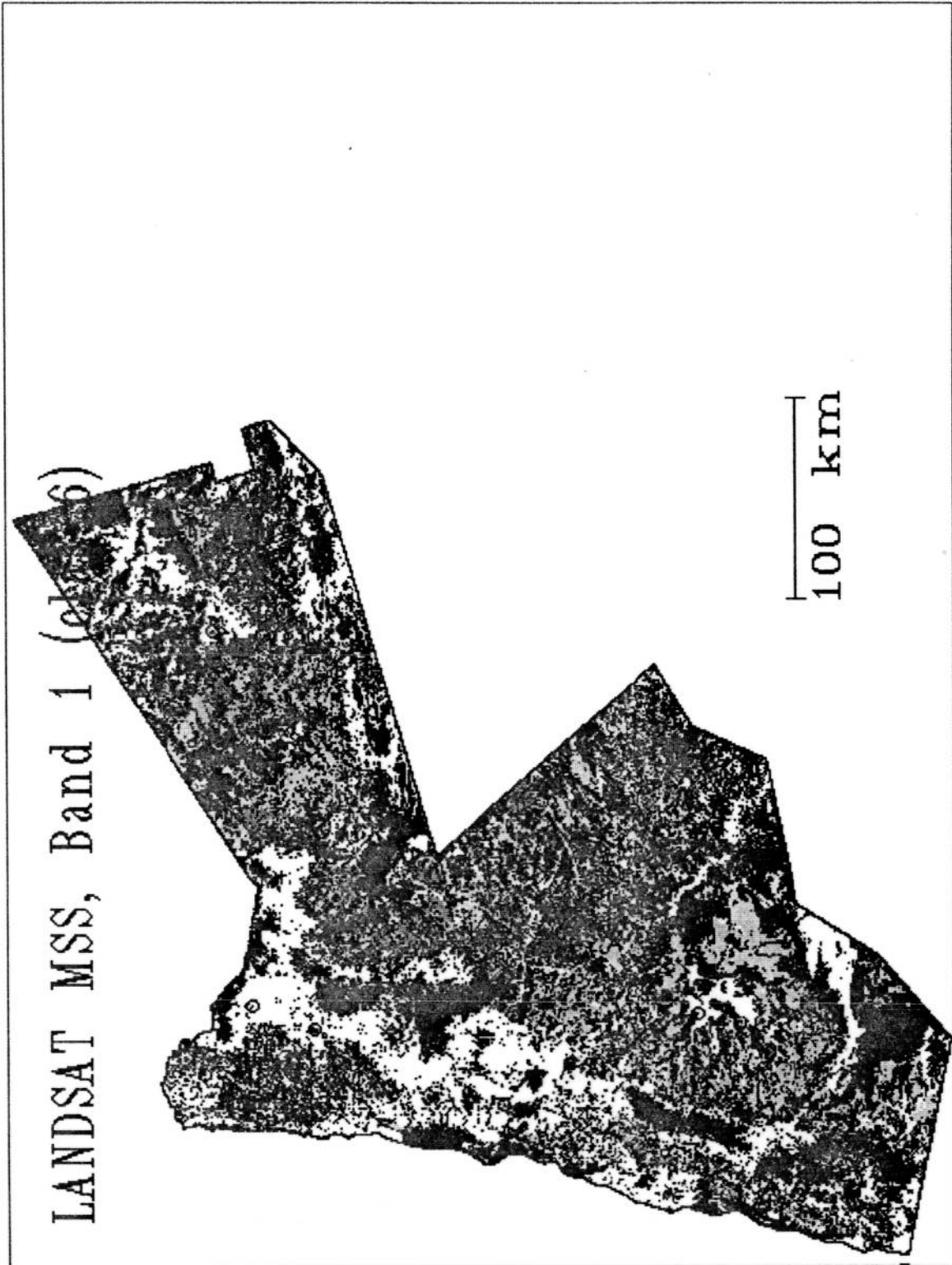
1	4531.4		
2	4283.9	4351.8	
3	4066.6	4120.4	4004.3

Correlation matrix

1	1.00		
2	0.96	1.00	
3	0.95	0.99	1.00

Band 1

Val	Freq	C Freq	% Freq	C % Freq
---	----	-----	-----	-----
0	1730809	1730809	24.31	24.31
1	8543	1739352	0.12	24.43
2	90	1739442	0.00	24.43
3	117	1739559	0.00	24.43
4	189	1739748	0.00	24.43
5	396	1740144	0.01	24.44
6	524	1740668	0.01	24.45
247	147	7088321	0.00	99.55
248	122	7088443	0.00	99.55
249	138	7088581	0.00	99.55
250	74	7088655	0.00	99.55
251	66	7088721	0.00	99.55
252	75	7088796	0.00	99.55
253	74	7088870	0.00	99.56
255	31660	7120530	0.44	100.00





Full name: Landsat MSS images, Band 2 (near infra-red, invisible)
Short name: MSS2TOT
Digitized features: Landsat MSS image, band 2 (near infra-red, invisible),
classification scheme 6: equally distributed in 13 classes

Source (authority): EOSAT
Source map(s): Digital data
Source map projection: corrected to JTM
Source map scale: raster size 70 x 70 m

Sheet index: - (see page G 5.3-15)
Sheets: 1...7

in total: 7 sheets
joining sequence: 1...7

Number of units: 13
Colour of units: 1...13, last:13
Dead Sea: -

Level codes: -
Feature codes: -
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: -
Date of digitization: compiled June 1993

Remarks: Map 'mss2tot' is split in two: mss2_w' and 'mss2_e' covering the Western and Eastern part of Jordan, because the entire map 'mss2tot' can not be displayed and processed with the present memory setup.

Browse file 'mss2tot' for entire Jordan exists.

Additionally, there is a browse file 'mss2tott' with the same information (image enhancements) as above, but covering Jordan **and** the adjacent border areas.

Statistics for Raster : sheet2

Number of rows : 2745
 Number of columns : 2594
 Horizontal pixel length (m) : 75.09
 Vertical pixel length (m) : 75.07
 Sampling interval and (type) : 1 90000 (-2)
 Sampling ratio : 1.000
 Number of sampled pixels : 7120530

Statistics of sampled pixels

Band	1	2	3
Mean	105.53	103.48	103.48
Stand. deviation	67.32	65.97	63.28
Minimum	0	0	0
Maximum	255	255	255
Min of all pixels	0	0	0
Max of all pixels	255	255	255

Variance-covariance matrix

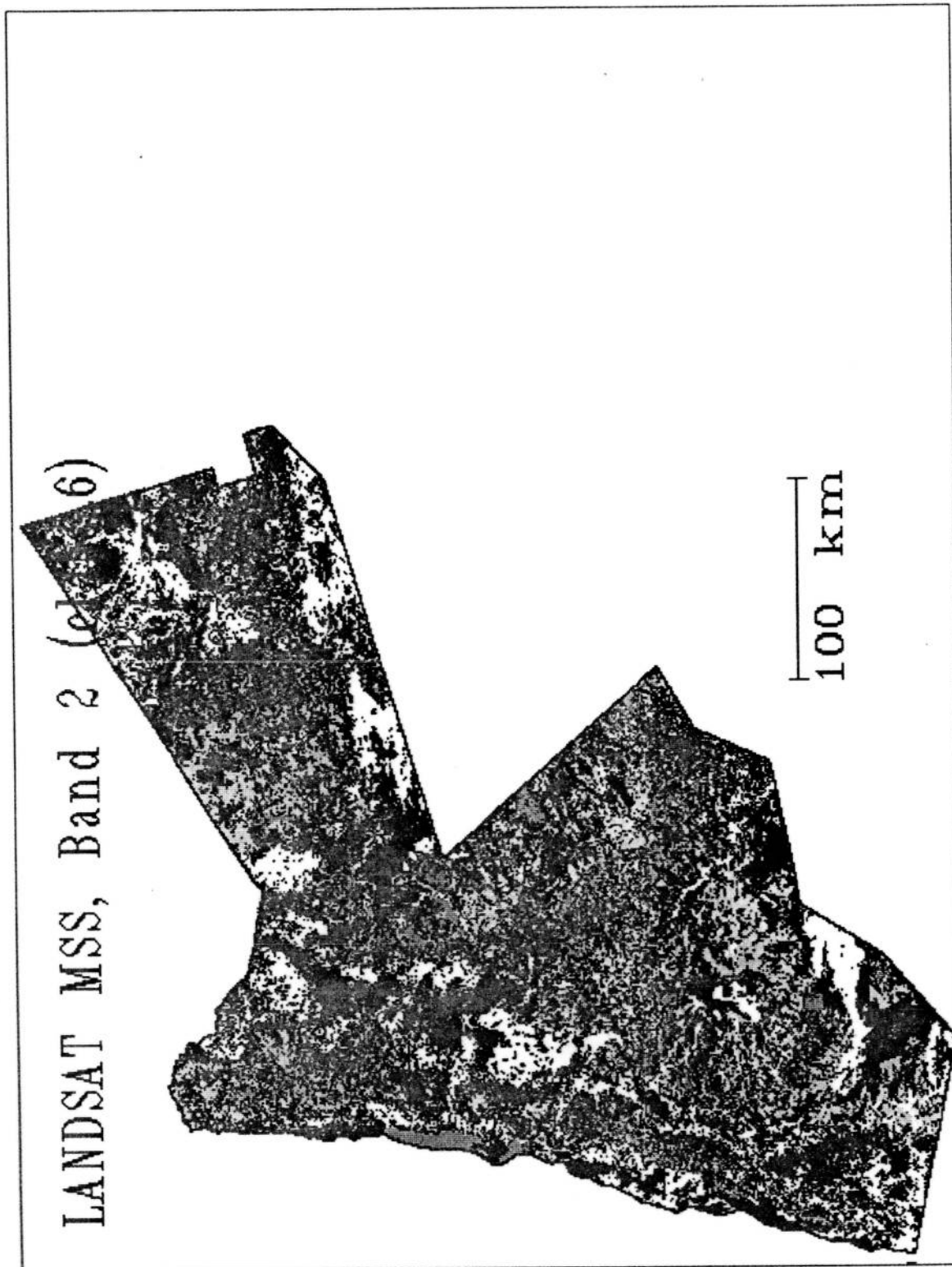
1	4531.4		
2	4283.9	4351.8	
3	4066.6	4120.4	4004.3

Correlation matrix

1	1.00		
2	0.96	1.00	
3	0.95	0.99	1.00

Band 2

Val	Freq	C Freq	% Freq	C % Freq
0	1721693	1721693	24.18	24.18
1	8516	1730209	0.12	24.30
2	55	1730264	0.00	24.30
3	39	1730303	0.00	24.30
4	48	1730351	0.00	24.30
5	121	1730472	0.00	24.30
246	121	7088568	0.00	99.55
247	86	7088654	0.00	99.55
248	69	7088723	0.00	99.55
249	90	7088813	0.00	99.55
250	53	7088866	0.00	99.56
251	65	7088931	0.00	99.56
253	21	7088952	0.00	99.56
255	31578	7120530	0.44	100.00





Full name: Landsat MSS images, Band 3 (near/mid infra-red, invisible)
Short name: MSS3TOT
Digitized features: Landsat MSS image, band 3 (near/mid infra-red, invisible),
classification scheme 6: equally distributed in 13 classes

Source (authority): EOSAT
Source map(s): Digital data
Source map projection: corrected to JTM
Source map scale: raster size 70 x 70 m

Sheet index: - (see page G 5.3-15)
Sheets: 1...7

in total: 7 sheets
joining sequence: 1...7

Number of units: 13
Colour of units: 1...13, last:13
Dead Sea: -

Level codes: -
Feature codes: -
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: -
Date of digitization: compiled June 1993

Remarks: Map 'mss3tot' is split in two: mss3_w' and 'mss3_e' covering the Western and Eastern part of Jordan, because the entire map 'mss3tot' can not be displayed and processed with the present memory setup.

Browse file 'mss3tot' for entire Jordan exists.

Additionally, there is a browse file 'mss3tott' with the same information (image enhancements) as above, but covering Jordan **and** the adjacent border areas.

Statistics for Raster : sheet2

Number of rows : 2745
 Number of columns : 2594
 Horizontal pixel length (m) : 75.09
 Vertical pixel length (m) : 75.07
 Sampling interval and (type) : 1 90000 (-2)
 Sampling ratio : 1.000
 Number of sampled pixels : 7120530

Statistics of sampled pixels

Band	1	2	3
Mean	105.53	103.48	103.48
Stand. deviation	67.32	65.97	63.28
Minimum	0	0	0
Maximum	255	255	255
Min of all pixels	0	0	0
Max of all pixels	255	255	255

Variance-covariance matrix

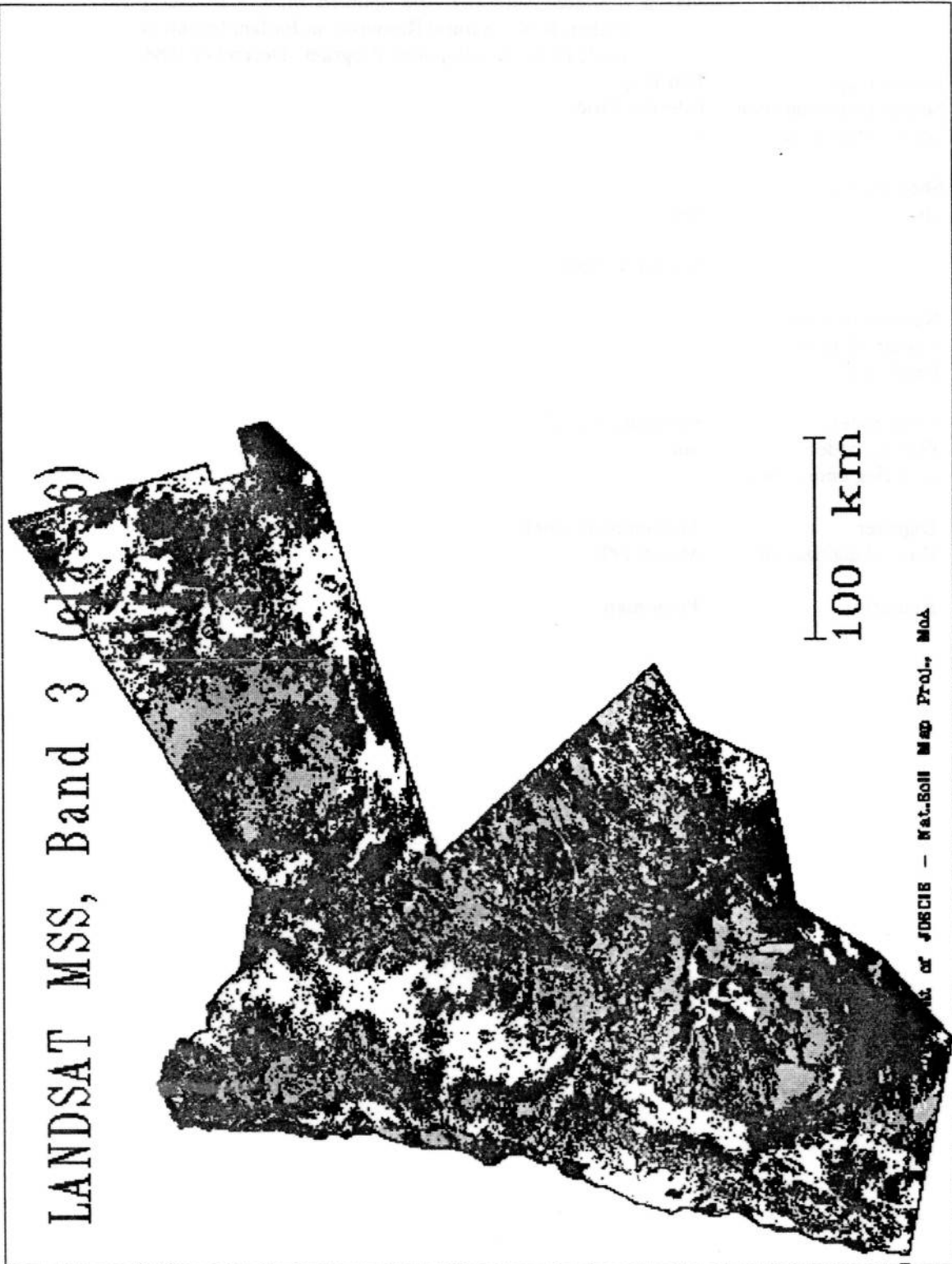
1	4531.4		
2	4283.9	4351.8	
3	4066.6	4120.4	4004.3

Correlation matrix

1	1.00		
2	0.96	1.00	
3	0.95	0.99	1.00

Band 3

Val	Freq	C Freq	% Freq	C % Freq
---	----	-----	-----	-----
0	1721590	1721590	24.18	24.18
1	8505	1730095	0.12	24.30
2	28	1730123	0.00	24.30
4	26	1730149	0.00	24.30
5	93	1730242	0.00	24.30
6	27	1730269	0.00	24.30
7	25	1730294	0.00	24.30
246	996	7084494	0.01	99.49
247	829	7085323	0.01	99.51
249	677	7086000	0.01	99.52
250	576	7086576	0.01	99.52
251	405	7086981	0.01	99.53
252	338	7087319	0.00	99.53
253	309	7087628	0.00	99.54
255	32902	7120530	0.46	100.00



Full name: Oil and gas exploration wells
Short name: OILXTOT
Digitized features: Positive oil and gas explorations as site location of wells

Source (authority): Natural Resource Authority: Abu-Ajamieh, M.M. + Bender, F.K. +
Eicher, R.N.: 'Natural Resources in Jordan, Inventory -
Evaluation - Development Program'; December 1988

Source map(s): Text map
Source map projection: Palestine Grid
Source map scale: -

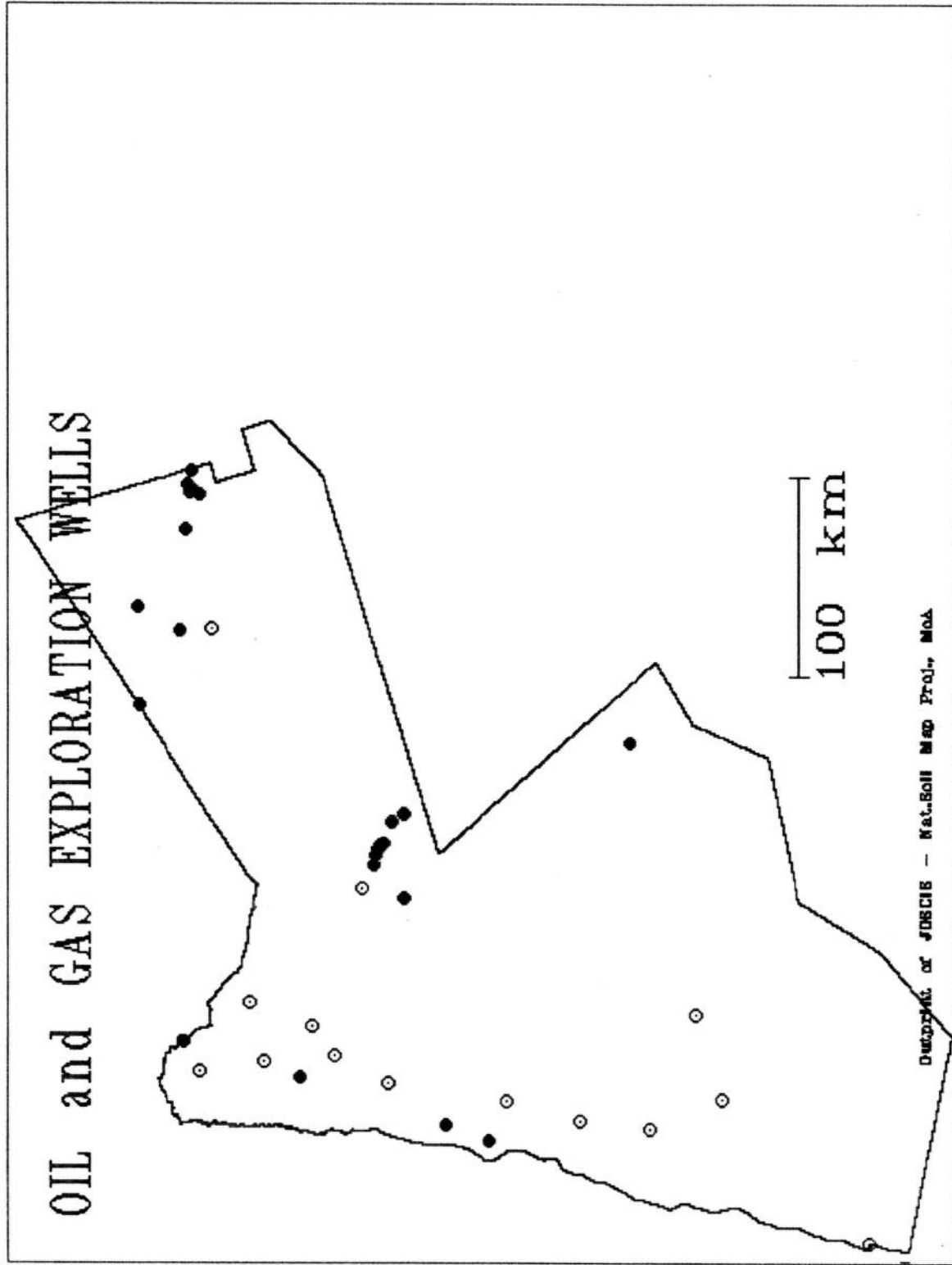
Sheet index: -
Sheets: AA
in total: 1 sheet

Number of units: 1
Colour of units: -
Dead Sea: -

Level codes: not used (only '1')
Feature codes: only '1'
Covering entire Jordan: -

Digitizer: Mohammed Sameh
Date of digitization: March 1993

Remarks: Point map





Full name: Outline
Short name: OUTXTOT
Digitized features: International boundary of Jordan

Source (authority): RJGC (date: 1960's)
Source map(s): Topographic map
Source map projection: Palestine Grid
Source map scale: 1:250,000

Sheet index: 'Old' 250000 topo sheet index
1.columns (A...F)
2.rows (1...5)

Sheets:

A	5
B	2...5
C	3...5
D	2...5
E	1...3
F	2

in total: 17 sheets

Number of units: 1
Colour of units: 6
Dead Sea: -

Level codes: not used (only '1')
Feature codes: only '1'
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
Date of digitization: November/December 1989

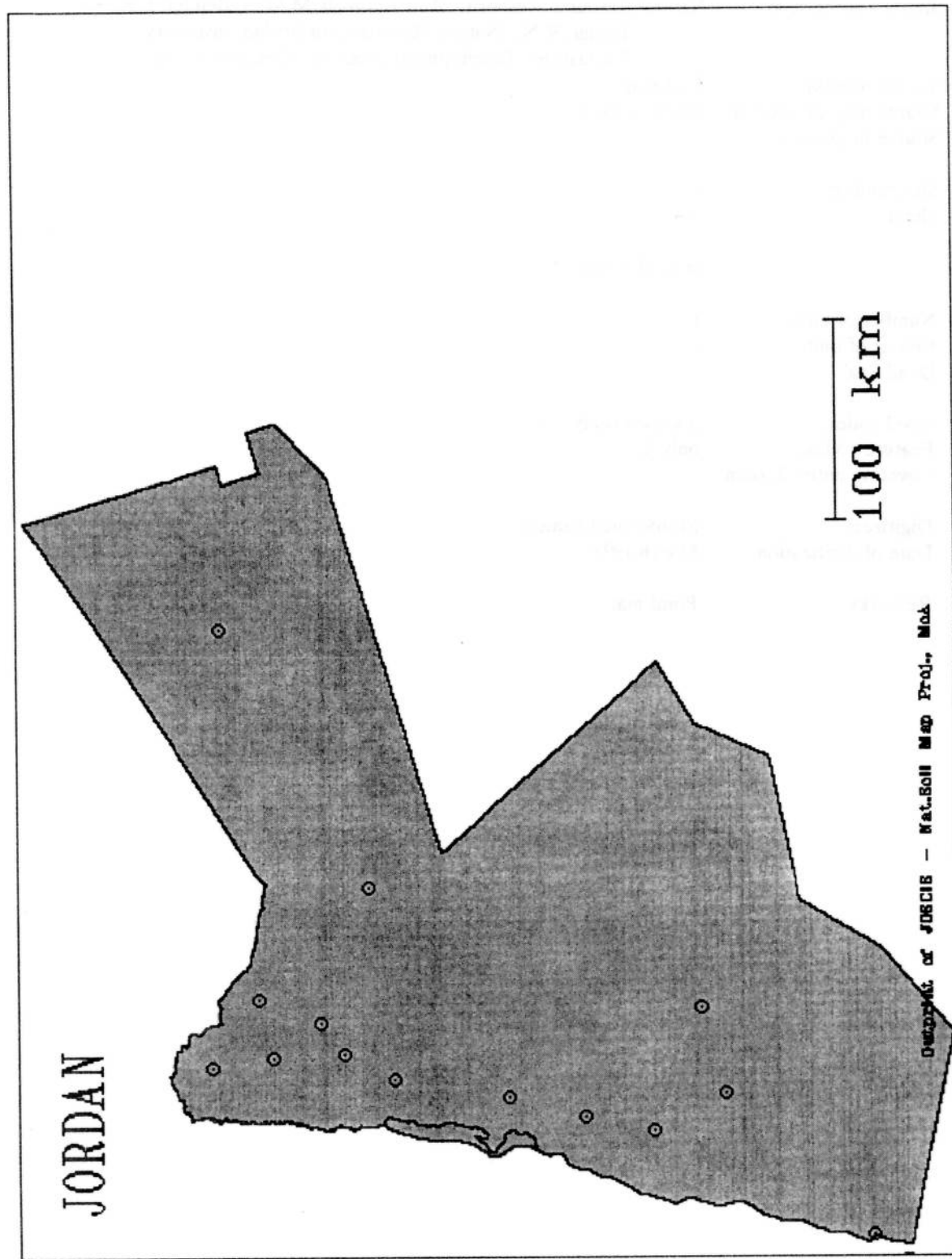
Remarks: Processed from altitude map ('altxtot': mapping units 1-23)
Boundary on Dead Sea in Northern part follows half distance to
Eastern shoreline
Boundary on Dead Sea in Southern part follows Armistic
Demarcation Line of 3/4/1949
Boundary at Red Sea follows shoreline
Boundary to Iraq follows new delineations

SINGLE MAP ANALYSIS

Map : outxtot - JORDAN

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	89187 km2	100.00	100.00	89190.1
Total of 1 classes		100.00		89190.1



Full name: Minalable phosphorite deposits
Short name: PHOSTOT
Digitized features: Phosphorite deposits which are minable

Source (authority): Natural Resource Authority: Abu-Ajamieh, M.M. + Bender, F.K. +
Eicher, R.N.: 'Natural Resources in Jordan, Inventory -
Evaluation - Development Program'; December 1988

Source map(s): Text map
Source map projection: Palestine Grid
Source map scale: -

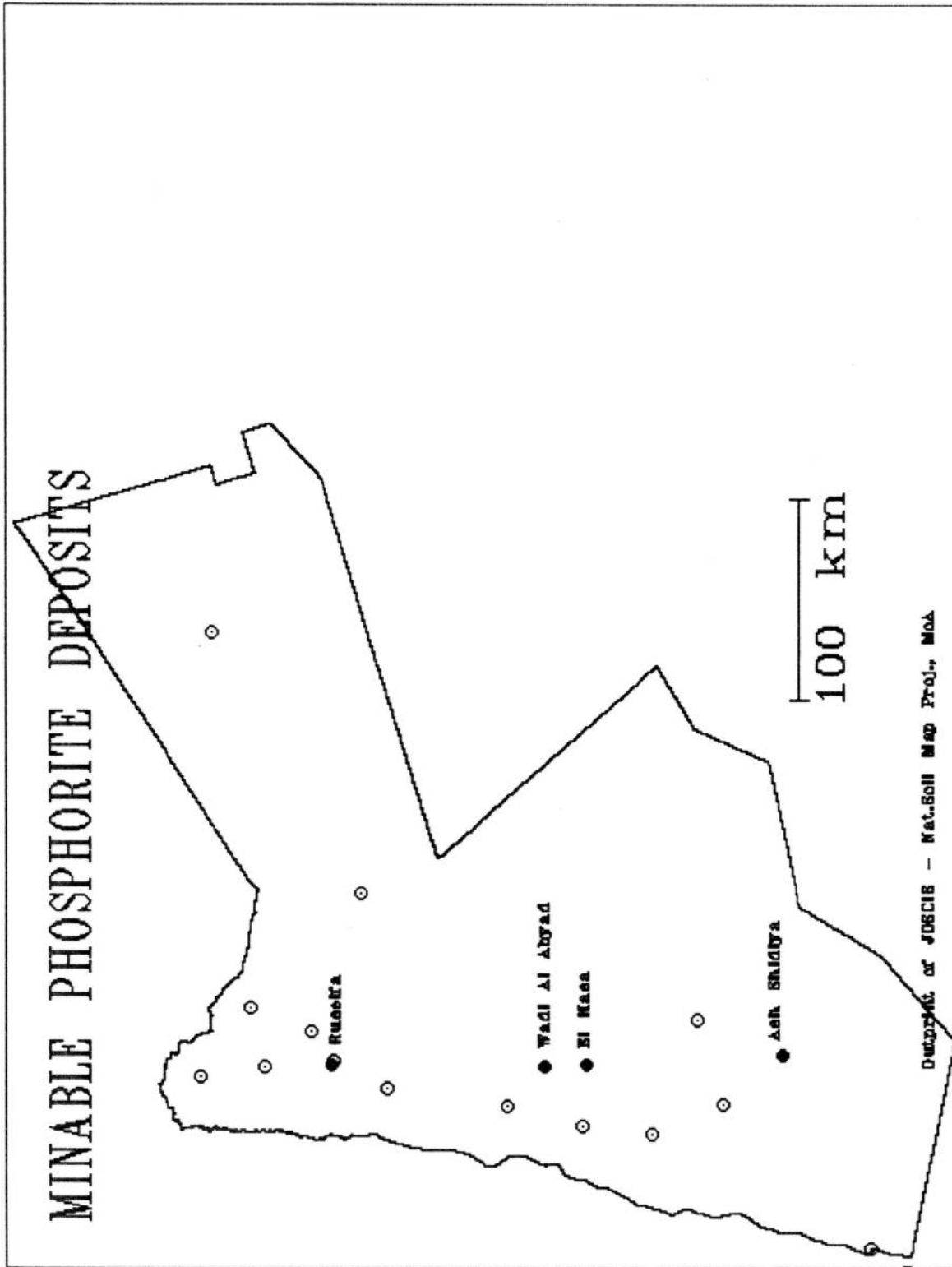
Sheet index: -
Sheets: AA
in total: 1 sheet

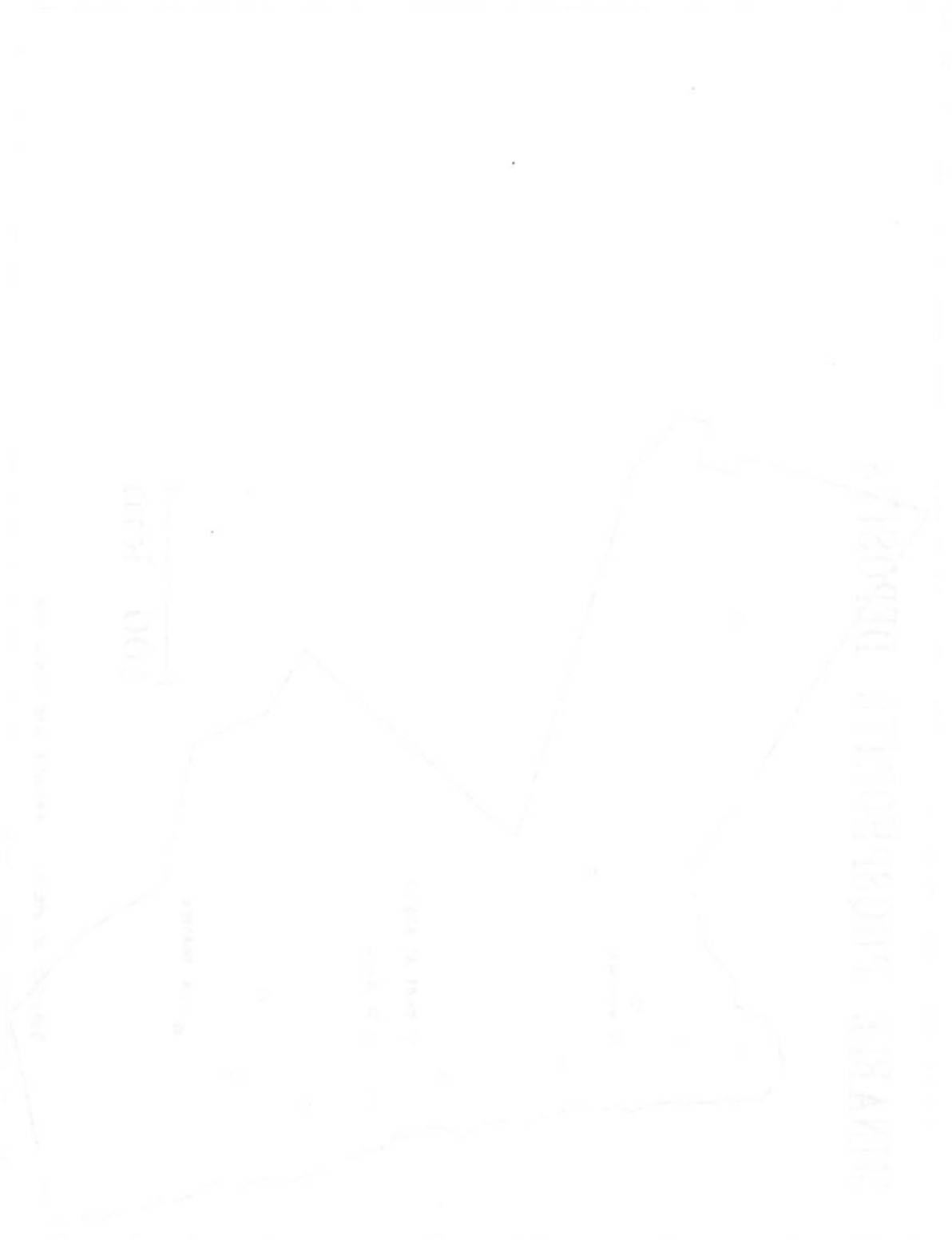
Number of units: 1
Colour of units: -
Dead Sea: -

Level codes: not used (only '1')
Feature codes: only '1'
Covering entire Jordan: -

Digitizer: Mohammed Sameh
Date of digitization: March 1993

Remarks: Point map





Full name: Physiographic - Geological Provinces
Short name: PHSGTOT
Digitized features: Physiographic - Geological Provinces

Source (authority): Natural Resource Agency / Bender, 1968
Source map(s):
Source map projection: Palestine Grid
Source map scale: 1:2,571,000

Sheet index: -
Sheets: AA
in total: 1 sheet

Number of units: 9
Colour of units: 6,5,3,8,7, 15,4,14,13
Dead Sea: Mapping unit 9 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Muhanned Kalaldeh
Date of digitization: 1990

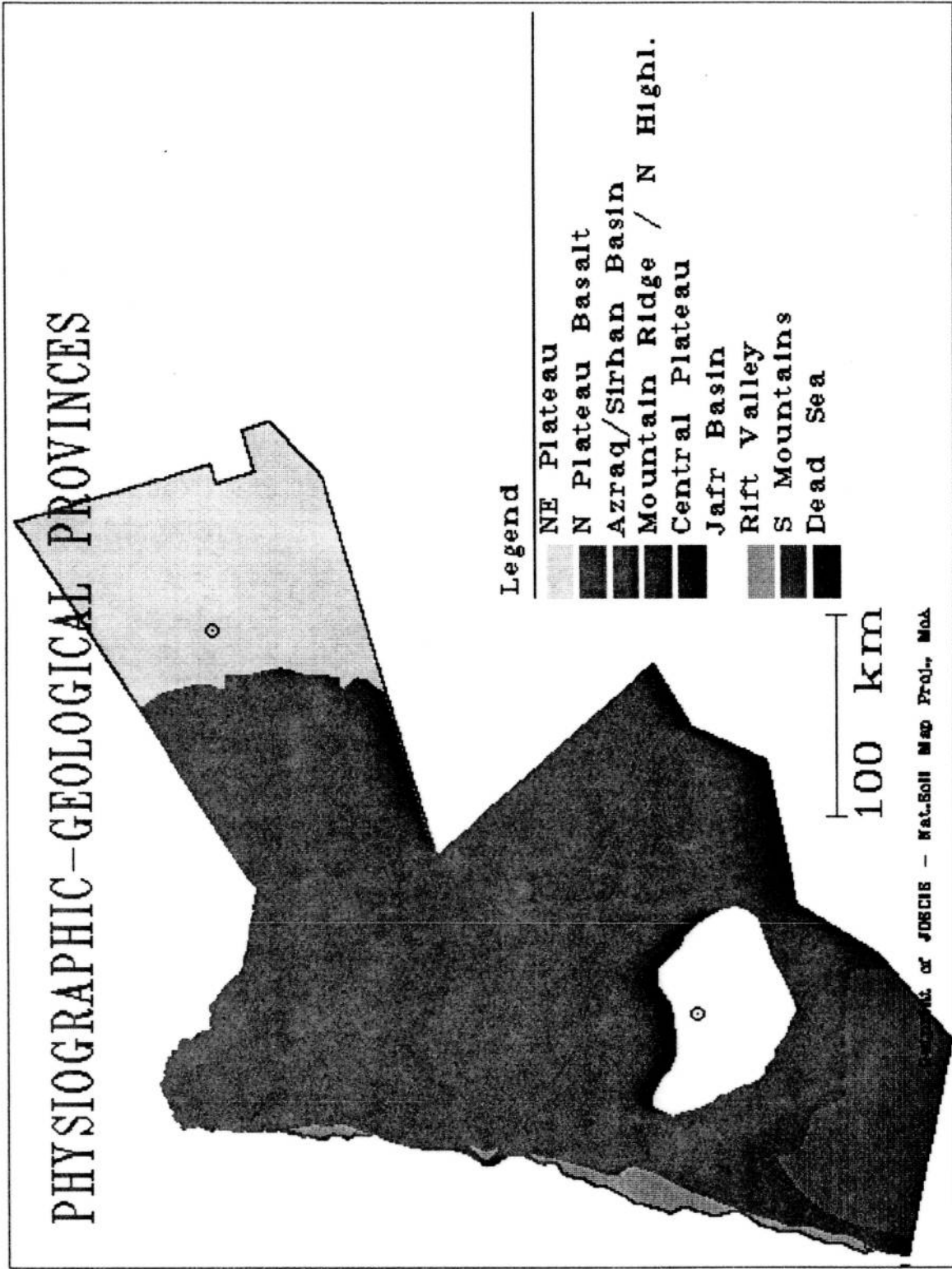
Remarks:

SINGLE MAP ANALYSIS

Map : phsgtot - PHYSIOGRAPHIC-GEOLOGICAL PROVINCES

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	NE Plateau	16.78	16.78	14968.4
2	N Plateau Basalt	12.85	29.63	11461.6
3	Azraq/Sirhan Basin	13.24	42.87	11807.4
4	Mountain Ridge / N Highl.	13.88	56.75	12377.1
5	Central Plateau	28.39	85.14	25323.4
6	Jafr Basin	5.32	90.46	4744.4
7	Rift Valley	1.59	92.05	1417.1
8	S Mountains	7.36	99.41	6560.8
9	Dead Sea	0.59	100.00	529.9
Total of 9 classes		100.00		89190.0





Full name: Project Phase II / field (final) version
 Short name: PR2DTOT
 Digitized features: Areas of survey of Phase II of the National Soil Map Project,
 as observed during / after field work

Source (authority): National Soil Map Project, field work
 Source map(s): Topographic maps, with delineation in the field
 Source map projection: Columns A...E: UTM (36); columns J and K: UTM (37)
 Source map scale: 1:25,000

Sheet index: 25,000 scale index
 Sheets: (not complete yet)

joining sequence:

A	G...K,M,N
B	9,A,B,F...J
C	8,9,A,B,G,H
D	8,9,A,B
E	8,B
J	5,6
K	5,6

Number of units: 6
 Colour of units: 5,7,6,3,8, 12
 Legend refers to 'pr2xtot'

Dead Sea: -

Level codes: not used (only '1')
 Feature codes: mapping units
 Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
 Date of digitization: Starting from January 1993

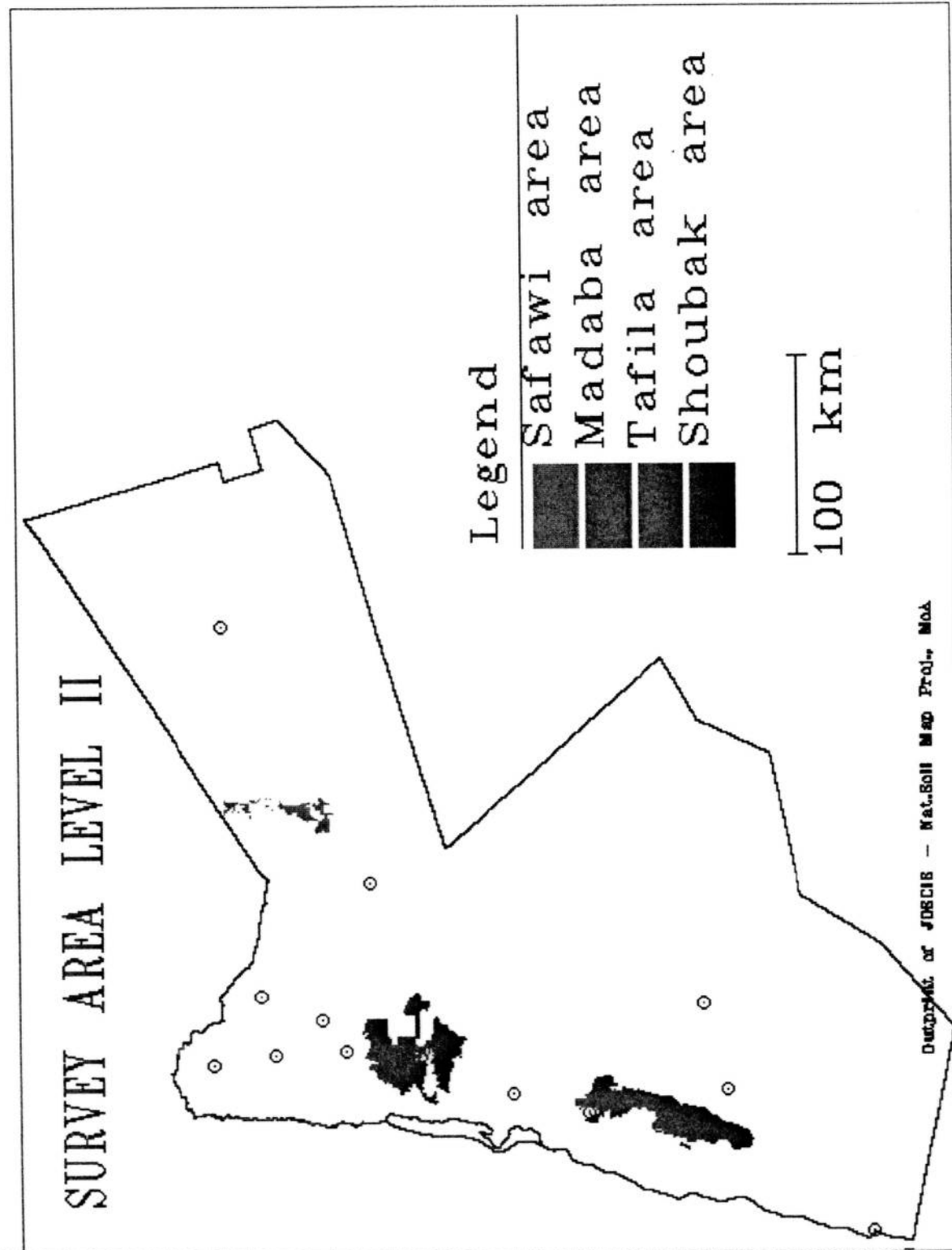
Remarks: Map is of 1/8/93, not complete yet !
 'Karak' area (unit 3) and 'Mafraq area' (unit 6) are not delineated yet
 The map is going to replace 'pr2xtot': Preliminary version of Level II areas of
 National Soil Map Project

SINGLE MAP ANALYSIS

Map : pr2dtot - SURVEY AREA LEVEL II

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Safawi area	9.67	9.67	266.91
2	Madaba area	44.45	54.12	1227.13
4	Tafila area	19.05	73.18	526.02
5	Shoubak area	26.82	100.00	740.47
Total of 4 classes		100.00		2760.53





Full name: Project Phase II / preliminary version
Short name: PR2XTOT
Digitized features: Areas of survey of Phase II of the National Soil Map Project,
as proposed for Phase II

Source (authority): National Soil Map Project
Source map(s): Working copy
Source map projection: Palestine Grid
Source map scale: Most 1:25,000, and a few in 1:50,000

Sheet index: Same as 'pr2dtot'
Sheets: Same as 'pr2dtot'

Number of units: 6
Colour of units: 5,7,6,3,8, 12
Dead Sea: -

Level codes: not used (only '1')
Feature codes: mapping units
Legend 'pr2xtot' is referred to by all 'pr2?tot' maps
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
Date of digitization: 1992

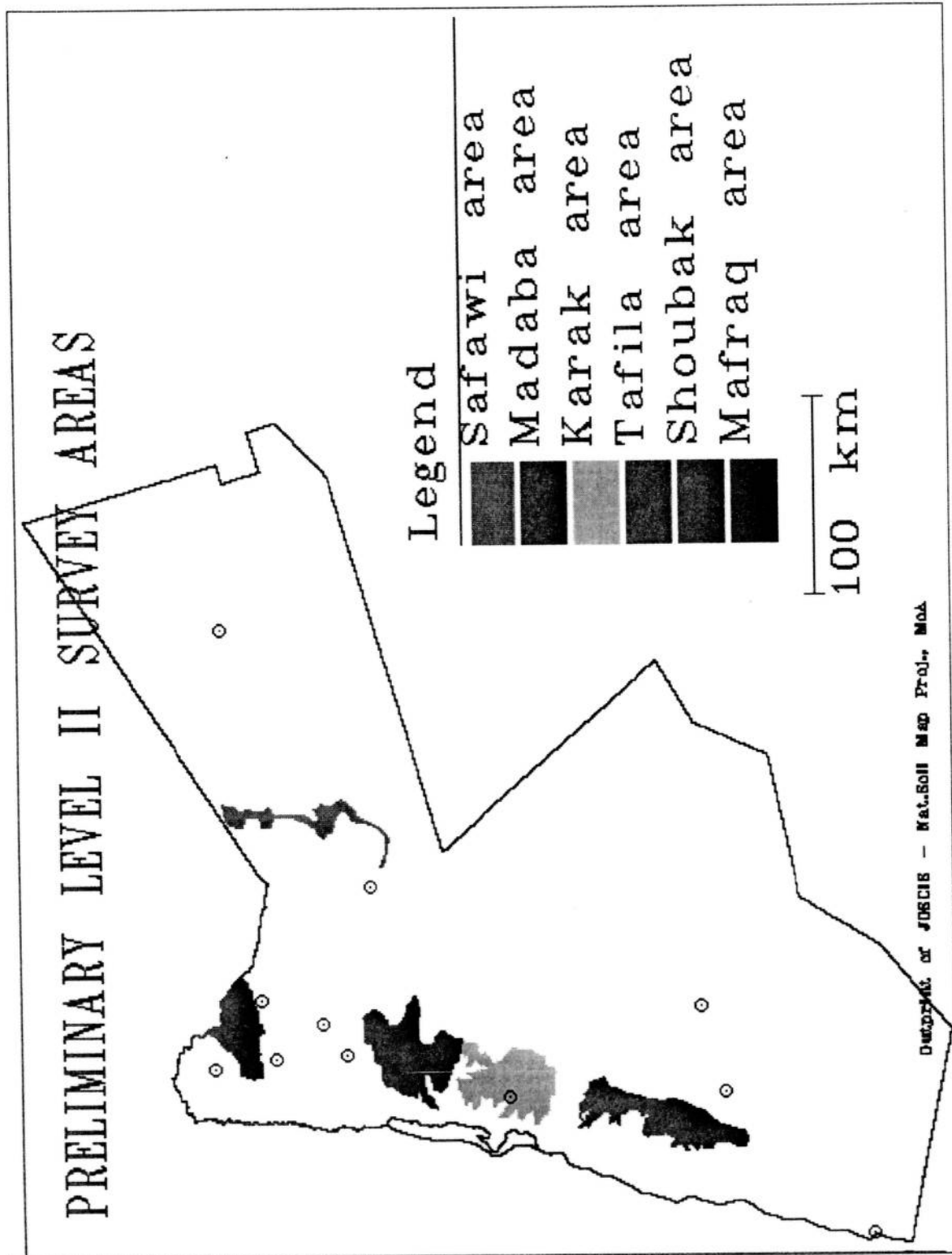
Remarks: Unit no. 6: 'Mafraq area' is transferred from 'exs1tot' map, unit 6: 'Infill area'

SINGLE MAP ANALYSIS

Map : pr2xtot - PRELIMINARY LEVEL II SURVEY AREAS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Safawi area	10.73	10.73	600.59
2	Madaba area	26.87	37.59	1504.35
3	Karak area	23.98	61.57	1342.48
4	Tafila area	9.38	70.95	525.24
5	Shoubak area	14.60	85.55	817.68
6	Mafraq area	14.45	100.00	808.83
Total of 6 classes		100.00		5599.17





Full name: Precipitation / NWMP
Short name: PRC1TOT
Digitized features: Precipitation units, as assessed in National Water Master Plan

Source (authority): National Water Master Plan, Water Authority
Source map(s): SW - 4.1
Source map projection: Palestine Grid
Source map scale: 1:1,000,000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 14; conversion formula: mm p.a. = mapping unit no. * 50 - 25
Colour of units: 6,5,4,3,7, 8,9,14,13,12, 11,10,1,13
Legend refers to 'pr2xtot'

Dead Sea: Mapping unit 14 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
Date of digitization: Early 1990

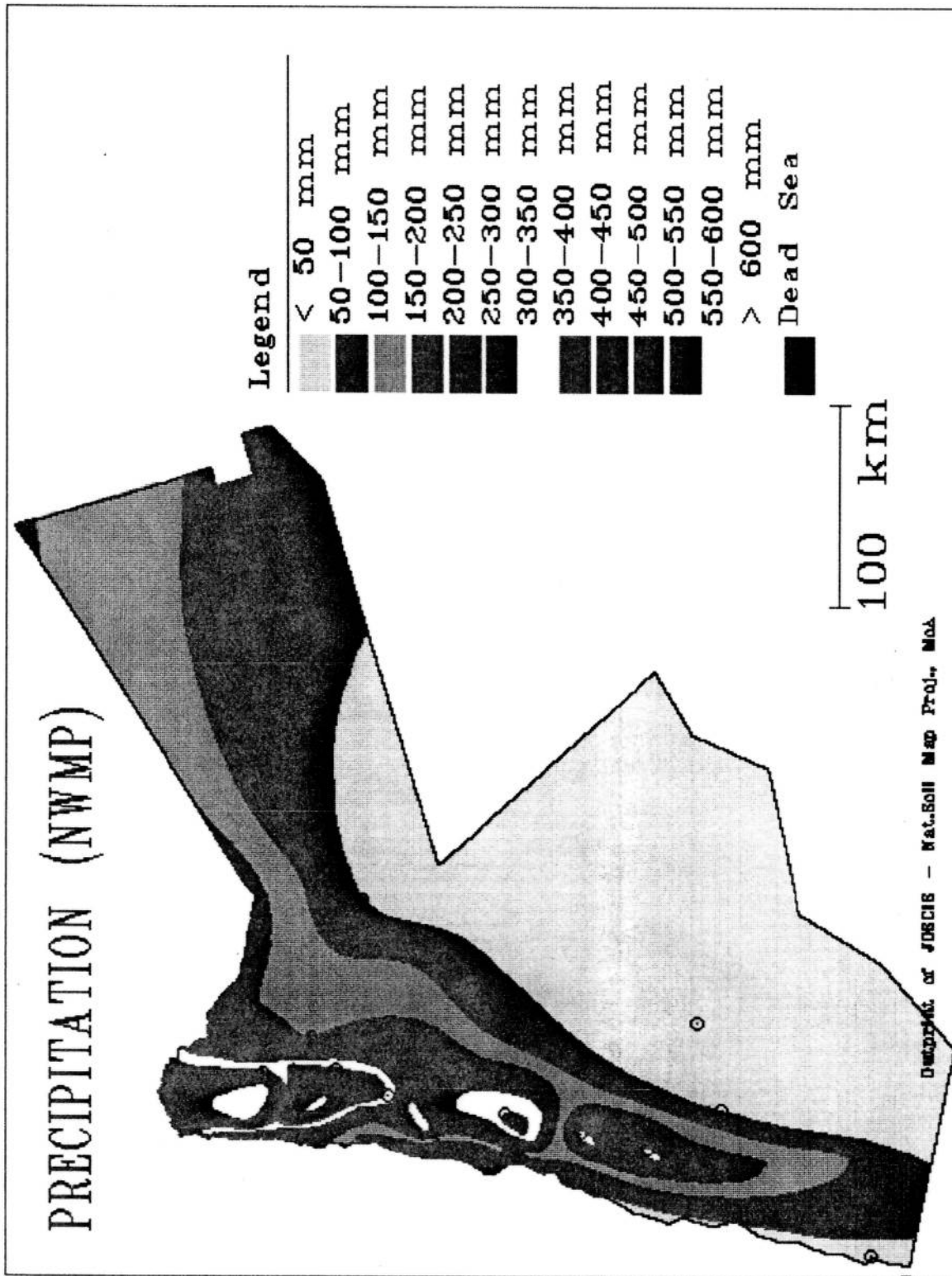
Remarks: See similar map 'prc2tot' (page G 5.2-169)

SINGLE MAP ANALYSIS

Map : prcltot - PRECIPITATION (NWMP)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	< 50 mm	41.26	41.26	36796.7
2	50-100 mm	26.07	67.33	23252.6
3	100-150 mm	16.99	84.31	15149.2
4	150-200 mm	5.29	89.60	4717.1
5	200-250 mm	3.00	92.60	2672.3
6	250-300 mm	1.89	94.49	1684.7
7	300-350 mm	1.48	95.97	1319.3
8	350-400 mm	0.94	96.91	842.8
9	400-450 mm	0.68	97.59	608.9
10	450-500 mm	0.64	98.23	571.4
11	500-550 mm	0.77	99.00	686.2
12	550-600 mm	0.24	99.24	211.9
13	> 600 mm	0.16	99.41	147.1
14	Dead Sea	0.59	100.00	529.9
Total of 14 classes		100.00		89190.1





Full name: Precipitation / Water Authority
Short name: PRC2TOT
Digitized features: Precipitation units, as assessed by Water Authority

Source (authority): Water Authority
Source map(s):
Source map projection: Palestine Grid
Source map scale: 1:500,000

Sheet index: -
Sheets: AA + BB

in total: 3 sheets
joining sequence: AA - BB - then with CC off screen

Number of units: 14; conversion formula: mm p.a. = mapping unit no. * 50 - 25
Colour of units: 6,5,4,3,7, 8,9,14,13,12, 11,10,1,13
Legend refers to 'pr2xtot'

Dead Sea: Mapping unit 14 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
Date of digitization: Mid 1990

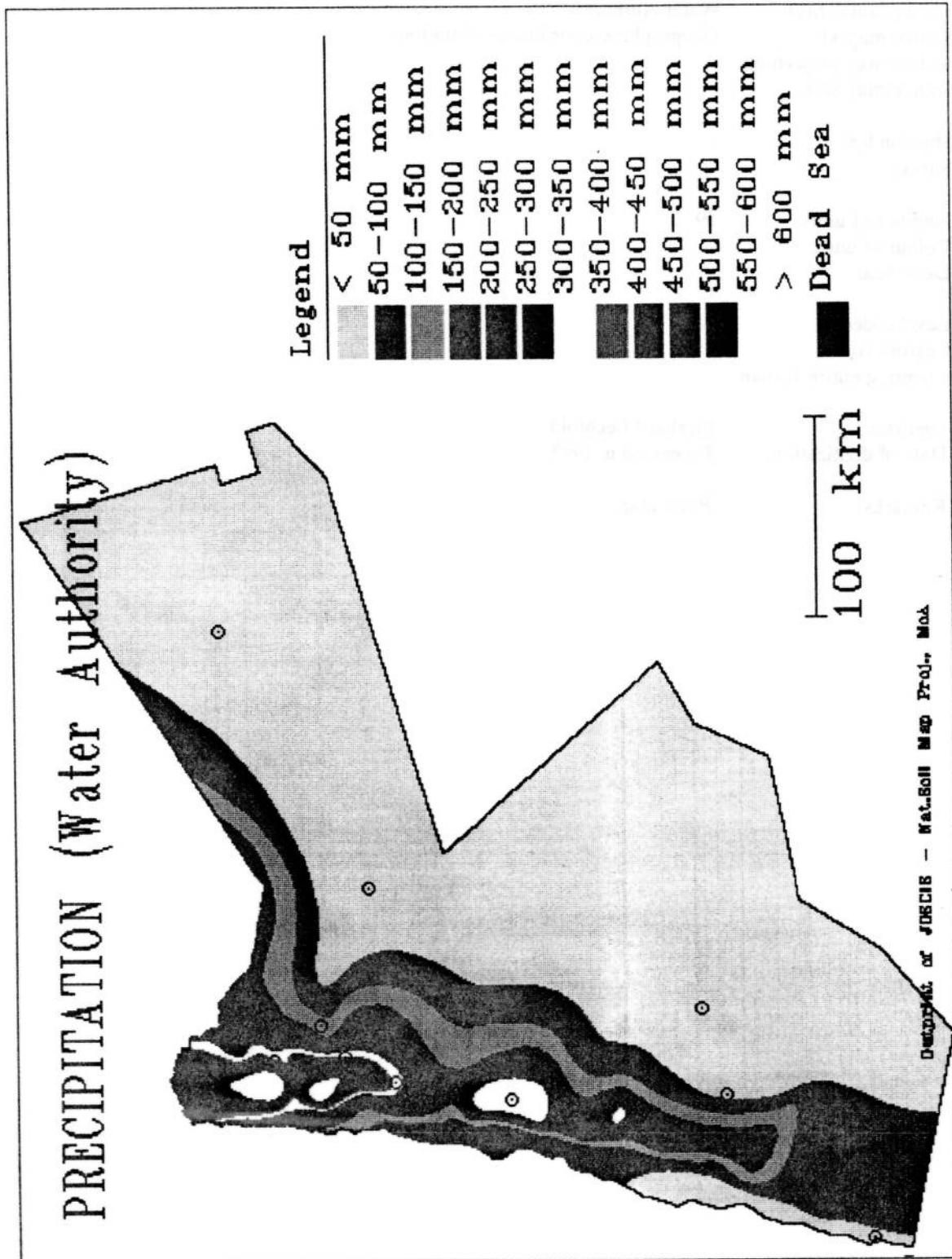
Remarks: See similar map 'prc1tot' (page G 5.2-165)

SINGLE MAP ANALYSIS

Map : prc2tot - PRECIPITATION (Water Authority)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	< 50 mm	65.82	65.82	58705.1
2	50-100 mm	14.40	80.23	12847.7
3	100-150 mm	5.80	86.03	5175.8
4	150-200 mm	4.46	90.49	3977.8
5	200-250 mm	2.41	92.90	2151.4
6	250-300 mm	1.97	94.87	1759.5
7	300-350 mm	1.34	96.21	1190.9
8	350-400 mm	0.69	96.90	616.7
9	400-450 mm	0.75	97.65	665.0
10	450-500 mm	0.62	98.27	554.0
11	500-550 mm	0.68	98.95	609.2
12	550-600 mm	0.21	99.16	188.3
13	> 600 mm	0.25	99.41	218.9
14	Dead Sea	0.59	100.00	529.9
Total of 14 classes		100.00		89190.1



Full name: Raingauges
Short name: RAINGAUG
Digitized features: Selected raingauges stations, of which data are available in JOSGIS

Source (authority): Water Authority
Source map(s): Geographical coordinates of stations
Source map projection: -
Source map scale: -

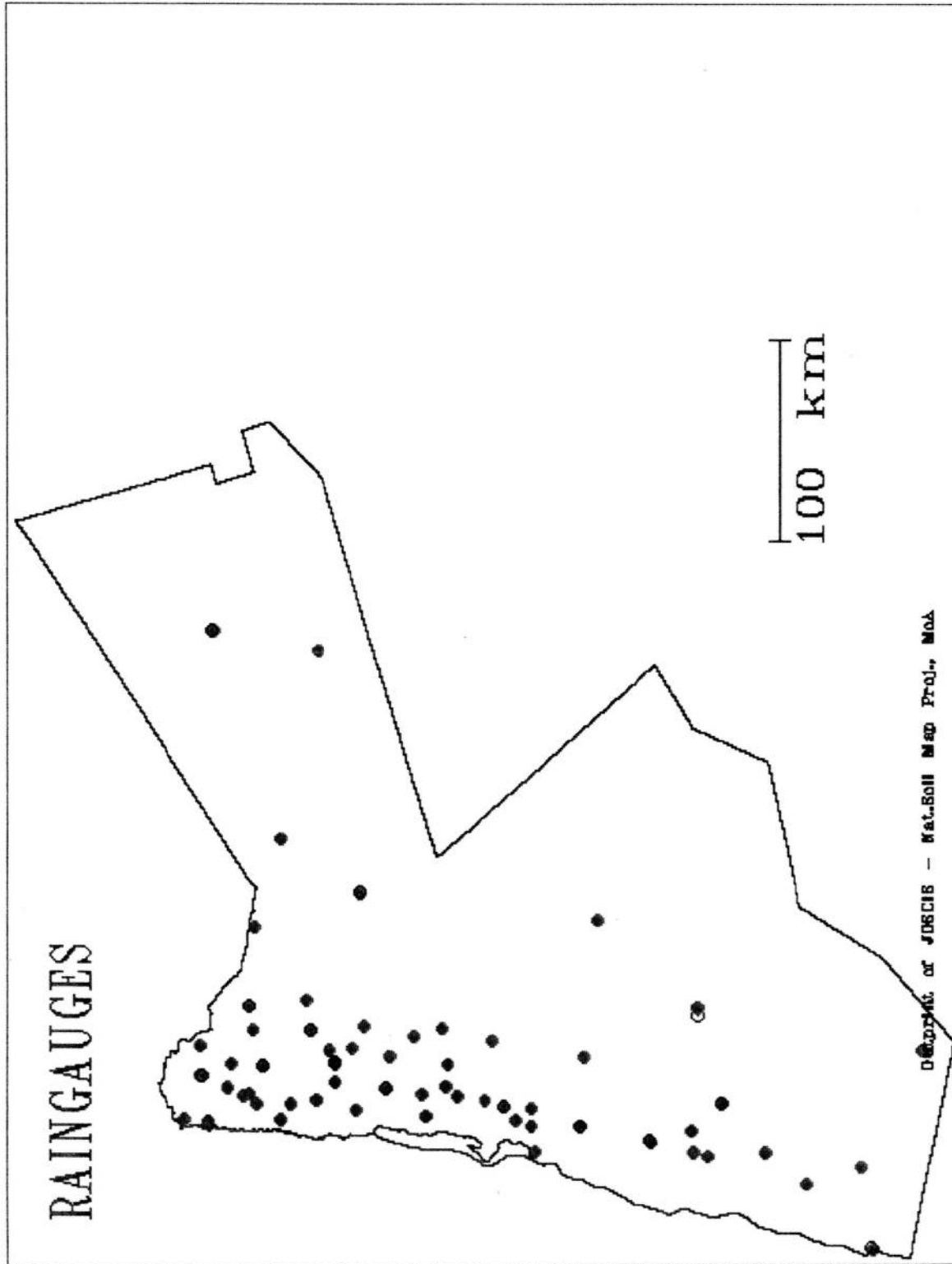
Sheet index: -
Sheets: -

Number of units: 59
Colour of units: -
Dead Sea: -

Level codes: -
Feature codes: -
Covering entire Jordan: -

Digitizer: Gerhard Bechtold
Date of digitization: Processed in 1992

Remarks: Point map





Full name: Land regions, version 2
Short name: REG2TOT
Digitized features: Land regions, 2.version, by R.Law

Source (authority): National Soil Map Project
Source map(s): Working document
Source map projection: Palestine Grid
Source map scale: 1:1,000,000

Sheet index: -
Sheets: AA + BB

in total: 2 sheets
joining sequence: AA - BB

Number of units: 19 (totally 20, but mapping unit 19 does not occur)
Legend 'reg2tot' is referred to by 'reg2tot' and 'reg3tot' maps

Colour of units: 1,7,10,14,4, 9,14,7,2,9, 5,6,8,12,3, 4,2,13,11,13
Dead Sea: Mapping unit 20 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Ali K.Odeh
Date of digitization: 1991

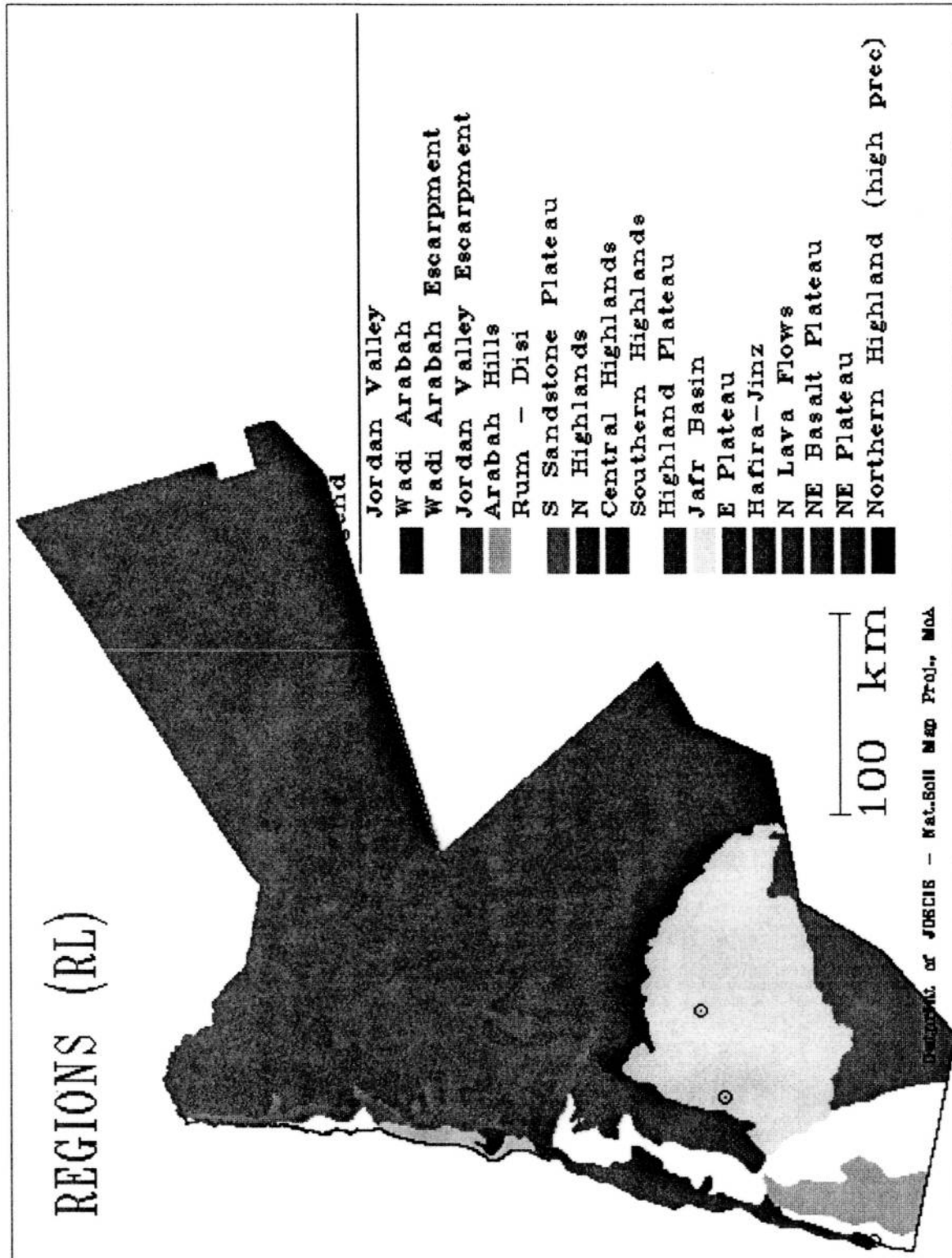
Remarks: This map replaces working version 'regxtot' (see page G 5.2-183), but has its final definition in map 'reg3tot' (which is an aggregation of soil mapping units according to their region, see page G 5.2-179).

SINGLE MAP ANALYSIS

Map : reg2tot - REGIONS (RL)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Jordan Valley	0.38	0.38	336.4
2	Wadi Arabah	1.93	2.31	1720.6
3	Wadi Arabah Escarpment	1.98	4.29	1769.7
4	Jordan Valley Escarpment	1.99	6.28	1776.8
5	Arabah Hills	1.99	8.27	1771.8
6	Rum - Disi	3.06	11.33	2725.7
7	S Sandstone Plateau	4.81	16.13	4286.5
8	N Highlands	4.41	20.54	3931.9
9	Central Highlands	1.93	22.47	1719.9
10	Southern Highlands	0.36	22.83	324.9
11	Highland Plateau	8.21	31.04	7324.5
12	Jafr Basin	12.23	43.27	10904.8
13	E Plateau	21.28	64.55	18975.7
14	Hafira-Jinz	3.62	68.17	3231.5
15	N Lava Flows	3.14	71.31	2798.4
16	NE Basalt Plateau	8.86	80.17	7903.5
17	NE Plateau	18.17	98.34	16207.3
18	Northern Highland (high prec)	1.07	99.41	950.2
20		0.59	100.00	529.9
Total of 19 classes		100.00		89190.1





Full name: Land regions, version 3
Short name: REG3TOT
Digitized features: Land regions, 3.version, final version, based on soil map (soi2tot) of Level I of National Soil Map Project,

Source (authority): National Soil Map Project
Source map(s): Soil map, Level I, delineated on Landsat MSS images
Source map projection: JTM
Source map scale: 1:250,000

Sheet index: same as / derived from 'soi2tot'
Sheets: same as / derived from 'soi2tot'

in total: 10 sheets

Number of units: 19
Legend refers to 'reg2tot'

Colour of units: 1..., last: 13
Dead Sea: Mapping unit 19 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units, reaggregated
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Mohammed Sameh
Date of digitization: February-June 1993

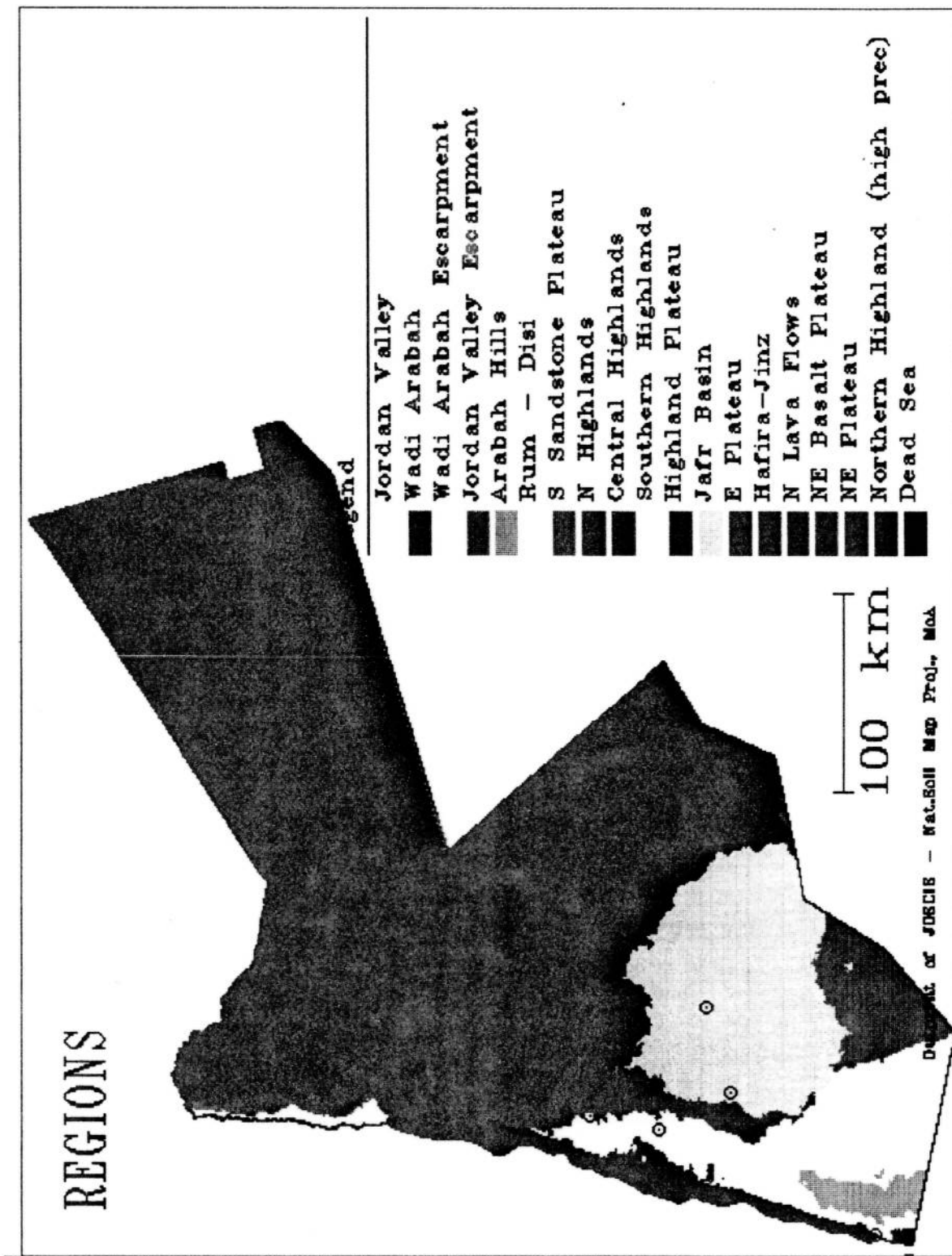
Remarks: Map was created by assignment of each soil mapping unit to a region (reaggregation of soil map of Level I: 'soi2tot', see page G 5.2-215)

SINGLE MAP ANALYSIS

Map : reg3tot - REGIONS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Jordan Valley	0.60	0.60	535.8
2	Wadi Arabah	2.34	2.94	2090.2
3	Wadi Arabah Escarpment	2.75	5.69	2448.6
4	Jordan Valley Escarpment	2.54	8.23	2262.1
5	Arabah Hills	1.17	9.40	1045.5
6	Rum - Disi	4.92	14.32	4392.0
7	S Sandstone Plateau	3.28	17.61	2929.7
8	N Highlands	4.60	22.20	4100.1
9	Central Highlands	1.32	23.52	1175.9
10	Southern Highlands	0.56	24.09	502.0
11	Highland Plateau	6.51	30.60	5809.0
12	Jafr Basin	12.06	42.66	10753.3
13	E Plateau	22.24	64.89	19834.5
14	Hafira-Jinz	3.92	68.81	3491.9
15	N Lava Flows	3.04	71.85	2710.9
16	NE Basalt Plateau	11.01	82.86	9822.2
17	NE Plateau	15.69	98.55	13997.0
18	Northern Highland (high prec)	0.85	99.41	759.4
19	Dead Sea	0.59	100.00	529.9
Total of 19 classes		100.00		89190.1





Full name: Land regions, version 1
Short name: REGXTOT
Digitized features: Land regions, 1.version, by N.Munro

Source (authority): National Soil Map Project
Source map(s):
Source map projection: Palestine Grid
Source map scale: 1:1,000,000

Sheet index: -
Sheets: A 1...3
B 1...3
C 1

in total: 7 sheets
joining sequence: A 1...3 - B 1...3 - C1

Number of units: 21 (totally 19, but mapping units 8 and 15 do not occur)
Colour of units: 1..., last: 11
Dead Sea: Mapping unit 21 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Ali K. Odeh
Date of digitization: 1990

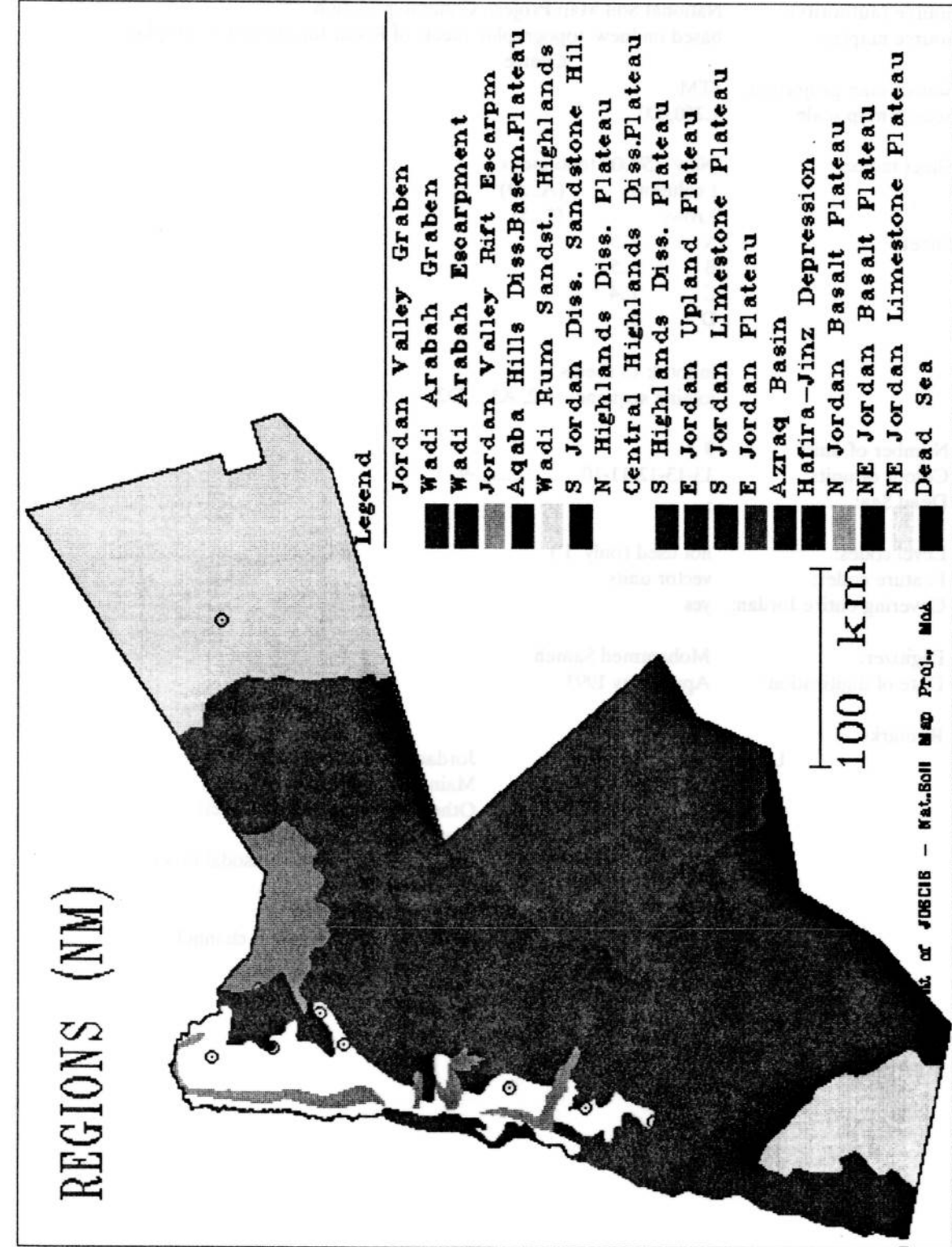
Remarks: This map is replaced by 'reg2tot' (see page G 5.2-175), which is to be replaced by final version 'reg3tot' (see page G 5.2-179)

SINGLE MAP ANALYSIS

Map : regxtot - REGIONS (NM)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Jordan Valley Graben	1.08	1.08	965.7
2	Wadi Arabah Graben	1.56	2.64	1389.4
3	Wadi Arabah Escarpment	1.65	4.29	1467.2
4	Jordan Valley Rift Escarpm	1.67	5.96	1490.2
5	Aqaba Hills Diss.Basem.Plateau	1.67	7.63	1491.6
6	Wadi Rum Sandst. Highlands	4.11	11.74	3662.7
7	S Jordan Diss. Sandstone Hil.	4.67	16.41	4168.6
9	N Highlands Diss. Plateau	3.37	19.78	3009.0
10	Central Highlands Diss.Plateau	1.64	21.42	1461.3
11	S Highlands Diss. Plateau	0.38	21.80	334.8
12	E Jordan Upland Plateau	9.33	31.12	8318.6
13	S Jordan Limestone Plateau	11.76	42.88	10487.7
14	E Jordan Plateau	15.11	58.00	13480.2
16	Azraq Basin	8.51	66.50	7586.4
17	Hafira-Jinz Depression	2.98	69.48	2657.3
18	N Jordan Basalt Plateau	3.05	72.53	2722.6
19	NE Jordan Basalt Plateau	8.70	81.23	7759.8
20	NE Jordan Limestone Plateau	18.17	99.41	16207.3
21	Dead Sea	0.59	100.00	529.9
Total of 19 classes		100.00		89190.1



Full name: Rivers (2.version)
 Short name: RIV2TOT
 Digitized features: Rivers, wadis, drainage lines

Source (authority): National Soil Map Project, Computer Section
 Source map(s): based on 'new' topographic sheets of Royal Jordanian Geographic Centre

Source map projection: JTM
 Source map scale: 1:250,000

Sheet index: 'New' 250000 topo index
 1.columns (A...D)
 2.rows (1...5)

Sheets: A 2..5
 B 2..5
 C 1..4
 D 2

in total: 13 sheets
 joining sequence: A2, A3 ... D2

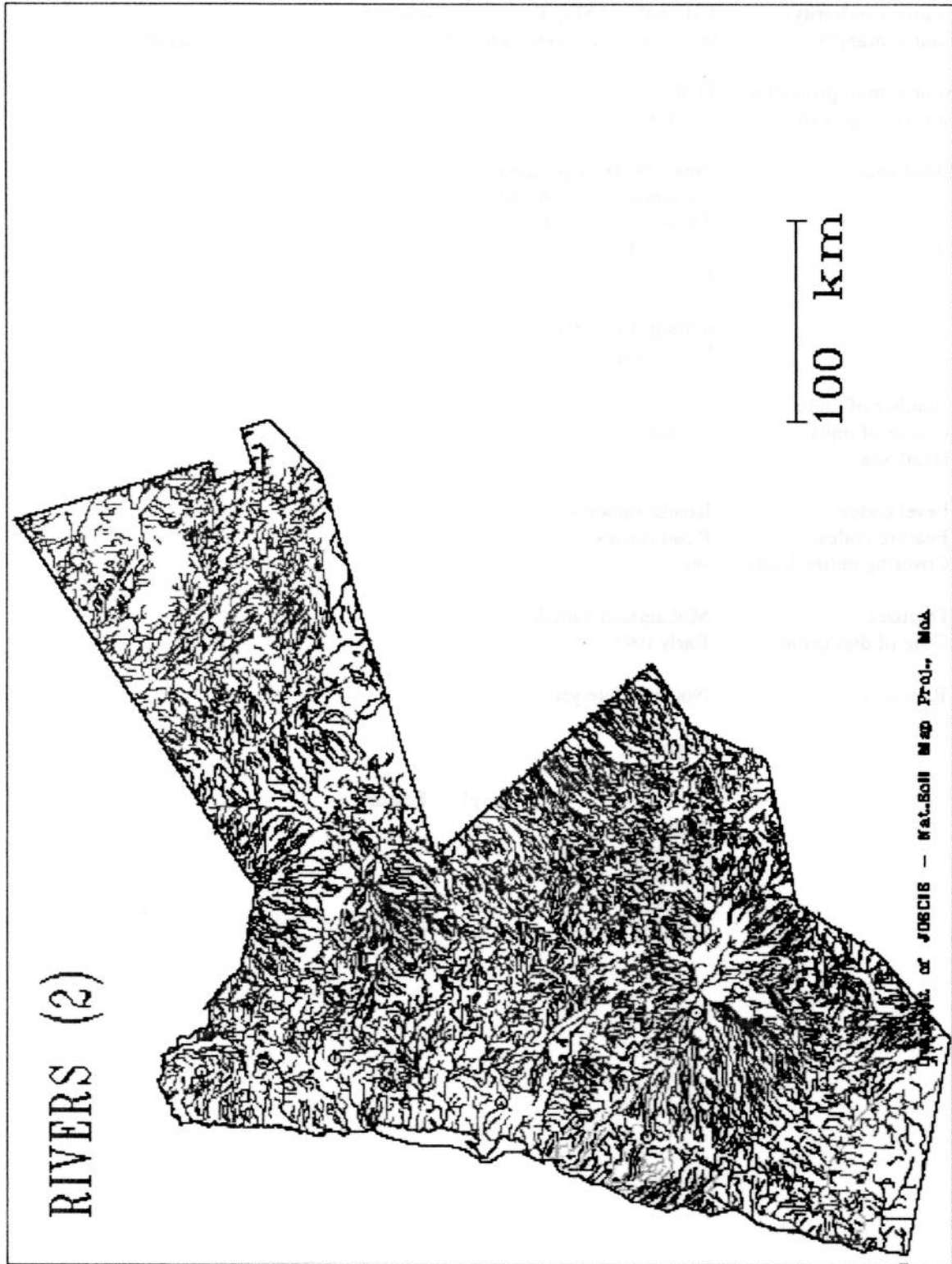
Number of units: 9
 Colour of units: 13-13-12-11-10--9
 Dead Sea: -

Level codes: not used (only '1')
 Feature codes: vector units
 Covering entire Jordan: yes

Digitizer: Mohammed Sameh
 Date of digitization: April/May 1993

Remarks:

Units:	1	Jordan river
	2	Main perennial rivers (1.level)
	3	Other perennial rivers (1.level)
	4	Seasonal rivers (2.level)
	5	Broad wadis, valleys (episodal flow)
	6	
	7	Small wadis (episodal)
	9	King Abdullah irrigation channel



Full name: Roads, 2.version
Short name: ROA2TOT
Digitized features: Roads

Source (authority): National Soil Map Project, Computer Section
Source map(s): based on 'new' topographic sheets of Royal Jordanian Geographic Centre

Source map projection: JTM
Source map scale: 1:250,000

Sheet index: 'New' 250000 topo index
 1.columns (A...B)
 2.rows (1...2)

Sheets: A 1.2
 B 2

in total: 13 sheets
 joining sequence:

Number of units: 5
Colour of units: 1..., last:
Dead Sea: -

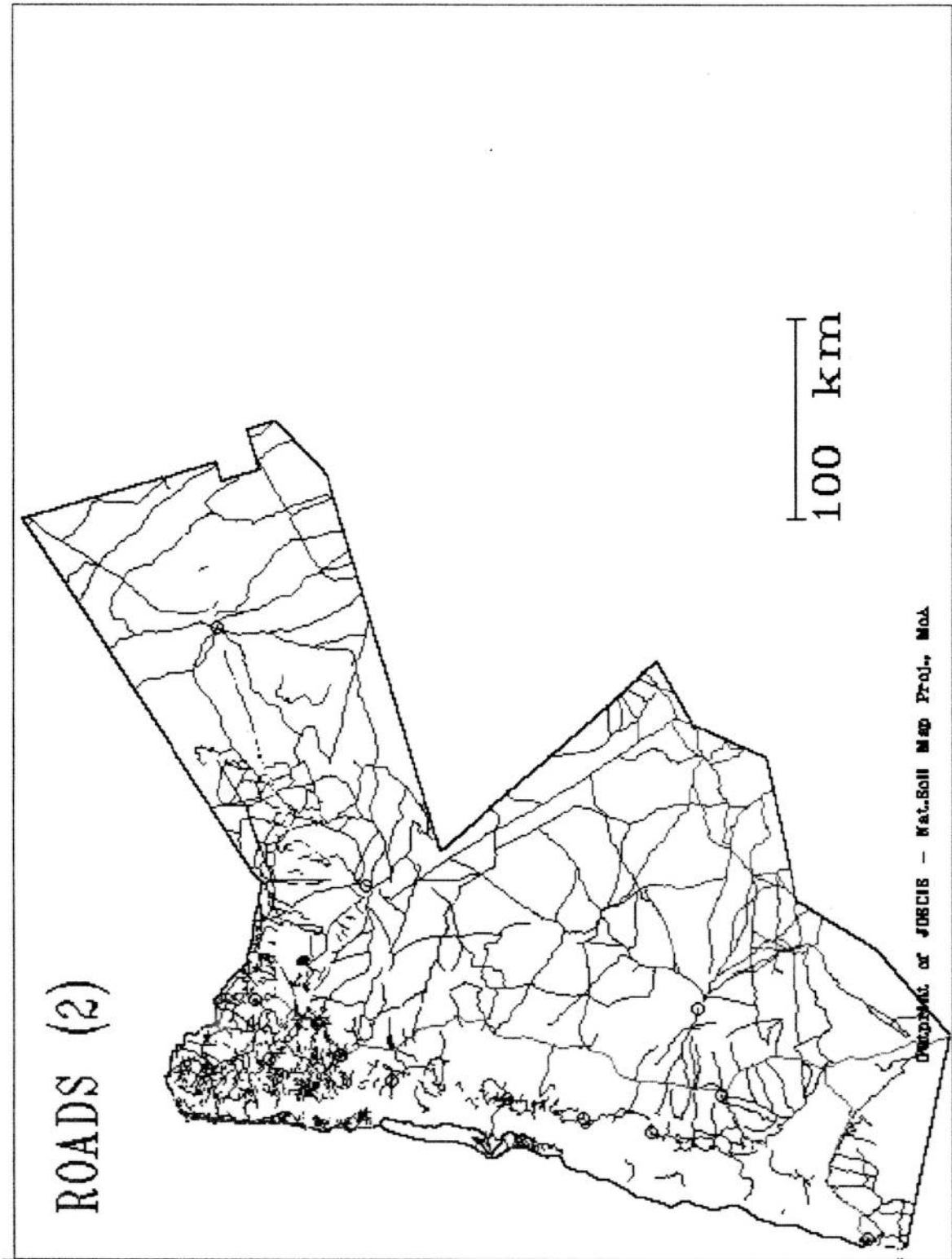
Level codes: Roads/railways
Feature codes: Road classes
Covering entire Jordan: yes

Digitizer: Mohammed Sameh
Date of digitization: Early 1993

Remarks: Not complete yet !

Legend:

	Level	Feature
Highways	1	1
Secondary roads	1	2
Tertiary roads	1	3
Tracks	1	4
Railway	2	6





Full name: Rangeland survey areas
Short name: RRLSTOT
Digitized features: Rangeland survey areas

Source (authority): Rangeland Section, Ministry of Agriculture
Source map(s):
Source map projection: Palestine Grid
Source map scale: 1:750,000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 39 (totally 38, but mapping unit 38 does not occur)
Colour of units: 1..., last:13
Dead Sea: Mapping unit 39 (transferred from 'altxtot' map)

Level codes: (used for rangeland survey progress map: 'rrlstot5')
Feature codes: mapping units
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Gerhard Bechtold
Date of digitization: 1991

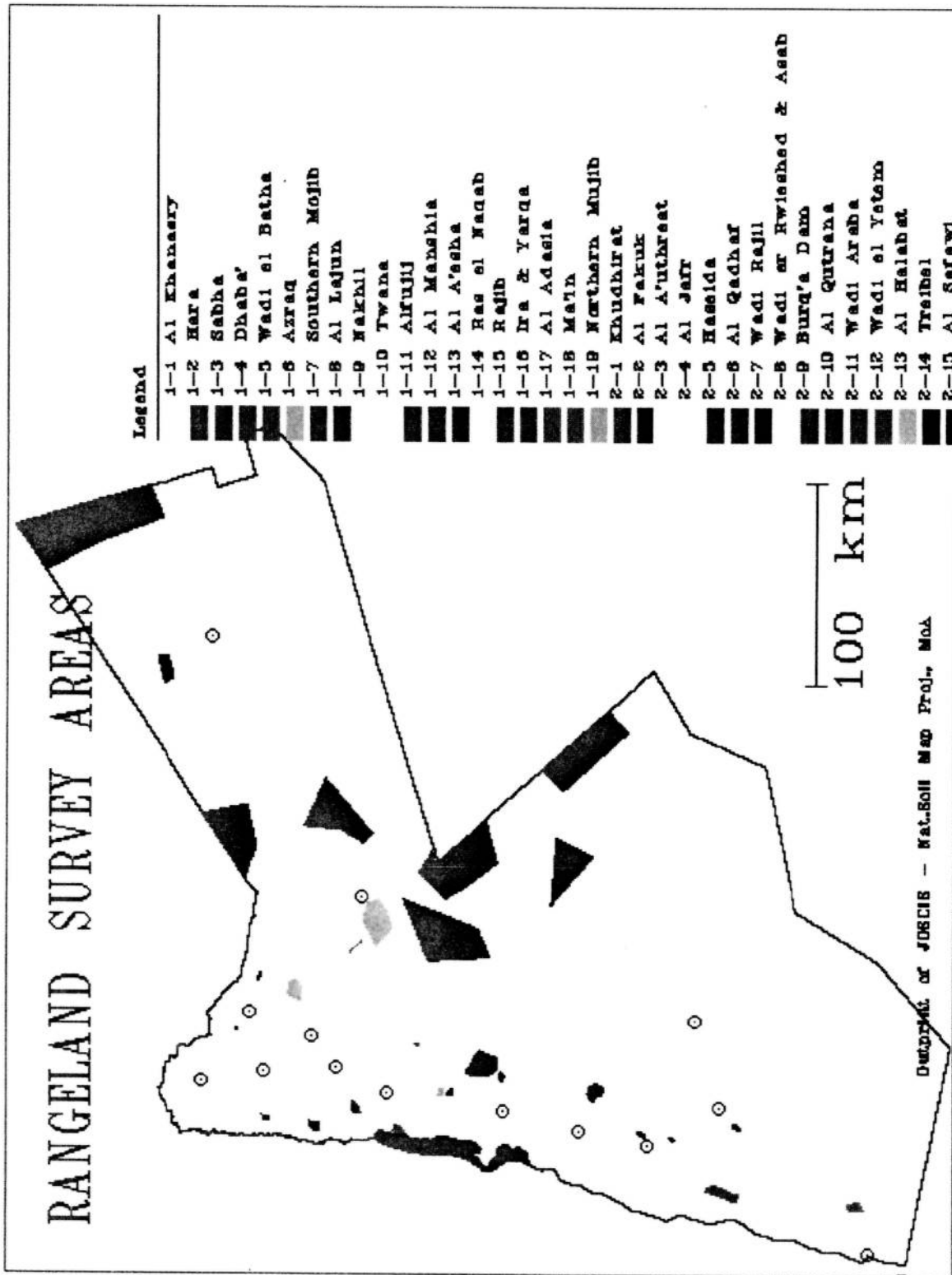
Remarks: Same digitization source as 'rrlstot5' map (see page G 5.2-195)

SINGLE MAP ANALYSIS

Map : rr1stot - RANGELAND SURVEY AREAS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	1-1 Al Khanasry	0.03	0.03	3.3
2	1-2 Hara	0.05	0.08	4.8
3	1-3 Sabha	0.11	0.19	11.1
4	1-4 Dhaba'	0.05	0.24	4.7
5	1-5 Wadi el Batha	0.11	0.35	11.3
6	1-6 Azraq	2.32	2.67	233.4
7	1-7 Southern Mojib	0.15	2.82	14.6
8	1-8 Al Lajun	0.16	2.98	16.3
9	1-9 Nakhil	0.22	3.20	22.0
10	1-10 Twana	0.19	3.39	19.1
11	1-11 Alfujij	0.16	3.55	15.6
12	1-12 Al Manshia	0.07	3.62	7.3
13	1-13 Al A'asha	0.16	3.78	15.8
14	1-14 Ras el Naqab	0.36	4.13	36.0
15	1-15 Rajib	0.16	4.29	15.9
16	1-16 Ira & Yarqa	0.28	4.58	28.5
17	1-17 Al Adasia	0.29	4.86	29.0
18	1-18 Ma'in	0.24	5.11	24.5
19	1-19 Northern Mujib	0.14	5.25	14.4
20	2-1 Khudhirat	3.69	8.94	370.3
21	2-2 Al Fakuk	6.95	15.88	697.9
22	2-3 Al A'uthreat	3.46	19.35	347.9
23	2-4 Al Jafr	3.16	22.51	317.9
24	2-5 Haseida	7.83	30.34	786.6
25	2-6 Al Qadhaf	7.49	37.83	752.4
26	2-7 Wadi Rajil	5.34	43.17	536.6
27	2-8 Wadi er Rwieshed & Asab	24.23	67.40	2434.1
28	2-9 Burq'a Dam	1.01	68.41	101.8
29	2-10 Al Qutrana	1.65	70.06	165.6
30	2-11 Wadi Araba	0.81	70.87	81.5
31	2-12 Wadi el Yetem	0.32	71.20	32.4
32	2-13 Al Halabat	0.69	71.89	69.5
33	2-14 Treibel	14.58	86.47	1464.6
34	2-15 Al Safawi	5.60	92.07	562.6
35	2-16 Ira & Yarqa	0.78	92.85	78.4
36	2-17 A'dasia	1.27	94.12	127.9
37	2-18 Ma'in	0.61	94.73	60.8
39	Dead Sea	5.27	100.00	529.9
Total of 38 classes		100.00		10046.4



Full name: Rangeland survey progress
Short name: RRLSTOT5
Digitized features: Rangeland survey progress

Source (authority): Rangeland Section, Ministry of Agriculture
Source map(s):
Source map projection: Palestine Grid
Source map scale: 1:750,000

Sheet index: -
Sheets: same as / derived from 'rrlstot'

in total: 1 sheet

Number of units: 3 (totally 4, but mapping unit 3 does not occur)
Colour of units: 4,5,0,13
Dead Sea: Mapping unit 4 (transferred from 'altxtot' map)

Level codes: mapping units
Feature codes: (used for rangeland survey areas: 'rrlstot')
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Gerhard Bechtold
Date of digitization: 1991

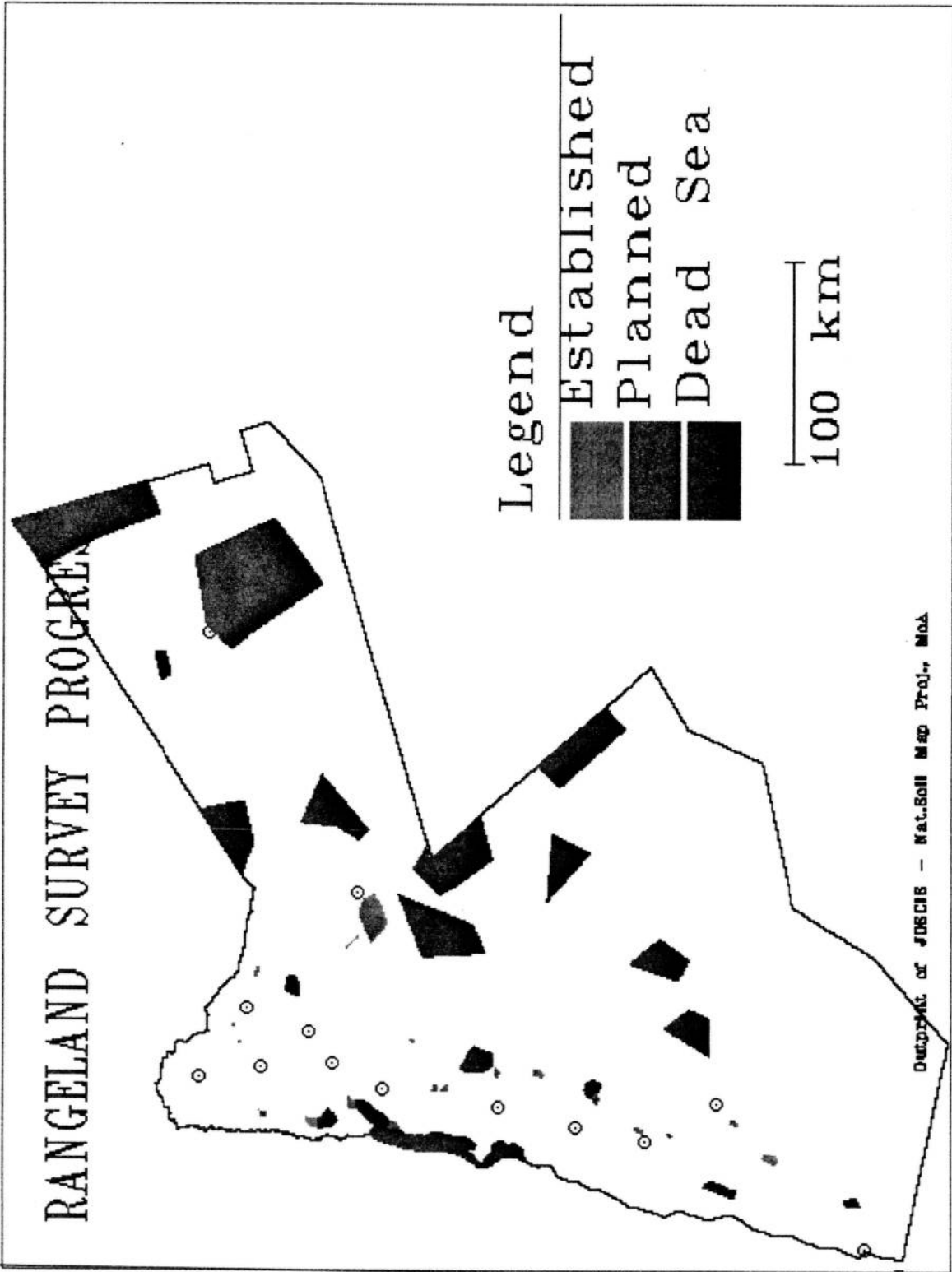
Remarks: Same digitization source as 'rrlstot' map (see page G 5.2-191)

SINGLE MAP ANALYSIS

Map : rrlstot5 - RANGELAND SURVEY PROGRESS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Established	5.25	5.25	527.7
2	Planned	89.47	94.73	8988.9
4	Dead Sea	5.27	100.00	529.9
Total of 3 classes		100.00		10046.4





Full name: Groundwater salinity
Short name: SAGRTOT
Digitized features: Groundwater salinity mapping units

Source (authority): National Water Master Plan
Source map(s): HG - 2.1
Source map projection: Palestine Grid
Source map scale: 1:1,000,000

Sheet index: -
Sheets: AA
in total: 1 sheet

Number of units: 7
Colour of units: 1..., last:13
Dead Sea: Mapping unit 7 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Mohammed Sameh
Date of digitization: 1991

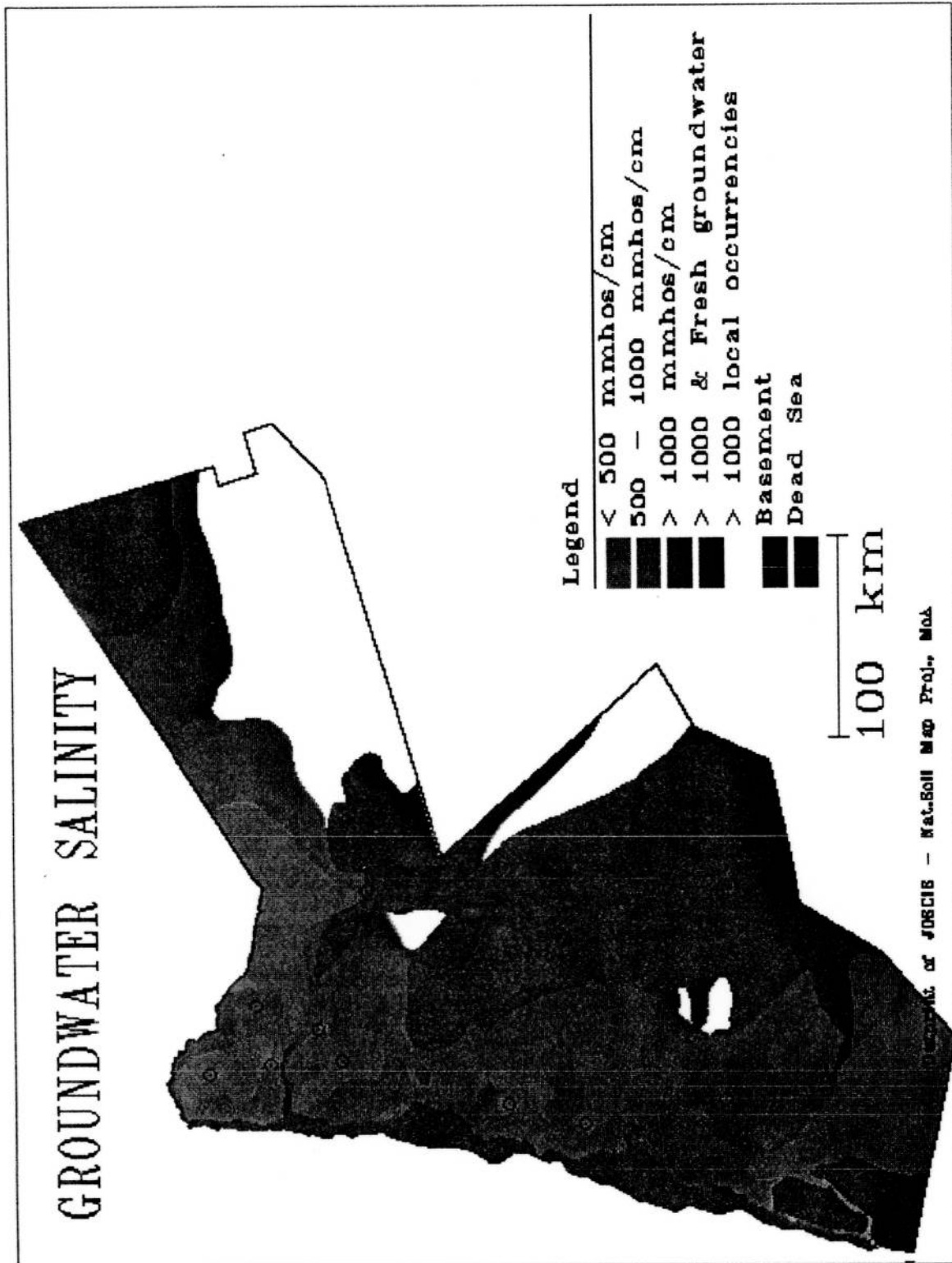
Remarks:

SINGLE MAP ANALYSIS

Map : sagrtot - GROUNDWATER SALINITY

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	< 500 mmhos/cm	14.22	14.22	12680.4
2	500 - 1000 mmhos/cm	29.45	43.67	26266.9
3	> 1000 mmhos/cm	23.37	67.04	20843.9
4	> 1000 & Fresh groundwater	13.29	80.33	11853.0
5	> 1000 local occurrences	16.46	96.79	14678.2
6	Basement	2.62	99.41	2336.7
7	Dead Sea	0.59	100.00	529.9
Total of 7 classes		100.00		89189.0





Full name: Schematic soil map
Short name: SLGSTOT
Digitized features: Generalized schematic soil units

Source (authority): Forestry Department, Natural Resource Agency
Source map(s): Fig.5
Source map projection: Palestine Grid
Source map scale: 1:1,578,000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 20 (totally 28, but mapping units 19 and 21-27 do not occur)
Colour of units: 1..., last:13
Dead Sea: Mapping unit 28 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Amjad Rihani
Date of digitization: 1990

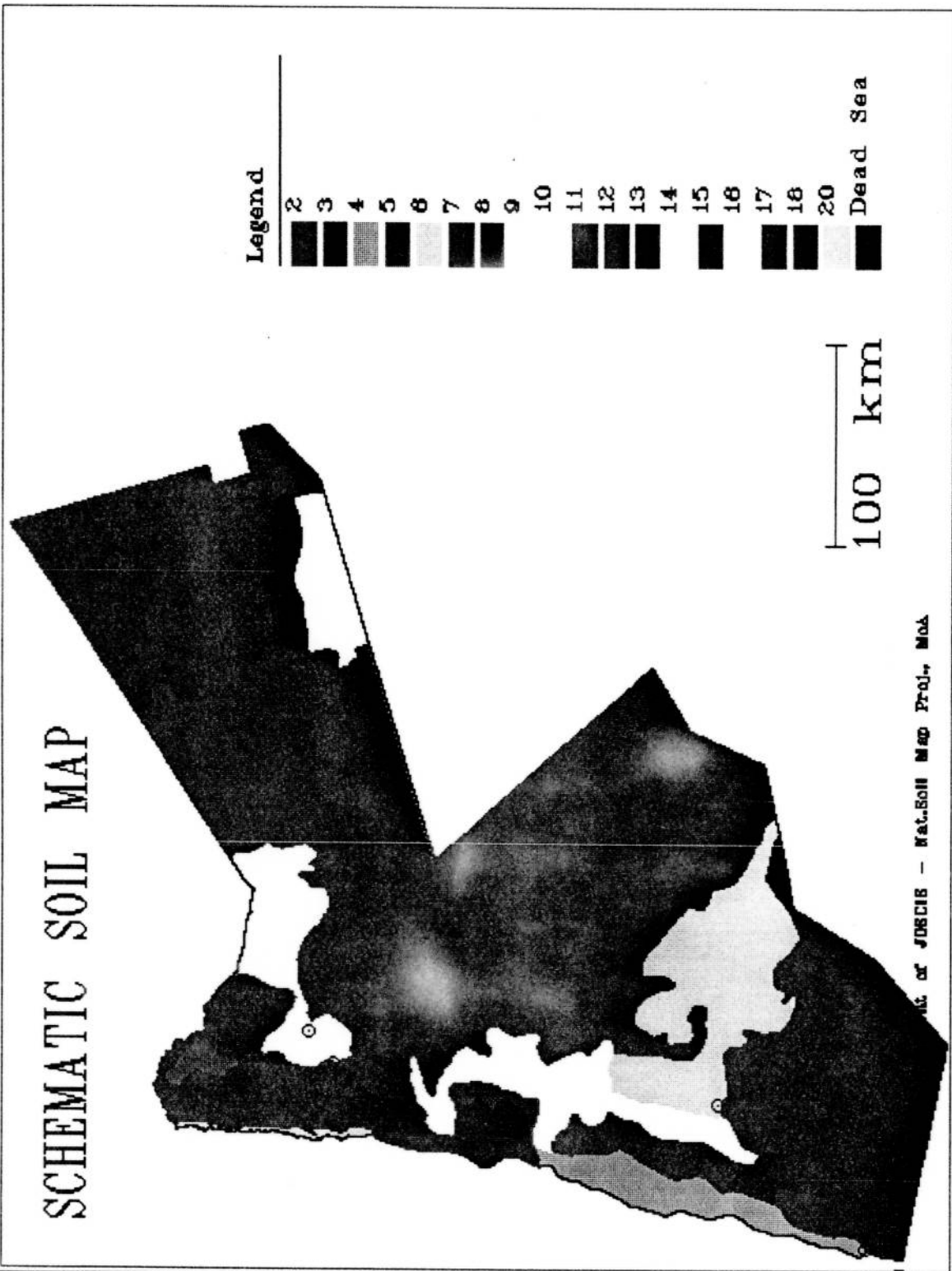
Remarks: First nationwide soil survey, using USDA taxonomy system

SINGLE MAP ANALYSIS

Map : slgstot - SCHEMATIC SOIL MAP

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	1	0.00	0.00	0.0
2	2	0.32	0.32	286.4
3	3	0.55	0.87	488.4
4	4	2.53	3.40	2254.5
5	5	1.47	4.87	1312.7
6	6	6.95	11.82	6198.1
7	7	3.93	15.74	3502.7
8	8	16.93	32.67	15096.6
9	9	4.06	36.73	3620.0
10	10	1.00	37.73	894.1
11	11	5.35	43.09	4774.7
12	12	13.79	56.87	12296.8
13	13	16.15	73.02	14405.5
14	14	2.69	75.71	2398.0
15	15	9.10	84.81	8116.2
16	16	2.03	86.84	1808.9
17	17	10.41	97.25	9287.6
18	18	1.86	99.12	1662.8
20	20	0.29	99.41	256.3
28	Dead Sea	0.59	100.00	529.9
Total of 20 classes		100.00		89190.1





Full name: Sample areas
Short name: SMPATOT
Digitized features: Sample areas of Level I survey of National Soil Map Project

Source (authority): National Soil Map Project
Source map(s): Outprint of GIS with observation sites (pits and bores) of
sample areas

Source map projection: JTM
Source map scale: 1:900,000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 79
Colour of units: 1..., last:
Dead Sea: -

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Gerhard Bechtold
Date of digitization: April 1993

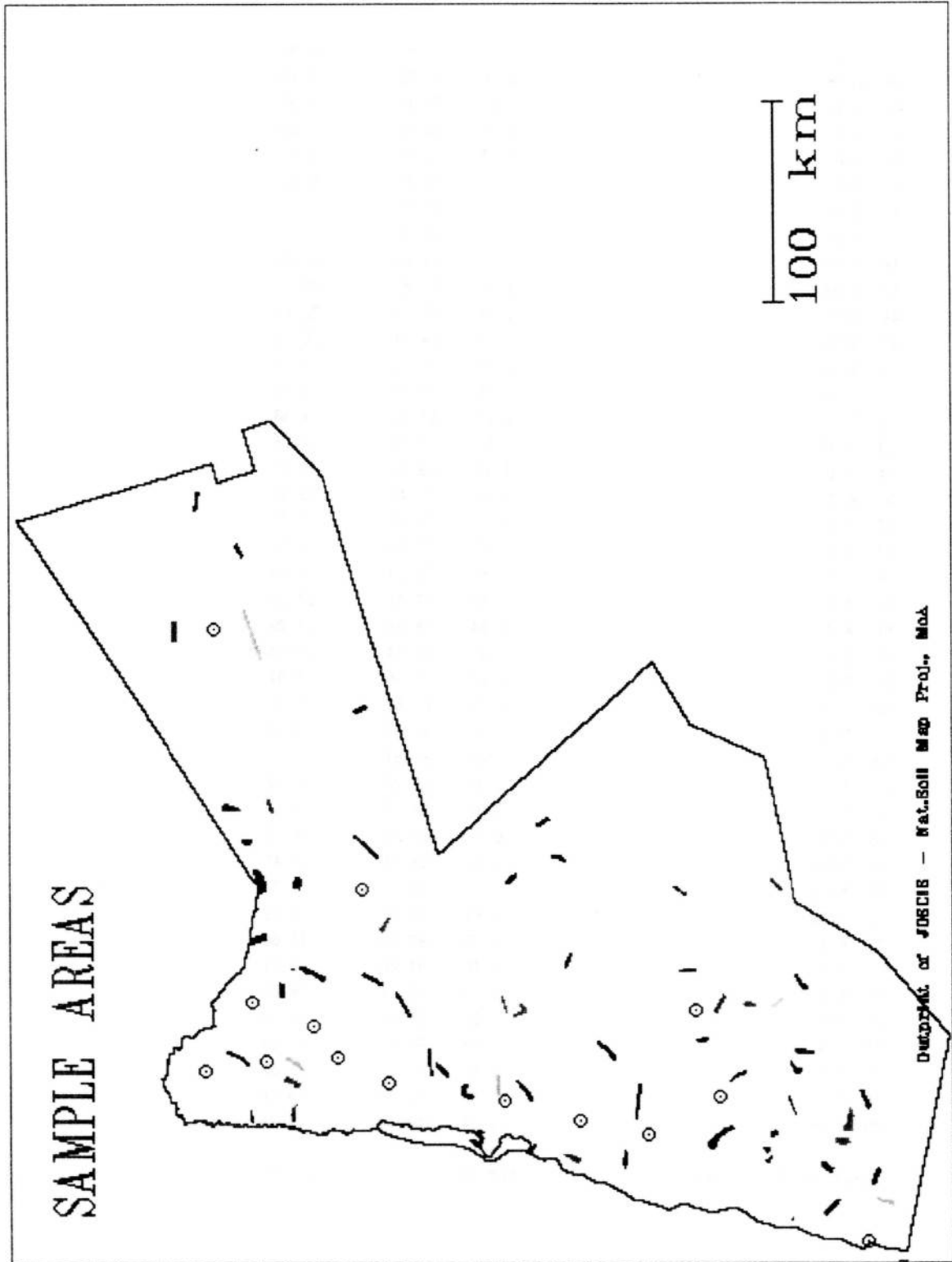
Remarks: Map was traced by plotting observtion sites (pits and bores) with in-
dicated sample areas numbers, digitization was done around these
observation sites

SINGLE MAP ANALYSIS

Map : smpatot - SAMPLE AREAS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
-----		----	-----	-----
1	1/1	0.62	0.62	11.26
2	1/2	0.60	1.22	10.80
3	1/6	1.47	2.69	26.73
4	1/10	0.93	3.63	16.94
5	1/11	1.52	5.15	27.55
6	1/12	1.45	6.59	26.27
7	1/13	1.16	7.76	21.07
8	1/14	2.24	9.99	40.60
9	2/3	1.00	10.99	18.10
10	2/4	0.83	11.83	15.13
11	2/5	1.36	13.19	24.68
12	2/6	1.40	14.58	25.30
13	2/7	1.31	15.89	23.75
14	2/8	1.38	17.28	25.06
15	2/9	1.22	18.50	22.16
16	2/10	1.66	20.16	30.11
17	2/11	1.61	21.77	29.16
18	2/12	1.28	23.05	23.22
19	2/13	1.86	24.91	33.74
20	2/14	1.30	26.21	23.52
21	2/15	1.56	27.77	28.31
22	2/16	0.57	28.33	10.26
23	2/17	1.88	30.22	34.12
24	2/18	1.39	31.61	25.21
25	2/19	1.66	33.26	30.05
26	2/20	1.94	35.21	35.22
27	3/1	1.17	36.38	21.21
28	3/5	2.83	39.20	51.27
29	3/6	1.37	40.58	24.90
30	3/7	1.09	41.67	19.76
31	3/8	0.82	42.49	14.86
32	3/10	1.31	43.80	23.80
33	3/11	0.89	44.69	16.14
34	3/12	0.84	45.53	15.30
35	3/13	1.20	46.73	21.67
36	3/14	1.19	47.92	21.59
37	3/16	1.68	49.60	30.45



38	3/17	1.21	50.81	21.88
39	3/18	1.14	51.95	20.66
40	3/19	1.43	53.38	25.92
41	3/20	0.49	53.86	8.85
42	3/22	0.17	54.03	3.00
43	3/24	1.23	55.26	22.31
44	3/25	1.53	56.79	27.70
45	3/26	1.30	58.08	23.49
46	3/27	1.60	59.69	29.08
47	3/28	2.16	61.85	39.17
48	3/30	1.24	63.09	22.45
49	3/31	1.15	64.24	20.93
50	3/33	1.27	65.51	23.02
51	3/35	1.45	66.96	26.30
52	3/37	0.25	67.21	4.58
53	3/38	0.57	67.78	10.26
54	4/1	1.70	69.48	30.80
55	4/2	2.98	72.45	53.99
56	4/3	1.53	73.99	27.77
57	4/4	1.40	75.39	25.38
58	4/5	0.81	76.19	14.60
59	4/6	1.52	77.71	27.58
60	4/7	0.94	78.65	17.09
61	5/1	0.98	79.64	17.84
62	5/2	0.22	79.86	4.07
63	5/3	1.76	81.63	31.95
64	5/4	1.00	82.63	18.16
65	5/6	1.24	83.87	22.53
66	5/7	1.38	85.25	25.02
67	5/8	0.92	86.17	16.67
68	5/9	0.89	87.06	16.15
69	5/10	1.02	88.08	18.42
70	5/11	1.03	89.11	18.70
71	5/12	0.64	89.75	11.63
72	6/1	0.75	90.50	13.68
73	6/2	0.76	91.26	13.81
74	6/6	0.99	92.26	18.03
75	7/2	1.55	93.81	28.16
76	7/4	2.59	96.41	47.03
77	7/5	0.93	97.33	16.82
78	7/6	1.33	98.66	24.06
79	7/7	1.34	100.00	24.28

Total of 79 classes		100.00		1813.07

Full name: Soil-Physiography
 Short name: SOIITOT
 Digitized features: Soil-Physiography Map, 'Land Systems',
 1.working version of soil map, Level I, by N.Munro

Source (authority): National Soil Map Project
 Source map(s): Field work, delineation on Landsat MSS images
 Source map projection: JTM
 Source map scale: 1:250,000

Sheet index: Soil map 250,000 index (see page G 5.2-214)
 1.columns (A...C)
 2.rows (1...7)

Sheets: A 2...6
 B 2...5
 C 7

in total: 10 sheets
 joining sequence: A 2...6 - B 2...5 - C 7

Number of units: 393 (totally 426, but 33 mapping units do not occur)
 Colour of units: 1...
 Dead Sea: Mapping unit 400 (transferred from 'altxtot' map)

Level codes: not used (only '1')
 Feature codes: mapping units
 Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Mohammed Sameh
 Date of digitization: 1991

Remarks: Early working copy of soil map Level I of National Soil Map Project,
 often referred to as 'Land System' map, thus replacing the earlier
 version of land system map 'sys2tot' (see page G 5.2-227)

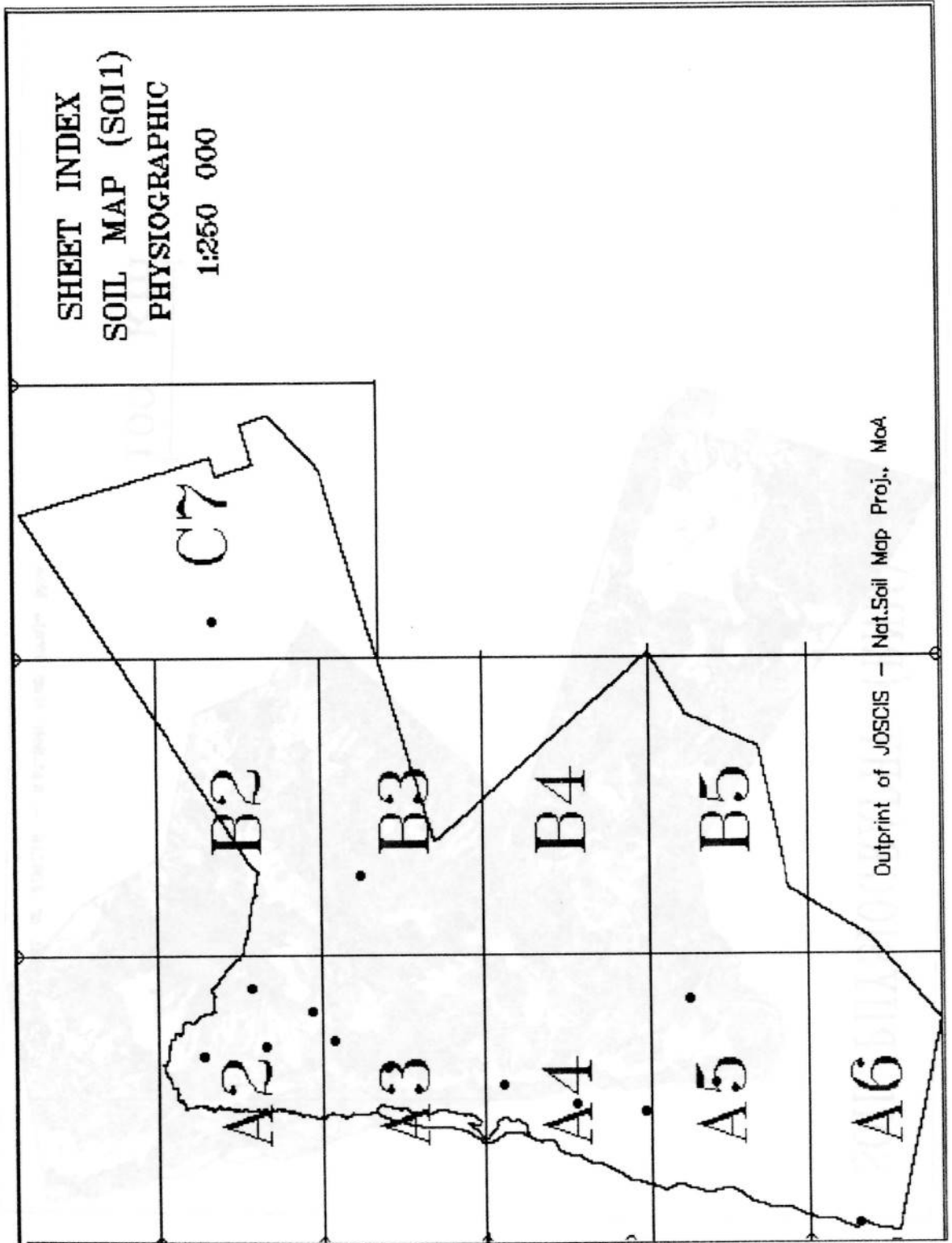
SINGLE MAP ANALYSIS

Map : soiltot - SOIL-PHYSGRAPHY (RNM)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	1/1	0.07	0.07	63.7
2	1/2	0.05	0.12	44.7
4	2/1	0.30	0.42	264.8
5	2/2	0.27	0.69	242.4
6	2/3	0.33	1.02	290.2
7	2/4	0.07	1.09	63.3
8	2/5	0.08	1.16	68.5
9	2/6	0.32	1.48	281.7
10	2/7	0.00	1.48	0.9
13	3/1	0.75	2.23	664.3
.				
.				
.				
395	14/1-3	0.01	98.13	9.4
396	14/7-2	0.01	98.14	9.2
397	14/7-3	0.02	98.17	21.6
398	14/7-4	0.01	98.17	5.1
399	12/6-9	0.02	98.19	15.8
400	Water	0.60	98.79	535.2
401	15/10-3	0.02	98.81	13.4
402	16/8-6	0.00	98.81	3.3
403	13/2-6	0.04	98.85	33.4
404	16/6-3	0.01	98.86	8.5
405	13/30-10	0.00	98.86	3.7
406	13/13-3	0.02	98.89	20.9
407	13/15-5	0.00	98.89	2.4
408	13/7-3	0.03	98.92	26.4
409	13/7-6	0.19	99.11	168.8
410	13/22-8	0.00	99.11	0.9
411	12/20	0.33	99.44	294.9
412	12/6-6	0.03	99.47	23.7
413	12/6-7	0.15	99.62	136.3
414	Disturbed land	0.04	99.66	37.2
415	6/9-3	0.00	99.66	0.8
416	5/2-5	0.23	99.90	209.1
417	5/4-5	0.02	99.91	13.6
418	3/7-8	0.01	99.92	9.0
420	3/5-5	0.00	99.92	1.7
421	11/17-7	0.00	99.93	4.2
422	12/1-1	0.01	99.94	10.7
423	7/4-7	0.01	99.95	4.6
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Total of 393 classes		100.00		89140.6





Full name: Soil Map, Level I
Short name: SOI2TOT
Digitized features: Final Soil Map, Level I of National Soil Map Project

Source (authority): National Soil Map Project
Source map(s): Field work, delineation on Landsat MSS images
Source map projection: JTM
Source map scale: 1:250,000

Sheet index: Soil map 250,000 - index (see page G 5.2-218)
1.columns (A...C)
2.rows (1...7)

Sheets: A 2...6
B 2...5
C 7

in total: 10 sheets

joining sequence: A 2...6 - B 2...5 - C 7

Number of units: 161 (totally 162, but mapping unit 14 does not occur)
Colour of units: 1..., last:13
Dead Sea: Mapping unit 162 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Mohammed Sameh
Date of digitization: April - July 1993

Remarks: CAUTION: Number 2 in name 'soi2tot' refers to Level I map,
not to Level II
(because of earlier version of map 'soi1tot')

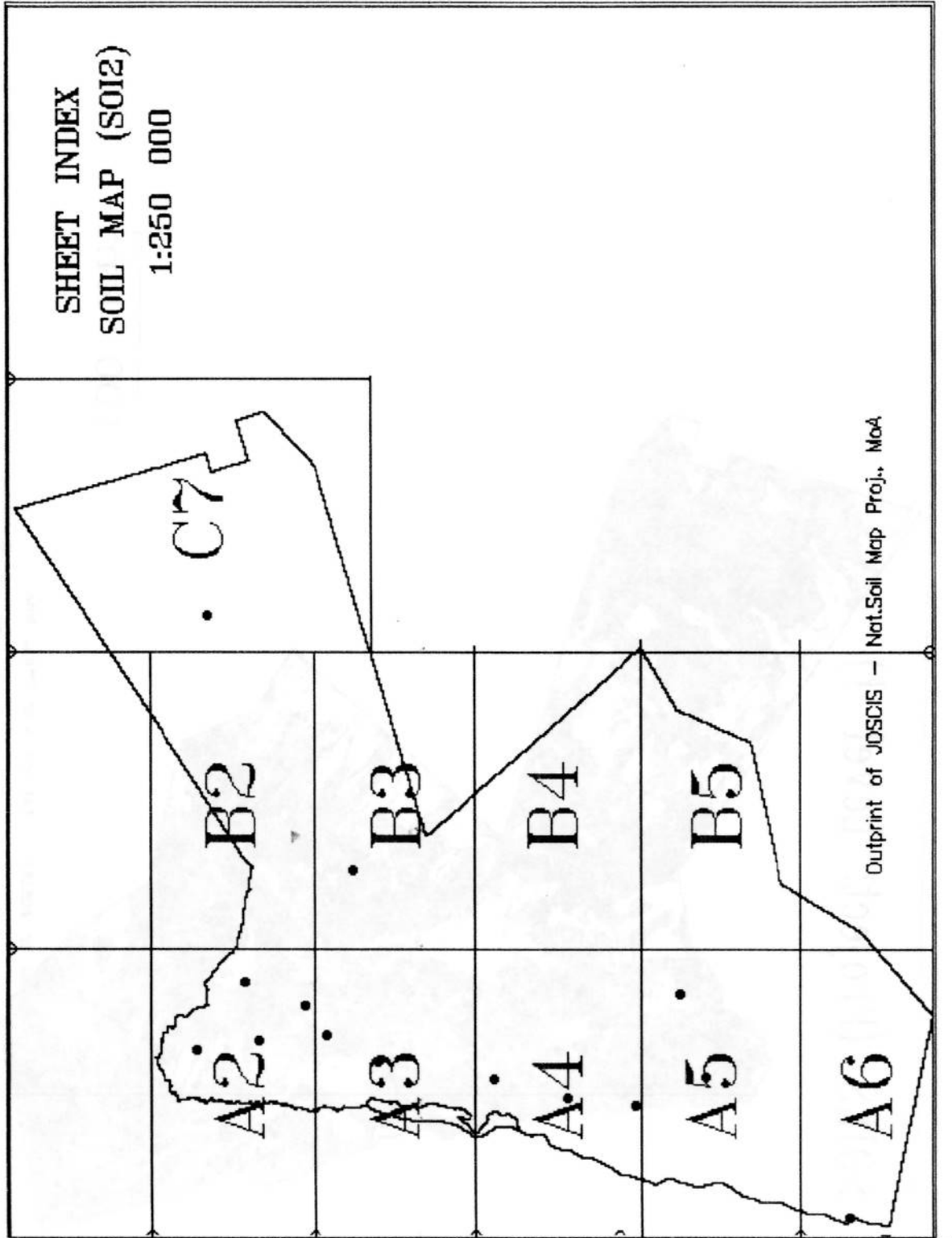
SINGLE MAP ANALYSIS

Map : soi2tot - SOILS (Project: Level 1)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	ZOR	0.07	0.07	64.9
2	KAT	0.19	0.26	168.0
3	GOR	0.34	0.60	302.7
4	TAD	0.44	1.04	389.3
5	ARA	0.59	1.63	528.1
6	RIS	0.50	2.13	447.6
7	GAR	0.34	2.47	306.4
8	LIS	0.27	2.75	244.2
9	SAF	0.14	2.89	123.9
10	DHI	0.06	2.94	50.6
11	TIR	0.83	3.77	736.8
12	HAY	0.82	4.59	730.0
13	TAW	0.54	5.12	477.5
15	WAN	0.57	5.69	504.1
16	ALL	0.62	6.31	553.3
17	ZAY	0.33	6.64	292.0
18	DAT	0.47	7.10	416.3
19	HIM	0.50	7.60	441.5
20	MUJ	0.58	8.18	515.9
21	DAR	0.05	8.23	43.6
22	URF	0.84	9.07	749.7
23	YUT	0.33	9.40	295.9
24	RAM	0.44	9.84	395.3
25	ISH	0.47	10.32	422.6
26	DIS	0.17	10.48	148.3
27	RAQ	0.37	10.85	329.2
.				
.				
.				
153	HUQ	1.36	92.30	1214.4
154	SIB	1.88	94.19	1678.6
155	MNK	0.74	94.92	655.6
156	BST	0.59	95.51	522.6
157	RUW	2.22	97.73	1982.8
158	ABU	0.82	98.55	735.1
159	AJL	0.66	99.21	585.4
160	SAK	0.08	99.29	72.5
161	IBB	0.11	99.41	102.0
162	Dead Sea	0.59	100.00	529.9
-----		-----	-----	-----
Total of 161 classes		100.00		89190.1





Full name: Soil Map, Level II
Short name: SOI3TOT
Digitized features: Soil Map, Level II of National Soil Map Project
(not complete, as of 1/8/93)

Source (authority): National Soil Map Project
Source map(s): Fieldwork, delineation on Landsat TM images
Source map projection: JTM
Source map scale: 1:50,000

Sheet index: Soil map 1:50,000 - index
1.columns (A...C)
2.rows (1...7)

Sheets: not complete yet !

in total: sheets
joining sequence:

Number of units: 12 (as of 1/8/93)
Colour of units: 1..., last:13
Dead Sea: Mapping unit (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
Date of digitization: Starting from May 1993

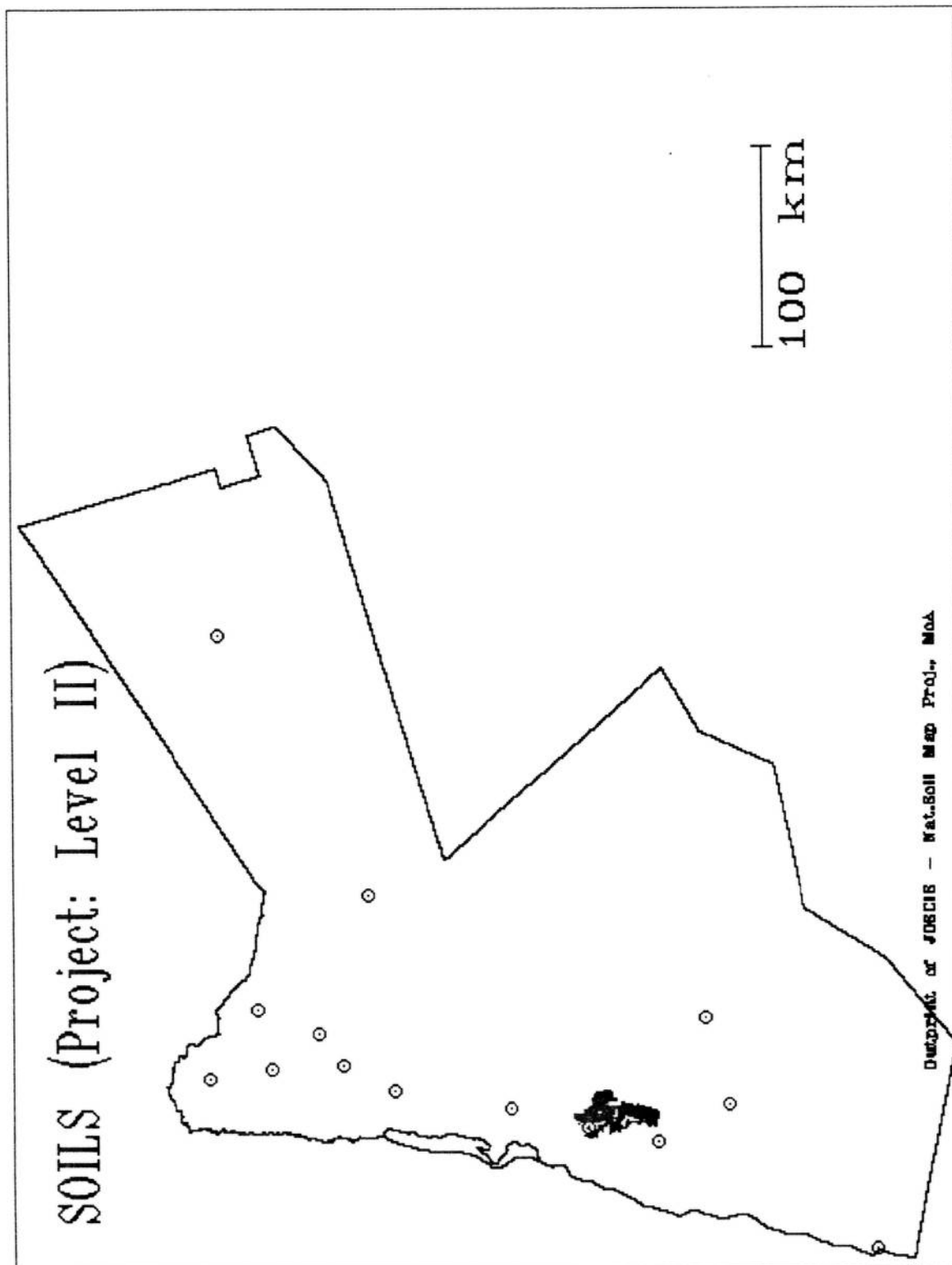
Remarks: CAUTION: Number 3 in name 'soi3tot' refers to Level II map,
not to Level III
(because of earlier version of map 'soi1tot')

SINGLE MAP ANALYSIS

Map : soi3tot - SOILS (Project: Level II)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
11	X 1	34.61	34.61	182.139
12	X 2	10.61	45.22	55.819
13	X 3	4.47	49.69	23.517
14	X 4	1.85	51.54	9.742
15	X 5	6.83	58.37	35.945
16	X 6	2.58	60.95	13.586
17	X 7	11.50	72.45	60.526
18	X 8	1.34	73.79	7.038
21	T 1	16.06	89.85	84.503
22	T 2	4.16	94.01	21.903
25	T 5	2.79	96.80	14.706
26	T 6	3.20	100.00	16.822
Total of 12 classes		100.00		526.246



DIRECTORATE OF JOSICIS - Nat. Soil Map Proj., MoA



Full name: Sowing date
Short name: SOWDTOT
Digitized features: Sowing date

Source (authority): Dryland Farming Project
Source map(s):
Source map projection: Palestine Grid
Source map scale: 1:1,000,000

Sheet index: -
Sheets: AA

in total: 1 sheet

Number of units: 9
Colour of units: 9,8,7,3,4, 5,6,14,13
Dead Sea: Mapping unit 9 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Wail Sartawi
Date of digitization: 1990

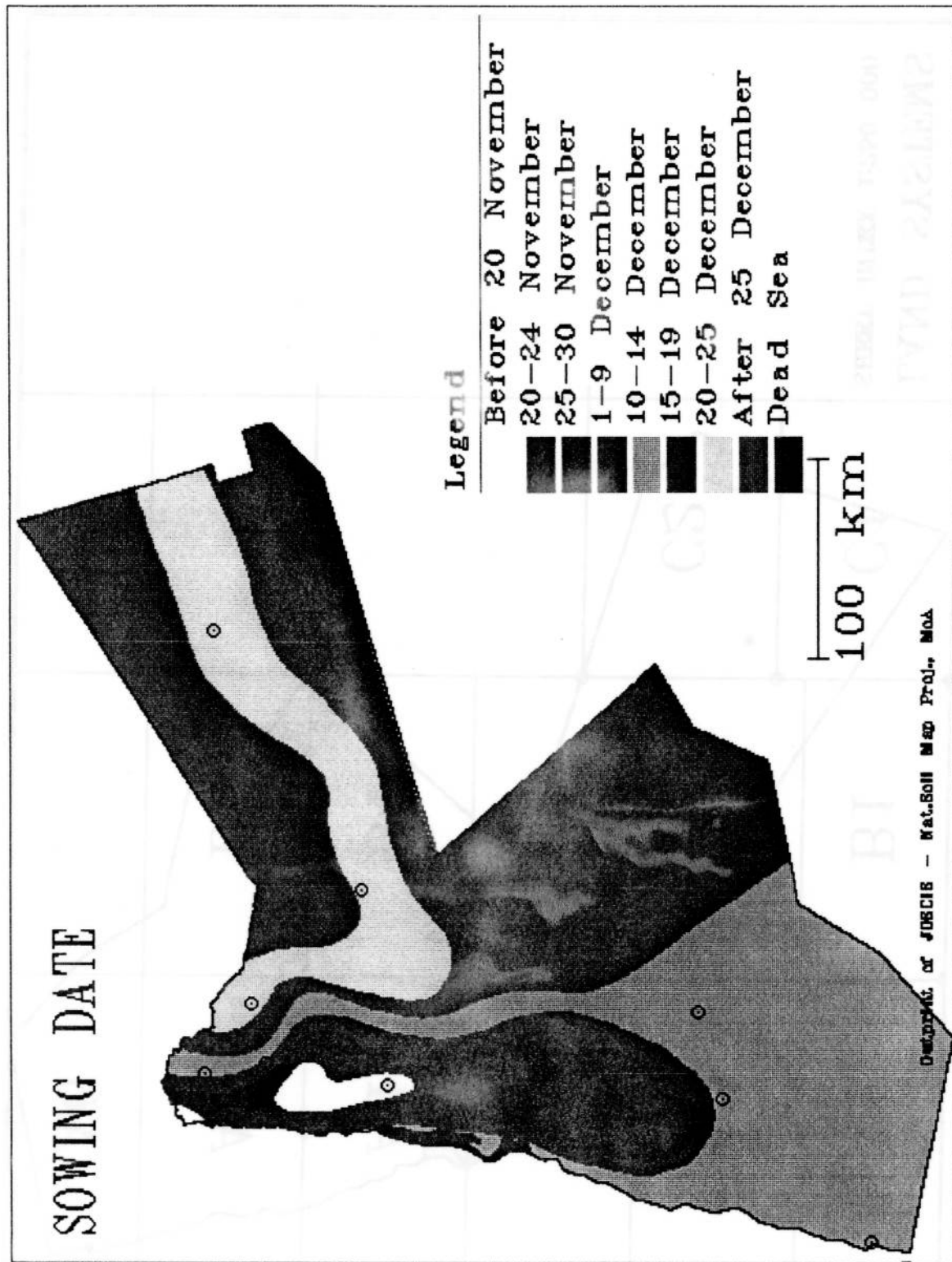
Remarks:

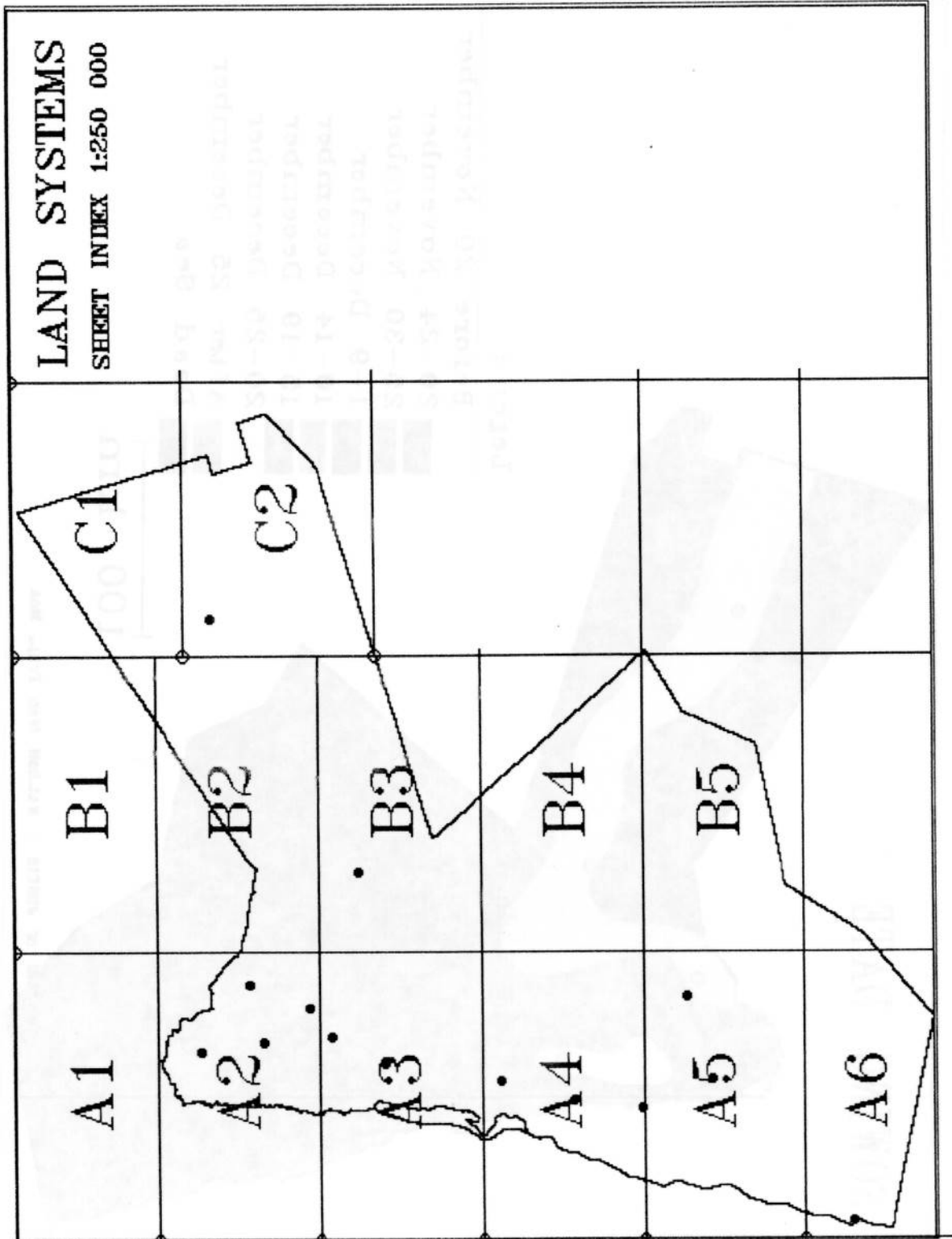
SINGLE MAP ANALYSIS

Map : sowdtot - SOWING DATE

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Before 20 November	1.30	1.30	1159.6
2	20-24 November	3.27	4.57	2918.4
3	25-30 November	6.62	11.19	5902.6
4	1-9 December	4.55	15.74	4055.7
5	10-14 December	25.80	41.54	23009.5
6	15-19 December	31.03	72.57	27679.2
7	20-25 December	13.02	85.59	11608.9
8	After 25 December	13.82	99.41	12326.3
9	Dead Sea	0.59	100.00	529.9
Total of 9 classes		100.00		89190.1





Full name: Land system / 1.version
 Short name: SYS2TOT
 Digitized features: Land system, working version by N.Munro

Source (authority): National Soil Map Project
 Source map(s): Delineated on Landsat MSS images
 Source map projection: JTM
 Source map scale: 1:250,000

Sheet index: Land system map index (see page G 5.2-226)
 1.columns (A...C)
 2.rows (1...6)

Sheets: A 2...6
 B 2...5
 C 1...2

in total: 11 sheets
 joining sequence: A 2...6
 B 2...5
 C 1...2

Number of units: 173 (totally 180, but 7 mapping units do not occur)
 Colour of units: 1..., last:
 Dead Sea: Mapping unit 174 (transferred from 'altxtot' map)

Level codes: not used (only '1')
 Feature codes: mapping units
 Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Mohammed Sameh
 Date of digitization: 1991

Remarks: Early working version to define regions, land systems and facets;
 it is to be replaced with map 'soiltot' (see page G 5.2-211)

SINGLE MAP ANALYSIS

Map : sys2tot - LAND SYSTEMS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	1.1.1	0.62	0.62	556.6
4	2.1.1	0.28	0.91	252.3
5	2.1.2	0.77	1.68	689.5
6	2.1.3	0.43	2.11	385.5
7	2.1.4	0.02	2.14	20.9
8	2.1.5	0.03	2.17	26.8
9	2.1.6	0.30	2.47	267.6
10	3.1	0.66	3.13	592.4
11	3.2	0.77	3.90	686.3
12	3.3.1	0.52	4.42	461.3
13	3.3.2	0.04	4.46	37.9
14	3.3.3	0.06	4.52	57.4
15	3.4.1	0.39	4.91	344.6
16	3.4.2	0.15	5.06	135.1
17	4.1	1.37	6.43	1220.1
18	4.2	0.27	6.70	239.9
19	4.3	0.34	7.04	301.7
20	5.1.1	0.72	7.75	639.2
21	5.1.2	0.34	8.09	304.3
22	5.2	0.16	8.25	140.1
23	6.1.1	0.17	8.42	151.8
24	6.1.2	0.38	8.81	342.2
25	6.1.3	1.05	9.85	933.4
26	6.1.4	0.66	10.51	586.9
27	6.2.1	1.23	11.74	1098.1
28	6.2.2	0.60	12.35	539.1
30	7.2.1	0.79	13.14	708.5
31	7.2.2	0.53	13.67	468.5
32	7.2.3	0.69	14.35	613.8
33	7.3	0.37	14.72	329.7
34	8.1.1	0.73	15.46	654.9
35	8.1.3	0.94	16.39	836.3
36	8.1.4	0.58	16.97	516.7
37	8.1.5	0.25	17.22	221.0
38	8.1.6	0.04	17.26	31.8
39	8.2.1	0.39	17.65	350.1
40	8.2.2	0.18	17.83	156.1



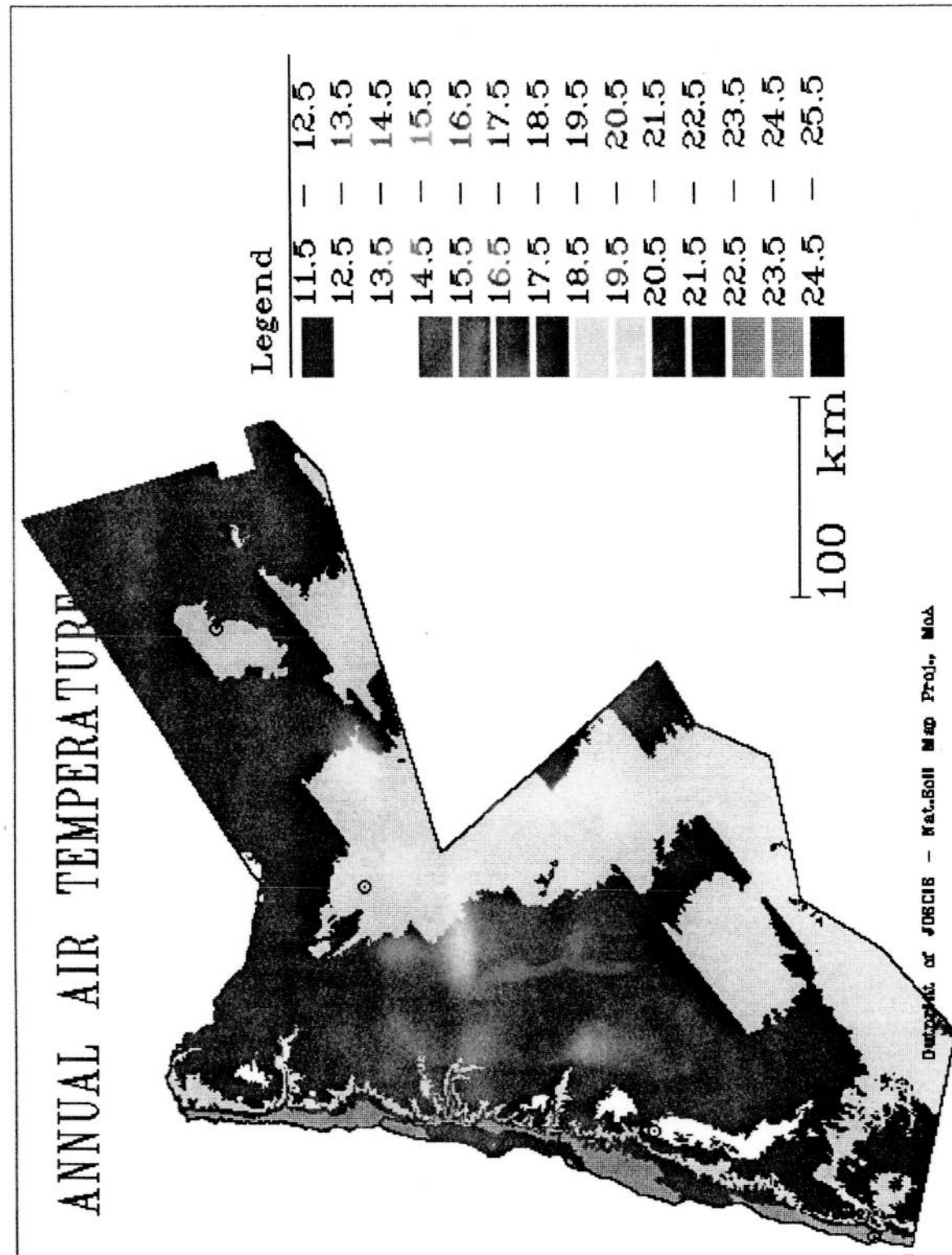
41	8.2.3	0.07	17.90	64.5
42	8.2.4	0.27	18.17	242.2
43	8.3.1	0.40	18.57	360.5
44	8.3.2	0.20	18.77	179.6
45	8.3.3	0.19	18.97	173.5
46	8.4.1	0.30	19.27	269.7
47	8.4.2	0.14	19.42	128.4
48	8.4.3	0.11	19.53	99.2
49	9.1.1	0.14	19.67	128.2
50	9.1.2	0.23	19.90	206.5
51	9.1.3	0.12	20.02	109.3
52	9.1.4	0.09	20.11	80.4
53	9.2.1	0.77	20.89	688.5
54	9.2.2	0.43	21.32	383.6
55	10.1	0.57	21.89	509.1
56	11.1.1	0.34	22.23	306.4
57	11.1.2	0.24	22.47	210.8
58	11.2.1	0.09	22.56	78.4
59	11.2.2	1.17	23.72	1042.4
60	11.2.3	1.16	24.89	1038.0
61	11.2.4	0.24	25.12	210.4
.				
.				
.				
156	12.9.5	0.08	93.15	69.6
158	17.1.1	1.03	94.18	914.5
159	17.1.2	0.48	94.66	430.0
160	Built-up Areas	0.19	94.85	166.8
161	13.2.6	1.45	96.30	1296.9
163	17.5	0.61	96.91	546.1
164	17.6	0.60	97.51	536.1
165	11.2.5	0.05	97.56	44.4
166	2.1.7	0.07	97.63	59.0
167	2.1.8	0.11	97.74	96.7
168	2.1.9	0.06	97.80	50.3
169	2.1.10	0.06	97.86	54.4
171	2.1.12	0.06	97.92	54.3
172	Mine	0.09	98.01	79.9
173	12.2.4	0.03	98.04	27.5
174	Dead Sea	0.60	98.64	535.1
175	16.2.5	0.14	98.78	128.7
176	Basalt	0.08	98.86	74.0
177	Unclassified	0.53	99.39	470.2
178	Unclassified	0.43	99.82	384.5
179	Eroded scarp	0.08	99.90	71.0
180	Dissected Window	0.10	100.00	86.8
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	Total of 173 classes	100.00		89190.1

SINGLE MAP ANALYSIS

Map : temda - ANNUAL AIR TEMPERATURE

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
21	11.5 - 12.5	0.07	0.07	62.8
22	12.5 - 13.5	0.41	0.48	365.5
23	13.5 - 14.5	1.02	1.50	913.4
24	14.5 - 15.5	2.16	3.66	1924.4
25	15.5 - 16.5	5.75	9.41	5129.5
26	16.5 - 17.5	18.08	27.49	16126.6
27	17.5 - 18.5	33.74	61.23	30091.3
28	18.5 - 19.5	22.53	83.77	20096.7
29	19.5 - 20.5	9.19	92.96	8200.2
30	20.5 - 21.5	2.58	95.54	2299.4
31	21.5 - 22.5	1.24	96.77	1102.6
32	22.5 - 23.5	1.52	98.29	1354.6
33	23.5 - 24.5	0.93	99.23	833.9
34	24.5 - 25.5	0.77	100.00	689.1
36	26.5 - 27.5	0.00	100.00	0.0
Total of 15 classes		100.00		89190.1





Full name: Set of 2 temperature maps, in classes of USDA taxonomy
Short name: TEMTA - TEMTS
Digitized features: Temperature assessments, as for TEMD... maps, but in
USDA taxonomy classes: mesic, thermic, hyperthermic
($< 15^0$, 15^0-22^0 , $> 22^0$)

Source (authority): National Soil Map Project (Computer Section)
Source map(s): Altitude, latitude, longitude (processed in SPANS)
Source map projection: -
Source map scale: -

Sheet index: -
Sheets: -

Number of units: 3
Colour of units: 11,3,6
All legends refer to 'temt'

Dead Sea: -

Level codes: -
Feature codes: -
Covering entire Jordan: yes

Digitizer: Processed by Gerhard Bechtold
Date of digitization: 1992

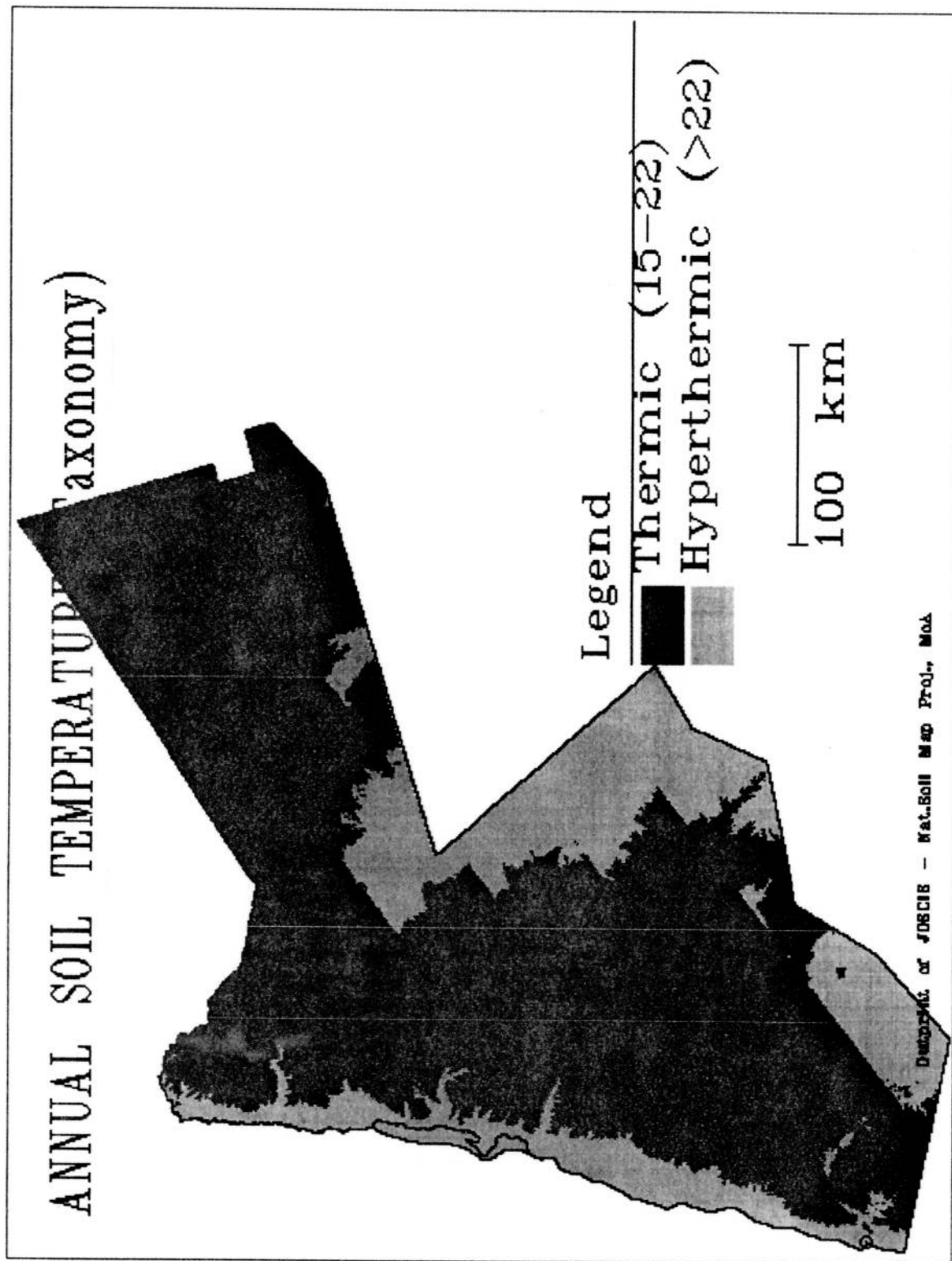
Remarks: These maps are derived from annual air and soil temperature maps
'temda' and 'temds' (see page G 5.2-231) with classification due to
USDA classes

SINGLE MAP ANALYSIS

Map : temts - ANNUAL SOIL TEMPERATURE (Taxonomy)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Mesic (<15)	0.00	0.00	2.3
2	Thermic (15-22)	76.90	76.91	68590.8
3	Hyperthermic (>22)	23.09	100.00	20597.0
Total of 3 classes		100.00		89190.1





Full name: Urban areas / 1.version
 Short name: URB1TOT
 Digitized features: Urban areas ('built up areas')

Source (authority): Royal Jordanian Geographic Centre
 Source map(s): 'New' topographic maps
 Source map projection: Palestine Grid
 Source map scale: 1:25,000

Sheet index: 25,000 topo sheet index
 1.columns (A...M)
 2.rows (1...9,M)

Sheets:

A	A,G
B	6,D
C	2,6,7,9
D	6,7,8
E	6,7,8
F	4
M	M

in total: 16 sheets
 joining sequence: A - B - C - D - E - F - M

Number of units: 15 (totally 19, but mapping units 9,10,13,17 do not occur)
 Colour of units: 1..., last: 13
 Dead Sea: Mapping unit 19 (transferred from 'altxtot' map)

Level codes: not used (only '1')
 Feature codes: mapping units
 Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
 Date of digitization: End 1992

Remarks: Greater Municipality of Amman includes:

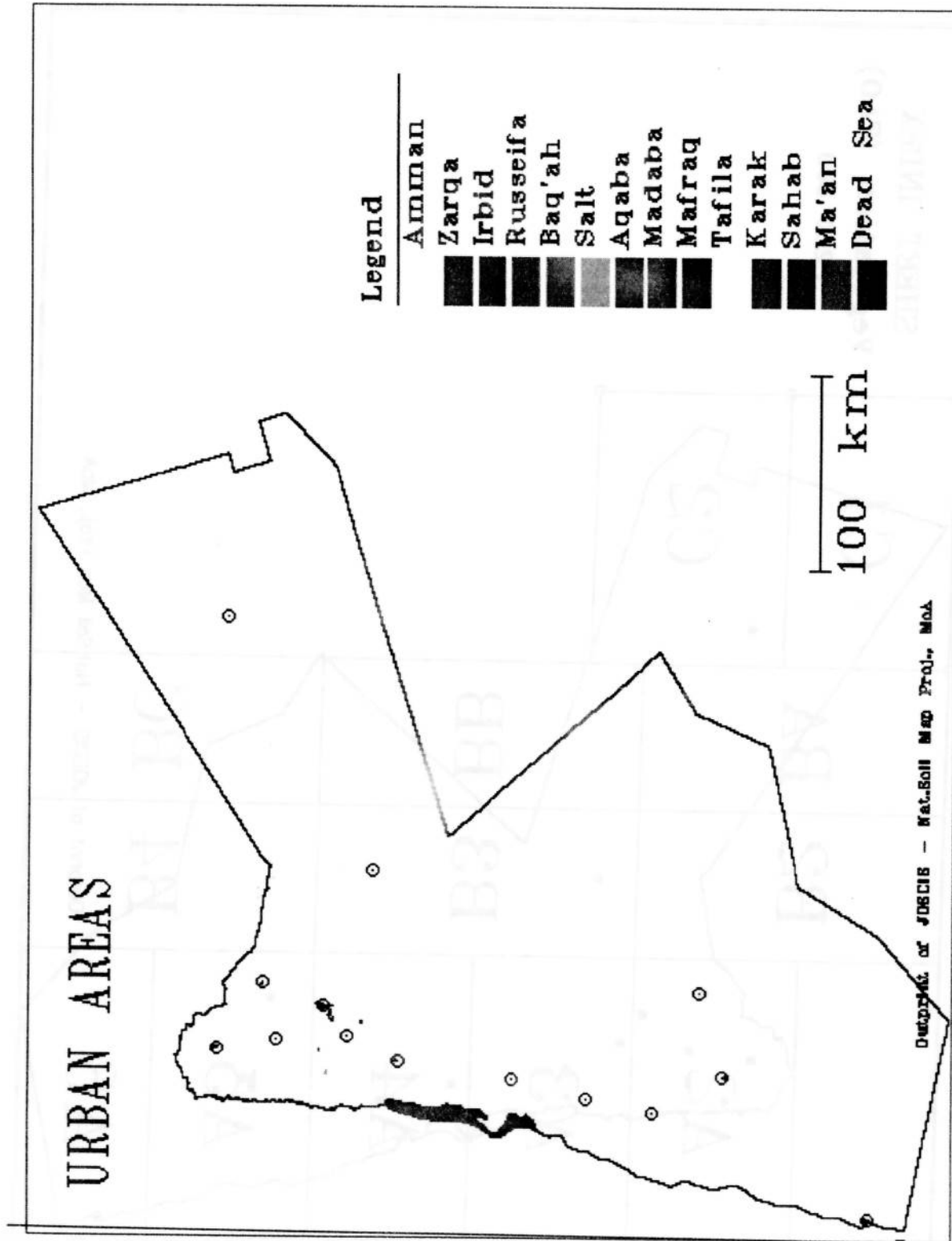
Abu Nuser	Al Abdeli
Shefa Badran	Wadi EsSir
Tareq (Tababor)	Badr - AlJadeeda
Basman	Zahran
Jubaya	Badr
Marqa	Ras ElEen
Jebal AlQusur	Al Eamuq
Aliqasma	Um AlExeer
Abu Alenda	Al Muqabelen
AlRajeb	ElBneat
Suweilha	Qhouribet AlSuq
Tla AlAli	Ghawa
Umu Samaq	Yadouda
Khalda	

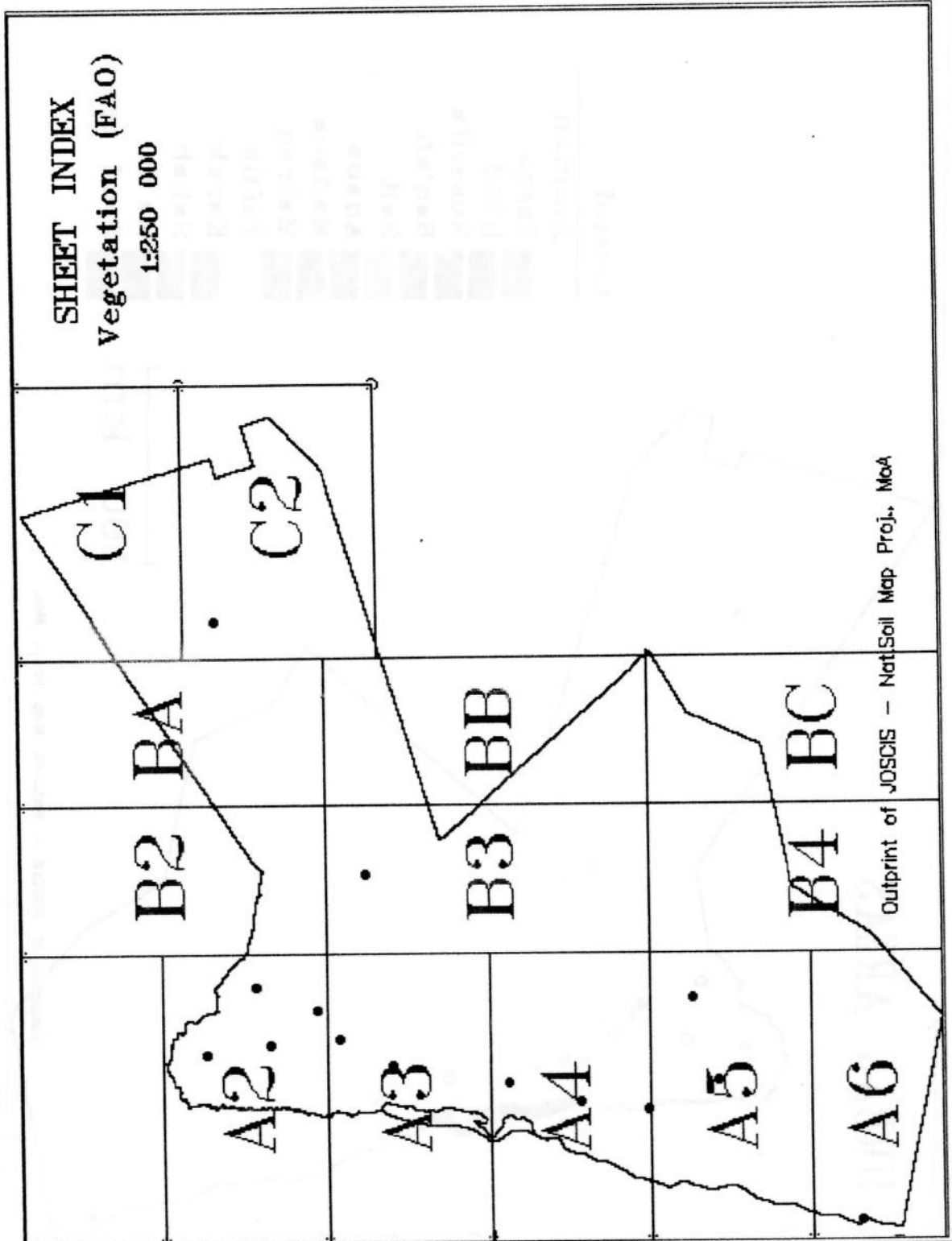
SINGLE MAP ANALYSIS

Map : urbitot - URBAN AREAS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Amman	22.41	22.41	178.873
2	Zarqa	3.37	25.78	26.930
3	Irbid	1.43	27.22	11.451
4	Russeifa	1.58	28.80	12.598
5	Baq'ah	0.25	29.04	1.976
6	Salt	0.61	29.65	4.873
7	Aqaba	1.05	30.70	8.373
8	Madaba	0.50	31.20	3.983
11	Schnellr	0.14	31.34	1.116
12	Mafraq	0.35	31.69	2.806
14	Tafila	0.31	32.00	2.474
15	Karak	0.10	32.10	0.800
16	Sahab	0.61	32.71	4.873
18	Ma'an	0.90	33.62	7.212
19	Dead Sea	66.38	100.00	529.874
Total of 15 classes		100.00		798.213





Full name: Vegetation (FAO)
Short name: VEG2TOT
Digitized features: Vegetation and land use, FAO, by Dr.Gaddes

Source (authority): FAO project in Forestry Department, Ministry of Agriculture, 1991
Source map(s): Vegetation Map of Jordan
Source map projection: Palestine Grid
Source map scale: 1:250,000

Sheet index: Vegetation map index (see page G 5.2-242)
1.columns (A...C)
2.rows (1...4,A...C)

Sheets: A 2...6
B 2,3,4,A,B,C
C 1,2

in total: 13 sheets
joining sequence: A - B - C

Number of units: 124 (totally 129, but 5 mapping units do not occur)
Colour of units: 1..., last: 13
Dead Sea: Mapping unit 125 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Mohammed Sameh
Date of digitization: Early 1992

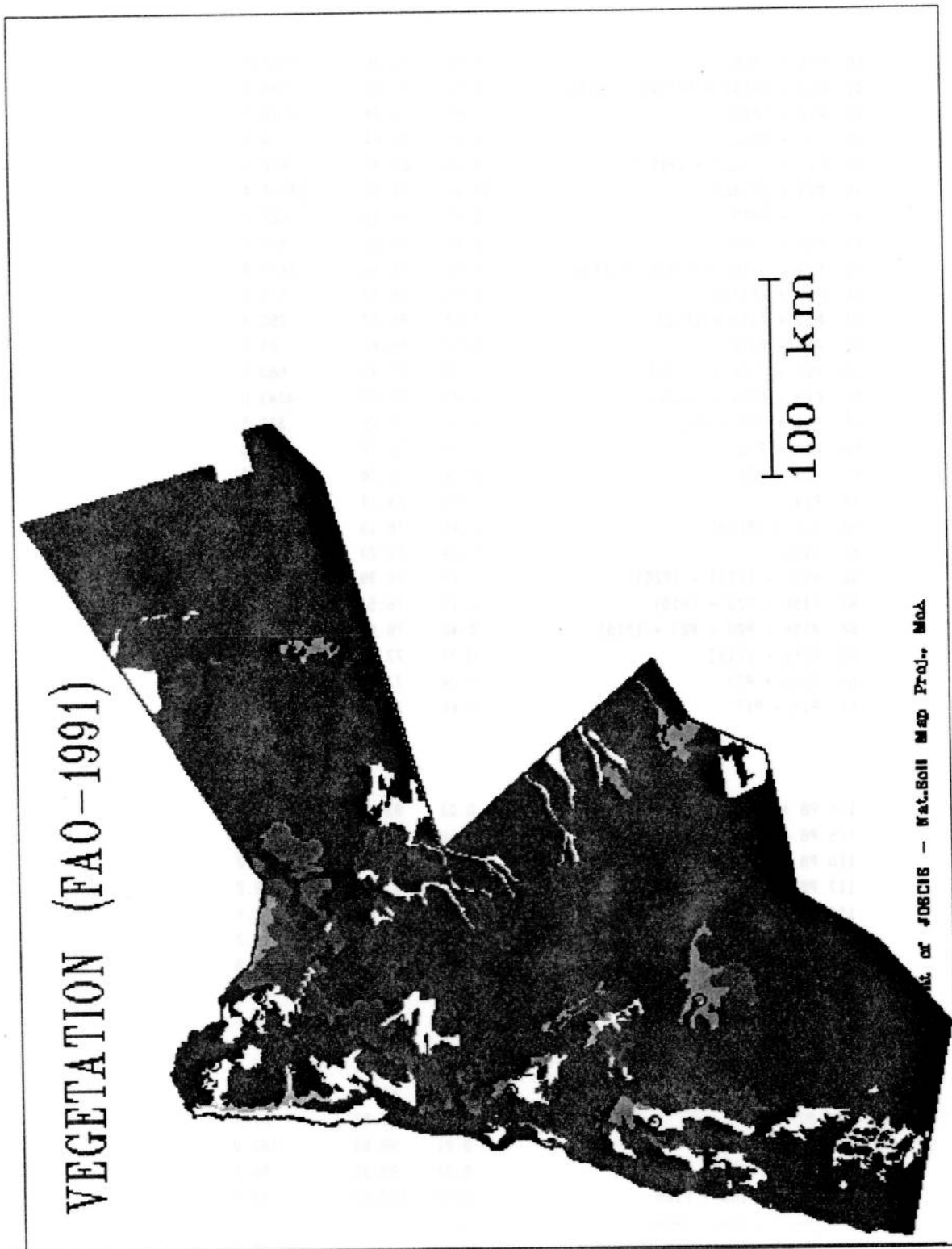
Remarks: This map is aggregated to form:
VEG2TOTA (see page G 5.2-247)

SINGLE MAP ANALYSIS

Map : veg2tot - VEGETATION (FAO-1991)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	A2 + P5b + C1b	0.03	0.03	29.3
2	A4	0.61	0.64	540.4
3	A4 + (P1) + (P2)	0.34	0.98	302.1
4	A4 + (P4)	0.43	1.41	387.8
5	C2 + A3 + A4 + (P5c)	0.76	2.17	675.9
6	C4 + (A)	0.24	2.41	214.0
7	F1a + F1b + F1c	0.14	2.55	121.9
8	F1a + F1b + F1c + P1 + P2	0.20	2.75	182.8
9	F1b + A2	0.02	2.77	14.2
10	F1c + P1 + P2 + C1a + A2	0.37	3.14	334.2
11	F2a + F2b + P1 + P2 + C1a + A1	0.46	3.60	407.8
12	F2b + P1 + P2 + C1a + (A)	0.28	3.88	248.2
13	F3	0.13	4.01	117.3
14	F3 + P1 + P2 + C1a + (A)	0.38	4.39	337.0
15	F3 + P1 + P2 + C1a + A1	0.20	4.59	180.7
16	F4 + F5 + P6 + C1b	0.21	4.80	190.8
17	F4 + P1 + P2 + C1a + A1	0.16	4.97	146.9
18	F4 + P1 + P2 + C1b + A2	0.34	5.31	301.7
19	F5 + F6	0.09	5.40	83.9
20	F5 + F6 + (A)	0.18	5.58	162.3
21	F5 + F6 + (P12)	0.16	5.75	146.0
22	F5 + F6 + P4 + C1b + A1	0.13	5.88	119.6
23	F6 + P12	0.27	6.15	238.0
24	IA4	0.51	6.66	456.1
25	P1 + P2 + A2	0.12	6.78	110.9
26	P1 + P2 + A3	0.13	6.91	111.7
27	P1 + P2 + A4	0.01	6.92	12.7
28	P1 + P2 + C1a	0.06	6.99	56.0
29	P1 + P2 + C1a + (A)	0.11	7.10	98.3
30	P1 + P2 + C1a + A1	0.25	7.34	222.6
31	P1 + P3 + C1b	0.09	7.43	77.6
32	P10 + (P9)	0.35	7.78	312.3
33	P10 + P13 + P15a + P15b	1.21	9.00	1082.0
34	P11	0.01	9.00	4.9
35	P11 + P13	1.21	10.21	1082.2
36	P12	1.47	11.68	1307.0
37	P12 + F6	0.07	11.75	59.6
38	P12 + P13	0.08	11.83	75.6
39	P13	0.81	12.64	718.1



40	P13 + (P10)	8.64	21.28	7707.6
41	P13 + (P10) + (P15a) + (P15b)	0.72	21.99	638.4
42	P13 + (P11)	1.85	23.84	1647.8
43	P13 + (P15)	0.00	23.84	0.5
44	P13 + (P15b) + (P15c)	0.58	24.42	518.1
45	P13 + (P15c)	30.48	54.91	27187.4
46	P13 + (P19)	0.65	55.56	584.2
47	P13 + (P9)	0.47	56.03	421.2
49	P13 + (P10) + (P15b) + (P15c)	9.53	65.56	8496.6
50	P13 + (P15b)	0.73	66.29	655.3
51	P13 + P15b + (P10)	0.33	66.62	290.4
52	P13 + P15c	0.03	66.65	23.3
53	P13 + P15c + (P15b)	0.77	67.41	683.6
54	P13 + P18a + (P18c)	4.87	72.28	4343.0
55	P13 + P20 + P23	0.38	72.66	339.5
56	P13 + P22	0.08	72.74	72.0
57	P13 + P23	0.04	72.78	37.5
58	P14	0.95	73.74	848.3
59	P14 + (P18b)	2.45	76.19	2188.7
61	P15b	0.04	76.23	37.2
62	P15b + (P10) + (P20)	0.16	76.39	141.7
63	P15b + P20 + (P10)	0.15	76.54	130.3
64	P15b + P20 + P23 + (P10)	0.40	76.93	354.7
65	P15c + (P13)	0.77	77.70	686.6
66	P15c + P23	0.04	77.74	34.2
67	P16 + P17	0.66	78.40	589.2
.				
.				
.				
114	P8 + C3	0.03	95.15	22.9
115	P8 + P15b + C3	0.58	95.73	513.2
116	P8 + P15b + C3 + (A)	0.29	96.02	255.2
117	P8 + P15b + C3 + A2	1.00	97.01	889.2
118	P9	0.22	97.23	192.4
119	P9 + P11	0.54	97.77	478.7
120	P9 + P13	0.08	97.84	68.6
121	P9 + P23	0.11	97.95	96.2
122	Sabkha Dam	0.12	98.07	102.6
123	Built-up Areas	0.27	98.33	236.9
124	P11 + (P13)	0.60	98.94	539.1
125	Dead Sea	0.59	99.53	530.0
126	P7 + A2	0.09	99.62	81.1
127	P1 + P2 + A1	0.21	99.83	183.0
128	P9 + (P13)	0.07	99.90	66.4
129	P13 + P18a + P18b	0.10	100.00	89.3

	Total of 124 classes	100.00		89189.8

Full name: Agricultural Land Use Intensity
 Short name: VEG2TOTA
 Digitized features: Vegetation and Land Use, grouped into intensity classes

Source (authority): FAO project in Forestry Department, Ministry of Agriculture, 1991
 Source map(s): Vegetation Map of Jordan
 Source map projection: Palestine Grid
 Source map scale: 1:250,000

Sheet index: same as / derived from 'veg2tot'
 Sheets: same as / derived from 'veg2tot'
 in total: 13 sheets

Number of units: 10
 Colour of units: 10,1,2,3,4, 5,9,6,14,13
 Dead Sea: Mapping unit 10 (transferred from 'altxtot' map)

Level codes: not used (only '1')
 Feature codes: mapping units
 Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Mohammed Sameh
 Date of digitization: Early 1992

Remarks: Derived from 'veg2tot' (see page G 5.2-243), using translation table:

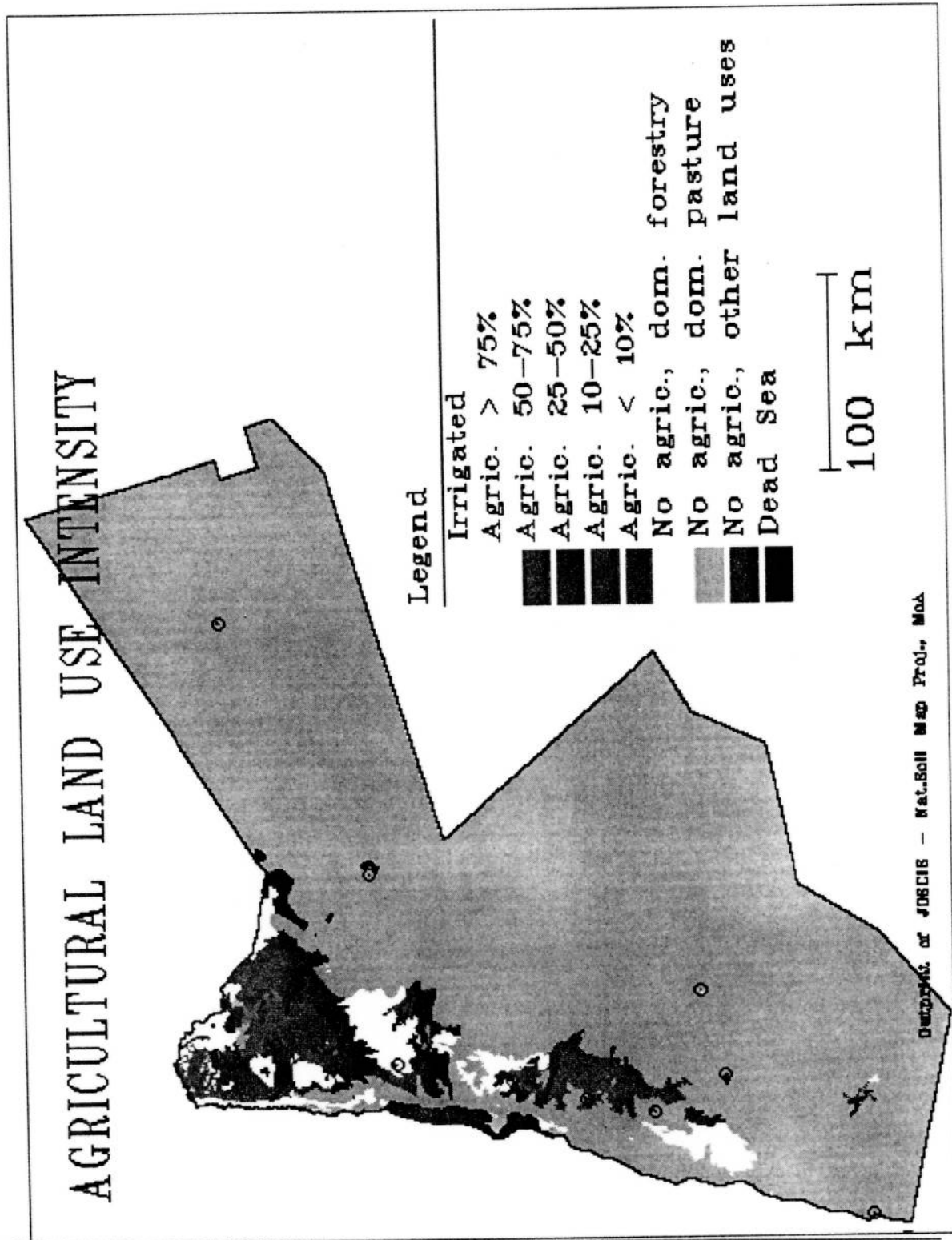
24	--> 1	Irrigated; agricultural land use > 75%
2 - 5, 27, 104	--> 2	Agricultural land use > 75 %
26, 88, 94, 107	--> 3	Agricultural land use 50 - 75 %
1, 9, 10, 18, 25, 87, 98, 103, 106, 117, 126	--> 4	Agricultural land use 25 - 50 %
11, 15, 17, 22, 30, 82, 86, 90, 93, 113, 127	--> 5	Agricultural land use 10 - 25 %
6, 12, 14, 20, 29, 95, 97, 101, 116	--> 6	Agricultural land use < 10 %
7, 8, 13, 16, 19, 21, 23	--> 7	Non-agricultural land use, dominantly forestry
28, 31 - 81, 83 - 85, 89, 92, 99, 100, 102, 105, 109 - 112, 114, 115 118 - 121, 124, 128, 129	--> 8	Non-agricultural land use, dominantly pasture
122, 123	--> 9	Non-agricultural land use, other uses
125	--> 10	Dead Sea

SINGLE MAP ANALYSIS

Map : veg2tota - AGRICULTURAL LAND USE INTENSITY

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Irrigated	0.51	0.51	456.1
2	Agric. > 75%	2.42	2.93	2160.1
3	Agric. 50-75%	0.64	3.57	568.6
4	Agric. 25-50%	2.37	5.94	2115.1
5	Agric. 10-25%	2.27	8.21	2025.9
6	Agric. < 10%	3.44	11.65	3066.9
7	No agric., dom. forestry	1.21	12.86	1080.6
8	No agric., dom. pasture	86.16	99.03	76847.1
9	No agric., other land uses	0.38	99.41	339.5
10	Dead Sea	0.59	100.00	530.0
Total of 10 classes		100.00		89189.8





Full name: Vegetation
Short name: VEGXTOT
Digitized features: Vegetation (as of 1960's)

Source (authority): Hunting Technical Services (date: 1960's)
Source map(s): R.Cl. 4
Source map projection: Palestine Grid
Source map scale: 1:2,200,000

Sheet index: -
Sheets: AA
in total: 1 sheet

Number of units: 13
Colour of units: 6,4,14,12,5, 1,8,10,7,9, 11,2,13
Dead Sea: Mapping unit 13 (transferred from 'altxtot' map)

Level codes: not used (only '1')
Feature codes: mapping units
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Gerhard Bechtold
Date of digitization: 1991

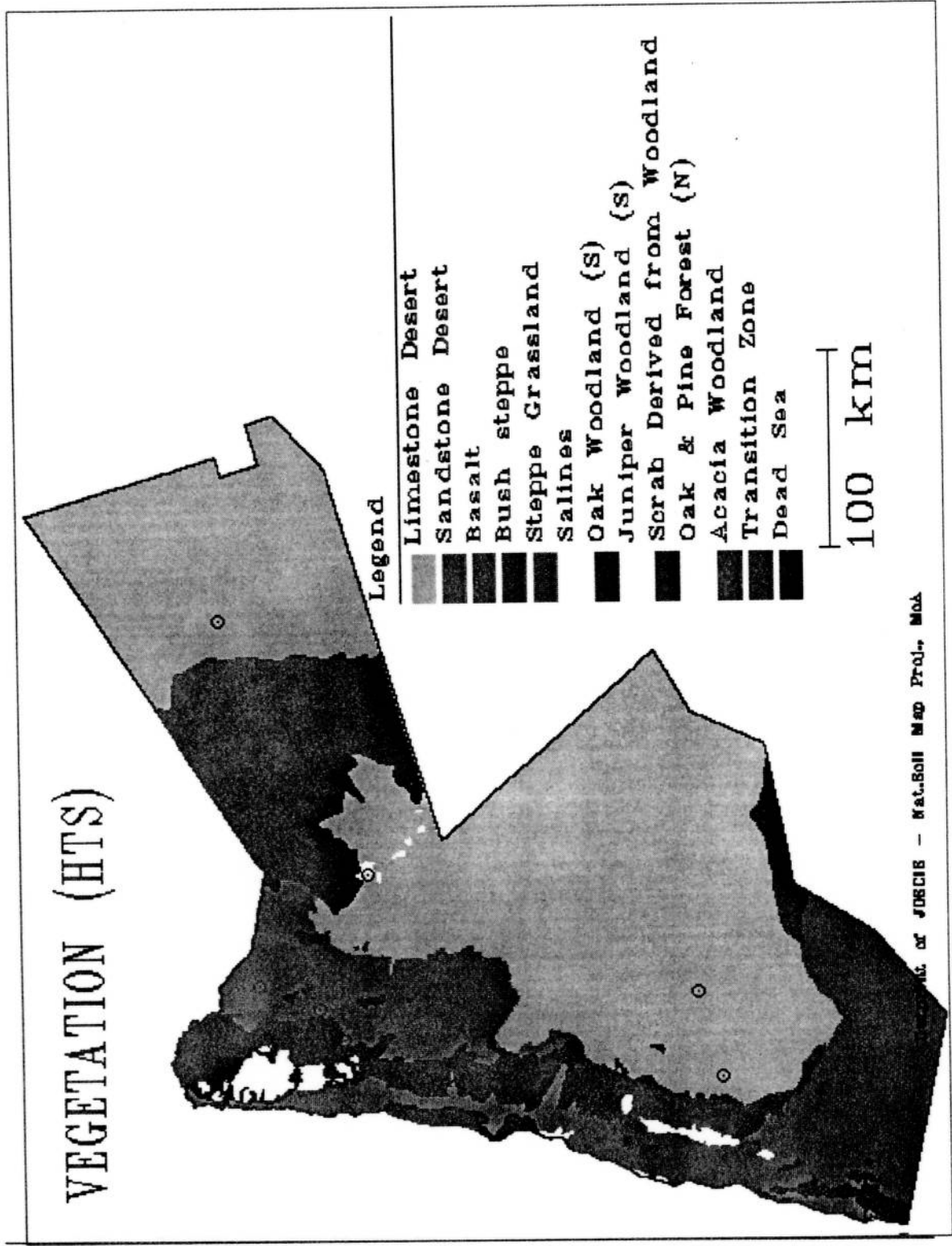
Remarks: Can work as historical document

SINGLE MAP ANALYSIS

Map : vegxtot - VEGETATION (HTS)

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Limestone Desert	53.20	53.20	47448.8
2	Sandstone Desert	14.35	67.55	12796.0
3	Basalt	11.81	79.35	10529.6
4	Bush steppe	3.00	82.35	2671.5
5	Steppe Grassland	8.25	90.60	7361.1
6	Salines	0.22	90.82	193.7
7	Oak Woodland (S)	0.28	91.10	250.7
8	Juniper Woodland (S)	0.36	91.46	324.0
9	Scrab Derived from Woodland	4.04	95.50	3605.1
10	Oak & Pine Forest (N)	0.92	96.43	824.6
11	Acacia Woodland	0.93	97.36	833.5
12	Transition Zone	2.04	99.41	1821.5
13	Dead Sea	0.59	100.00	529.9
Total of 13 classes		100.00		89190.1





Full name: Villages
Short name: VILLTOT
Digitized features: Voronoi map of village areas

Source (authority): Royal Jordanian Geographic Centre
Source map(s): Coordinates of villages (point file)
Source map projection: (Palestine Grid)
Source map scale: -

Sheet index: -
Sheets: -

Number of units: 956 (totally more, but some villages were given without coordinates)
Colour of units: 1..., last:
Dead Sea: -

Level codes: -
Feature codes: -
Covering entire Jordan: yes (no area with feature code: 0)

Digitizer: Entered by Muhanned Kalalkeh and Etihad Rihani,
processed by Gerhard Bechtold
Date of digitization: Early 1993

Remarks: Example of 'voronoi' map (Thyssen polygons), derived from village index, obtained from Royal Jordanian Geographic Centre, with village names and coordinates (file 'gen_vill.dbf')

See also Section G 3.8 of this Volume: 'Generate Voronoi maps'

This map is aggregated to form map:
GOV4TOT (see page G 5.2-109)

Map is in process of final checking of coordinates with Royal Jordanian Geographic Centre (1/8/93)

Use of earlier versions of village maps (example: 'adm1tot' etc.) is not recommended anymore.

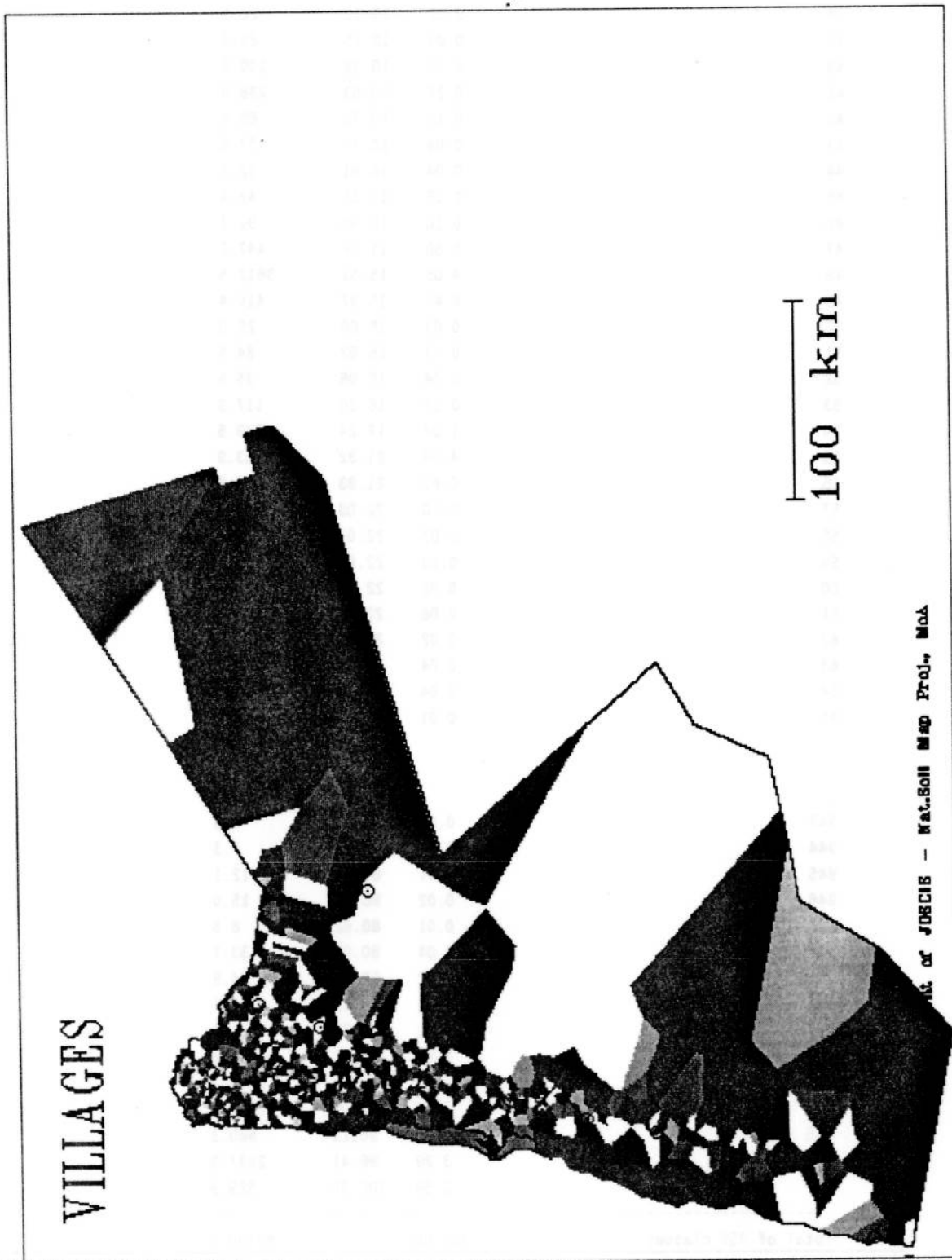
SINGLE MAP ANALYSIS

Map : villtot - VILLAGES

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)

1	Village 1	0.07	0.07	65.4
2		0.74	0.82	661.5
3		0.11	0.92	95.5
4		0.09	1.01	77.8
5		0.08	1.09	69.8
6		0.29	1.38	259.0
7		0.29	1.67	257.2
8		0.20	1.87	177.7
9		0.41	2.28	366.3
10		0.14	2.41	121.4
11		0.27	2.68	242.7
12		1.80	4.48	1605.1
13		1.24	5.72	1105.2
14		0.16	5.88	139.4
15		0.09	5.97	84.1
16		0.90	6.87	799.2
17		0.66	7.53	590.8
18		0.18	7.71	159.4
19		0.08	7.79	72.5
20		0.04	7.83	32.3
21		0.11	7.94	100.5
22		0.18	8.12	161.8
23		0.33	8.45	290.6
24		0.52	8.96	460.6
25		0.11	9.08	101.5
26		0.06	9.13	49.6
27		0.10	9.24	92.1
28		0.05	9.29	46.9
29		0.02	9.31	21.8
30		0.18	9.50	161.4
31		0.31	9.81	278.3
32		0.18	9.99	160.4
33		0.04	10.03	37.6
34		0.02	10.05	20.1
35		0.03	10.08	29.3
36		0.09	10.18	81.8
37		0.02	10.20	18.4



38	0.02	10.22	22.1
39	0.03	10.25	25.3
40	0.11	10.36	100.9
41	0.27	10.63	238.9
42	0.10	10.73	86.8
43	0.04	10.77	37.5
44	0.04	10.81	32.3
45	0.05	10.85	42.4
46	0.10	10.96	91.7
47	0.50	11.46	447.2
48	4.05	15.51	3612.5
49	0.46	15.97	410.4
50	0.03	16.00	25.0
51	0.03	16.02	24.6
52	0.04	16.06	35.6
53	0.13	16.20	117.9
54	1.04	17.24	929.5
55	4.09	21.32	3643.9
56	0.60	21.93	538.6
57	0.10	22.03	90.8
58	0.03	22.07	31.1
59	0.03	22.09	23.3
60	0.02	22.11	13.6
61	0.08	22.19	73.2
62	0.02	22.21	18.4
63	0.04	22.25	32.7
64	0.04	22.29	36.2
65	0.01	22.29	5.4
.			
.			
943	0.01	80.57	8.3
944	0.01	80.58	7.3
945	0.01	80.60	12.1
946	0.02	80.61	15.0
947	0.01	80.62	8.3
948	0.04	80.66	33.1
949	0.02	80.68	14.9
950	0.01	80.69	11.1
951	0.01	80.70	6.1
952	9.86	90.56	8793.8
953	2.13	92.69	1903.2
954	2.32	95.01	2072.3
955	1.10	96.11	980.3
956	3.29	99.41	2937.9
957	0.59	100.00	529.9
-----	-----	-----	-----
Total of 956 classes	100.00		89190.1

Full name: Wildlife reserve areas
Short name: WLDRTOT
Digitized features: Wildlife reserve areas

Source (authority):
Source map(s):
Source map projection: Palestine Grid
Source map scale: 1:3,650,000

Sheet index: -
Sheets: AA
in total: 1 sheet

Number of units: 14 (totally 13, but mapping unit 13 does not occur)
Colour of units: 1..., last: 13
Dead Sea: Mapping unit 14 (transferred from 'altxtot' map)

Level codes: (used for wildlife reserve progress map: 'wldrtot5')
Feature codes: mapping units
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
Date of digitization: 1991

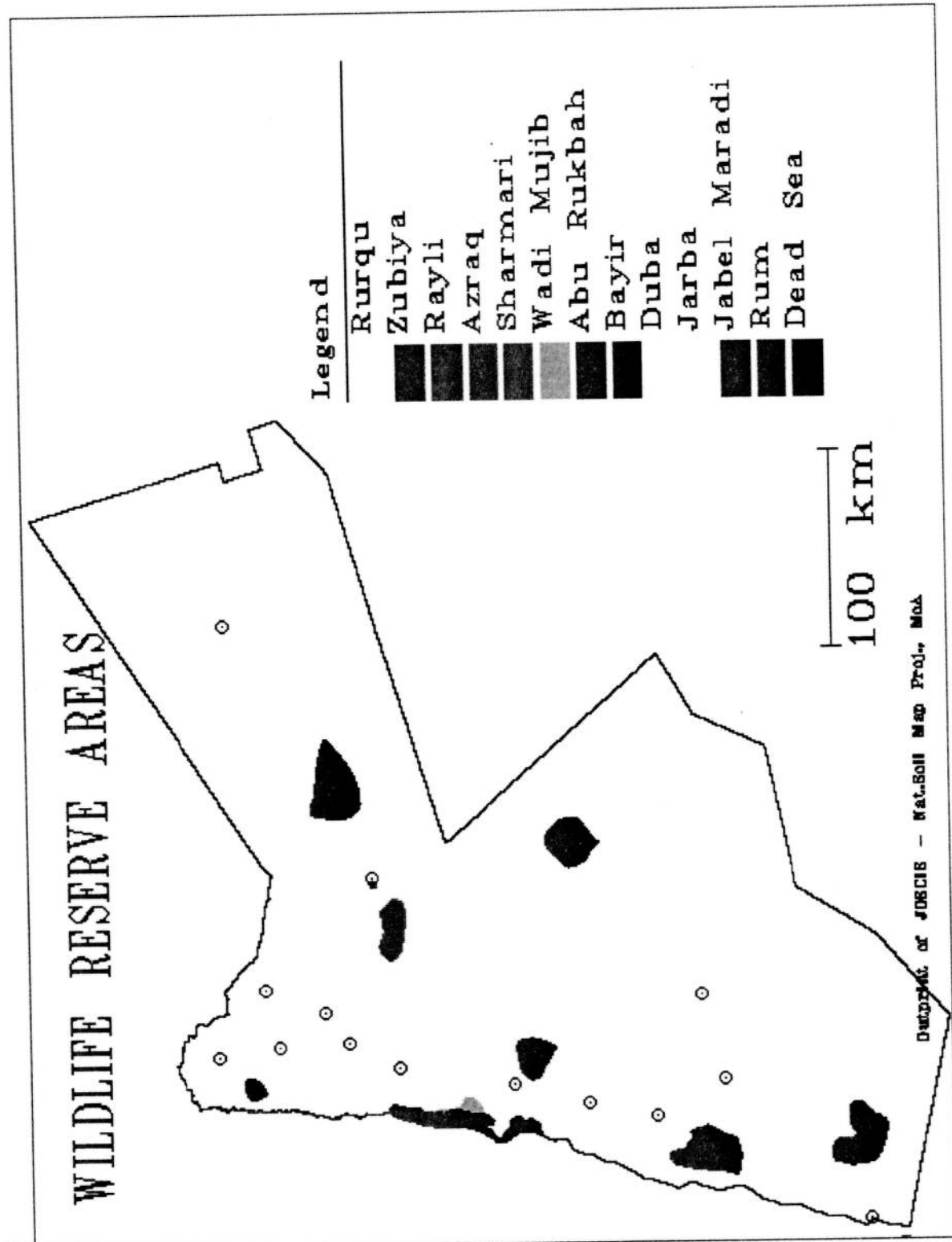
Remarks: Same digitization source as 'wldrtot5' map (see page G 5.2-263)

SINGLE MAP ANALYSIS

Map : wldrtot - WILDLIFE RESERVE AREAS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Rurqu	17.59	17.59	873.12
2	Zubiya	2.06	19.66	102.35
3	Rayli	15.96	35.61	791.91
4	Azraq	0.35	35.96	17.34
5	Sharmari	7.20	43.16	357.26
6	Wadi Mujib	2.10	45.26	104.19
7	Abu Rukbah	6.51	51.77	323.17
8	Bayir	10.01	61.78	496.92
9	Duba	1.56	63.35	77.50
10	Jarba	0.67	64.02	33.48
11	Jabel Maradi	13.19	77.21	654.45
12	Rum	12.11	89.32	601.24
14	Dead Sea	10.68	100.00	529.87
Total of 13 classes		100.00		4962.80



Full name: Wildlife reserve progress
Short name: WLDRTOT5
Digitized features: Wildlife reserve progress

Source (authority):
Source map(s):
Source map projection: Palestine Grid
Source map scale: 1:3,650,000

Sheet index: -
Sheets: same as 'wldrtot'

in total: 1 sheet

Number of units: 3 (totally 4, but mapping unit 3 does not occur)
Colour of units: 4,5,0,13
Dead Sea: Mapping unit 4 (transferred from 'altxtot' map)

Level codes: mapping units
Feature codes: (used for wildlife reserve areas: 'wldrtot')
Covering entire Jordan: no (areas with feature code: 0 occur)

Digitizer: Mohammed Sameh
Date of digitization: 1991

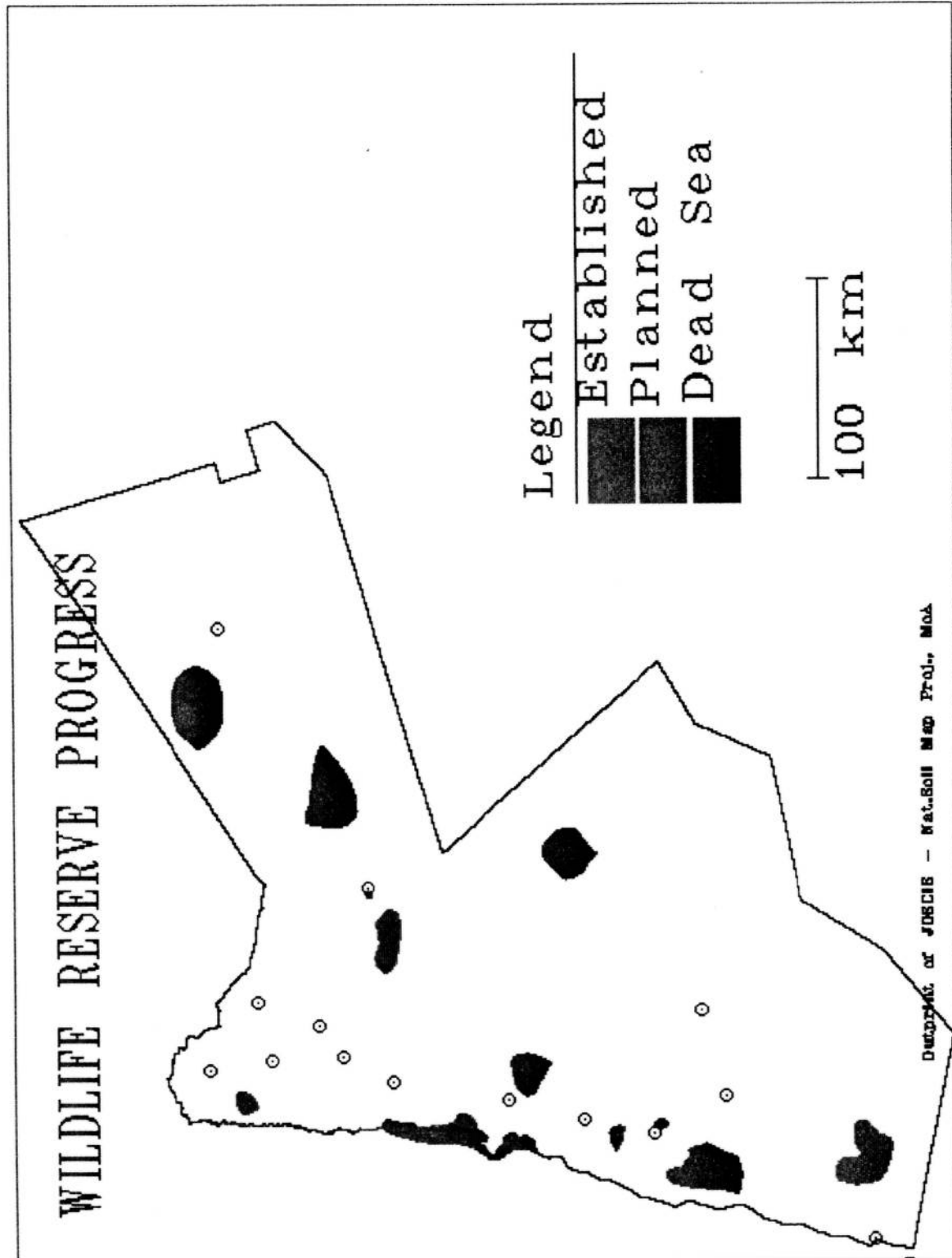
Remarks: Same digitization source as 'wldrtot' map (see page G 5.2-259)

SINGLE MAP ANALYSIS

Map : wldrtot5 - WILDLIFE RESERVE PROGRESS

Window : 00 - Universe

Class	Legend	Area (%)	Cumm Area	Area (km sq)
1	Established	25.39	25.39	1259.88
2	Planned	63.94	89.32	3173.04
4	Dead Sea	10.68	100.00	529.87
Total of 3 classes		100.00		4962.80





GENERAL MAP SHEET INDICES

Following map sheet indices are defined for general maps:

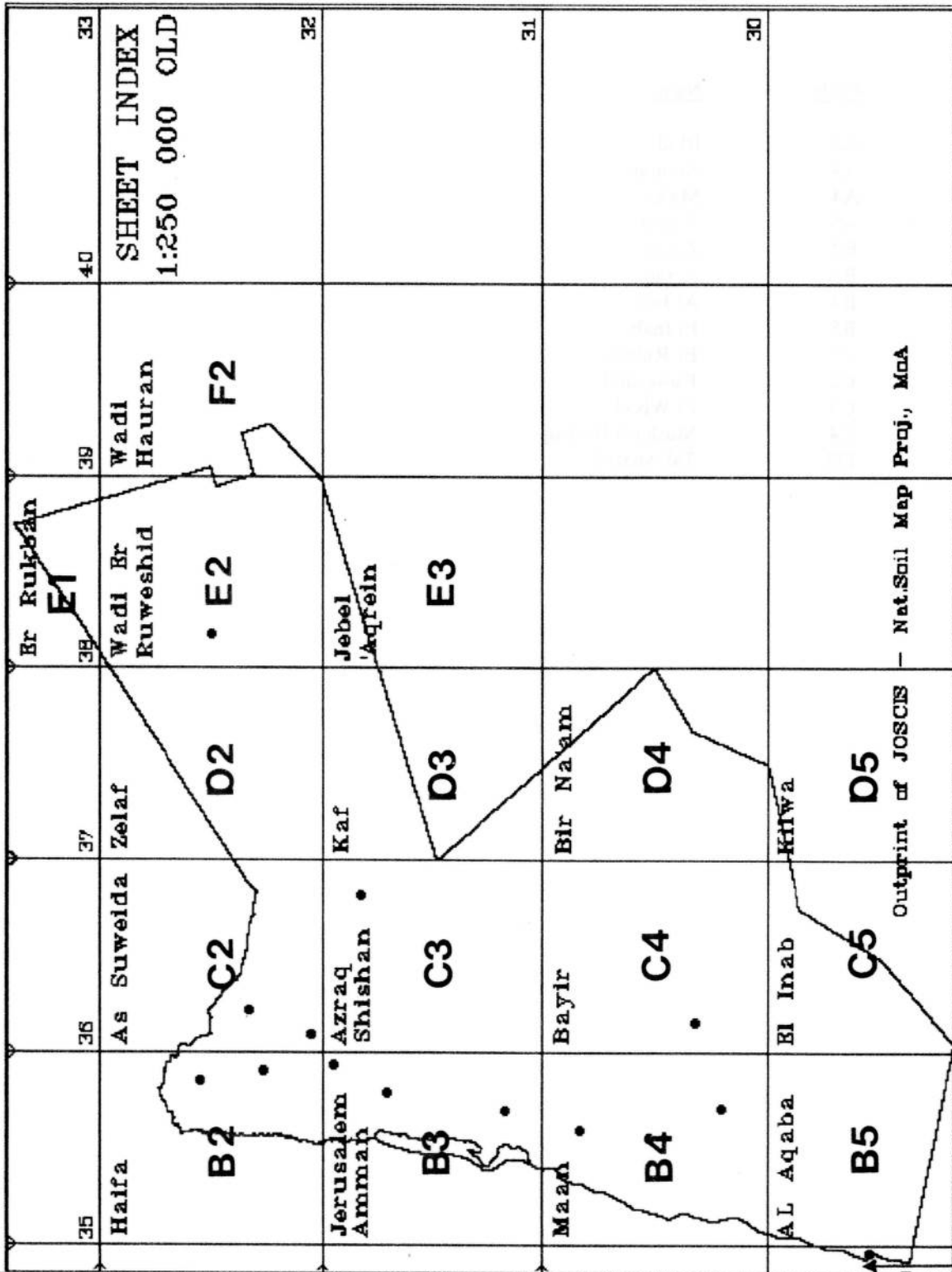
- 'Old' 250,000 topo sheet index
- 'New' 250,000 topo sheet index
- 50,000 sheet index
- 25,000 sheet index
- Combined 50,000 and 25,000 index
- Landsat MSS index

Sheet indices applied only for one specific map are shown in the Map Database, Section 5.2 of this Volume.

SHEET INDEX

'OLD' 1:250 000 TOPO INDEX

<u>Code</u>	<u>Name</u>
A1	Eilat
B2	Haifa
B3	Jerusalem
B4	Maan
B5	Aqaba
C2	As Suweida
C3	Azraq Shishan
C4	Bayir
C5	El Inab
D2	Zelaf
D3	Kaf
D4	Bir Na'am
D5	Hilwa
E1	Er Rukban
E2	Wadi Er Ruweshid
E3	Jabel Aqrein
F2	Wadi Hauran

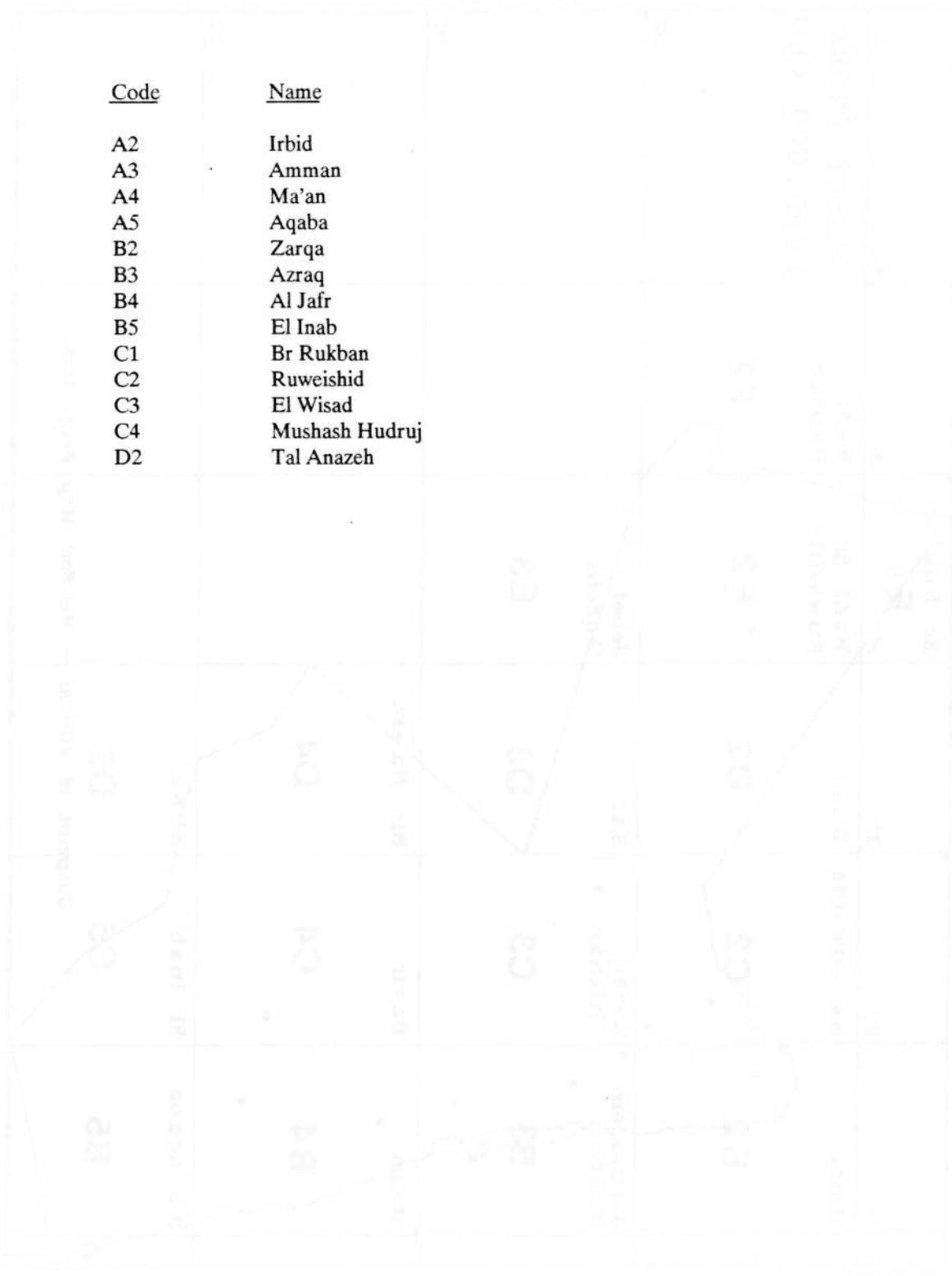


JOSCS 1.0

A5

SHEET INDEX

'NEW' 1:250 000 TOPO INDEX



SHEET INDEX

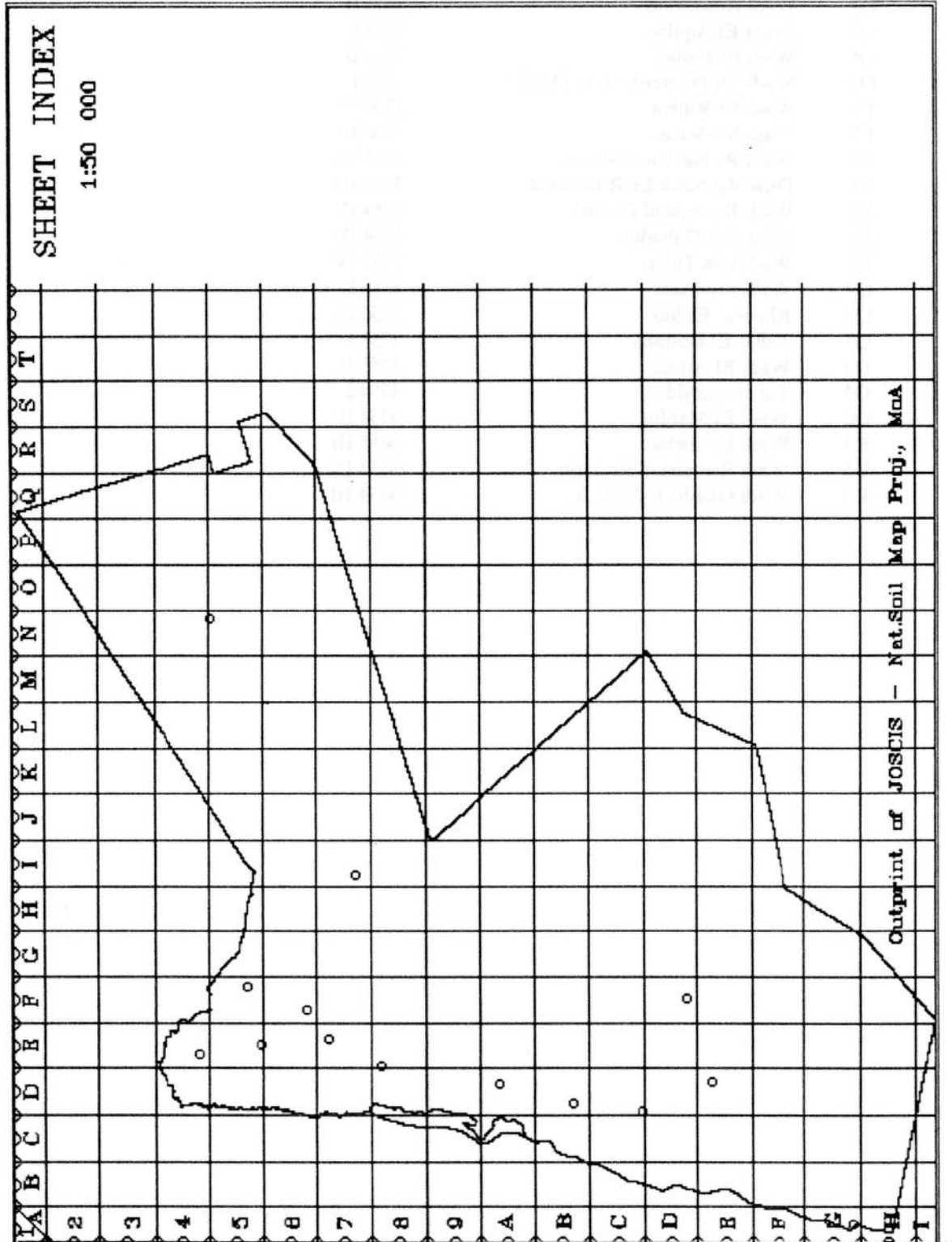
1:50 000 TOPO INDEX

<u>Code</u>	<u>Name</u>	<u>No</u>
AG	Wadi Araba	2949 II
AH	El Yamaniya	2948 I
BC	Wadi El Ghamar	3051 III
BD	Wadi El Lihyana	3050 IV
BE	Wadi Gharandal	3050 III
BF	Wadi Rahma	3049 IV
BG	Aqaba	3049 III
BH	Jabel El Mubarak	3048 III
C9	Qabr Ed Dilma	3052 I
CA	Es Safi	3052 II
CB	Fifi	3051 I
CC	Jabel Hamrat Fidan	3051 II
CD	Petra	3050 I
CE	Ras En Naqab	3050 II
CF	El Quwsira	3049 I
CG	Jabel Um Ishrin	3049 II
CH	Ein El Hashim	3048 I
D4	Waqqas	3155 III
D5	Deir Abu Said	3154 IV
D6	Salt	3154 III
D7	Karama	3153 IV
D8	Ma'in	3153 III
D9	Er Rabba	3152 IV
DA	Karak	3152 III
DB	At Tafila	3151 IV
DC	Shaubak	3151 III
DD	Bir Khdad	3150 III
DE	Ma'an	3150 III
DF	Jabal Batra	3149 IV
DG	Jabel El Qanasiya	3149 III
DH	Jabel Um Sahn	3148 IV
DI	Wadi As Saladih	3148 III
E4	Irbid	3155 II
E5	Jarash	3154 I
E6	Suweilih	3154 II
E7	Amman	3153 I
E8	Madaba	3153 II
E9	Ariha (Dhiban)	3152 I
EA	Adir	3152 II
EB	Aina	3151 I
EC	Jurf Ed Darawish	3151 II

ED	Wadi Abu El Haman	3150 I
EE	Isfir El Mahatta	3150 II
EF	Qal'at Fassua	3149 I
EG	Jabel El Harad	3149 II
EH	Dubeidib	3148 I
EI	Jabal Ladghayad	3148 II
F4	Ramtha	3255 III
F5	Mafraq	3254 IV
F6	Zarqa	3254 III
F7	Sahab	3253 IV
F8	Khan Ez Zabib	3253 III
F9	Siwaqa	3252 IV
FA	Jabel El Mutaramel	3252 III
FB	Wadi El Buweijia	3251 IV
FC	Wadi El Bahiya	3251 III
FD	El Jafr	3250 IV
FE	Wadi El Musawwal	3250 III
FF	Wadi Abu Mil	3249 IV
FG	Eth Thuleithul	3249 III
FH	El Mudawarah	3248 IV
FI	Halat Ammar	3248 III
G5	Um El Jimal	3254 I
G6	Qasr El Hallabat	3254 II
G7	Qasr Mushash	3253 I
G8	Qasr El Kharana	3253 II
G9	Wadi Attarat Um Ghudran	3252 I
GA	Wadi Maghar	3252 II
GB	Wadi El Na'diya	3251 I
GC	Jabal Ghuziama	3251 II
GD	Qa' El Jafr	3250 I
GE	Wadi El Jahdaniya	3250 II
GF	Jabel Kabid	3249 I
GG	El 'Ajua	3249 II
GH	Jabel El Khishsha	3248 I
H5	Um El Quttein	3354 IV
H6	El Hibabiya	3354 III
H7	Qasr Amra	3353 IV
H8	Wadi Ed Dabi'	3353 III
H9	Qasr Et Tubah	3352 IV
HA	Wadi Edh Dhirwa	3352 III
HB	Bayir	3351 IV
HC	Wadi Ukhieidir Ed Duweima	3351 III
HD	Qi'an Wad'a	3350 IV
HE	Wad'a Es Samra	3350 III
HF	Mdyan El Ghudhei	3349 IV
HG	Qarat Amrat	3349 III
I5	Jabal Abu El Idham	3354 I
I6	El Aritein	3354 II
I7	Azraq	3353 I
I8	Wadi El Ghadaf	3353 II
I9	Wadi El Jashsha El Adla	3352 I

IA	Wadi El Makhruq	3352 II
IB	Wadi Es Sir	3351 I
IC	Wadi Ukhheidir Es Satih	3351 II
ID	Jabal El Adhiriyat	3350 I
IE	Jabal El Arfa	3350 II
IF	El Inab	3349 I
J4	Qa' El Abd	3455 III
J5	Qa' Shubeika	3454 IV
J6	Mahattat El Hafif	3454 III
J7	Wadi Rajil	3453 IV
J8	Abar EL Hazim	3453 III
J9	Wadi Huseidat Um Jilat	3452 IV
JA	Wadi Huseidat Um Ghudran	3452 III
JB	Wadi Samarmada	3451 IV
JC	Wadi El Hasan	3451 III
JD	Wadi Hudruj	3450 IV
JE	Wadi Sahb El Abyad	3450 III
JF	Wadi Ed Dubeiani	3449 IV
K4	Wadi El Jathum	3455 II
K5	Wadi El Abd	3454 I
K6	Wadi El Ausaji	3454 II
K7	Wadi El Qattaf	3453 I
K8	Um Nukheila	3453 II
KA	Wadi Bayir	3452 II
KB	Wadi El Charra	3451 I
KC	Wadi Fakk Esh Shiekm	3451 II
KD	Gharamil Hudruj	3450 I
KE	Wadi Edh Dhuweihya	3450 II
KF	Wadi Sahb El Asmar	3449 I
L3	Wadi Mahmud	3555 IV
L4	Tel El Misma	3555 III
L5	Tulul Esh Shahba	3554 IV
L6	Tulul El Ashaqif	3554 III
L7	Wadi Es Sibhi	3553 IV
L8	Jabal En Nasaslan	3553 III
LC	Wadi El Fakk Abu Taur	3551 III
LD	Mushash Hudruj	3550 IV
LE	Wadi Abu Hawaya	3550 III
LF	Wadi Kilwa	3549 IV
M3	Wadi Muqat	3655 I
M4	Qasr Burqu'	3555 II
M5	Biyar Gusew	3554 I
M6	Qa' Bakhita	3554 II
M7	El Wisad	3553 I
M8	Wadi Judei	3553 I
MD	Tilal Khuwisima	3550 I
ME	Wadi El Ghina	3550 II
MF	Jabel Et Tubeiq	3549 I
N2	Fia'co Duleima	3656 III
N3	Wadi Rishat En Nuieili	3665 IV
N4	Ruweishid	3655 III

N5	Wadi Huqeish	3654 IV
N6	Qa' Abu El Husein	3654 III
N7	Wadi El Jarani	3653 IV
O2	Qa' Qaseem	3656 II
O3	Wadi Er Risha	3655 I
O4	Wadi Ruweishid	3655 II
O5	Saum El Aqliya	3654 I
O6	Wadi El Judhei	3654 II
O7	Wadi Ed Dumeitha Um Mahfur	3653 I
P1	Wadi Er Rutiya	3756 IV
P2	Wadi Mudeisis	3756 III
P3	Wadi Rishat Um Taraeat	3755 IV
P4	Duweilat Satih Er Ruweishid	3755 III
P5	Wadi Ruweishid El Qisb	3754 IV
P6	Kharabat Dabadib	3754 III
P7	Wadi Um Tu'eis	3753 IV
Q1	Wadi Mudeisis	3756 I
Q2	Khabrat Es Sib	3756 II
Q3	Tallat El Bustana	3755 I
Q4	Wadi El Athna	3755 II
Q5	Tal'at Quayid	3754 I
Q6	Wadi El Mahfur	3754 II
R4	Wadi El Mirba'	3855 III
R5	Wadi Ruweishid Es Satih	3854 IV
R6	Wadi Ghadir Esh Sheik	3854 III



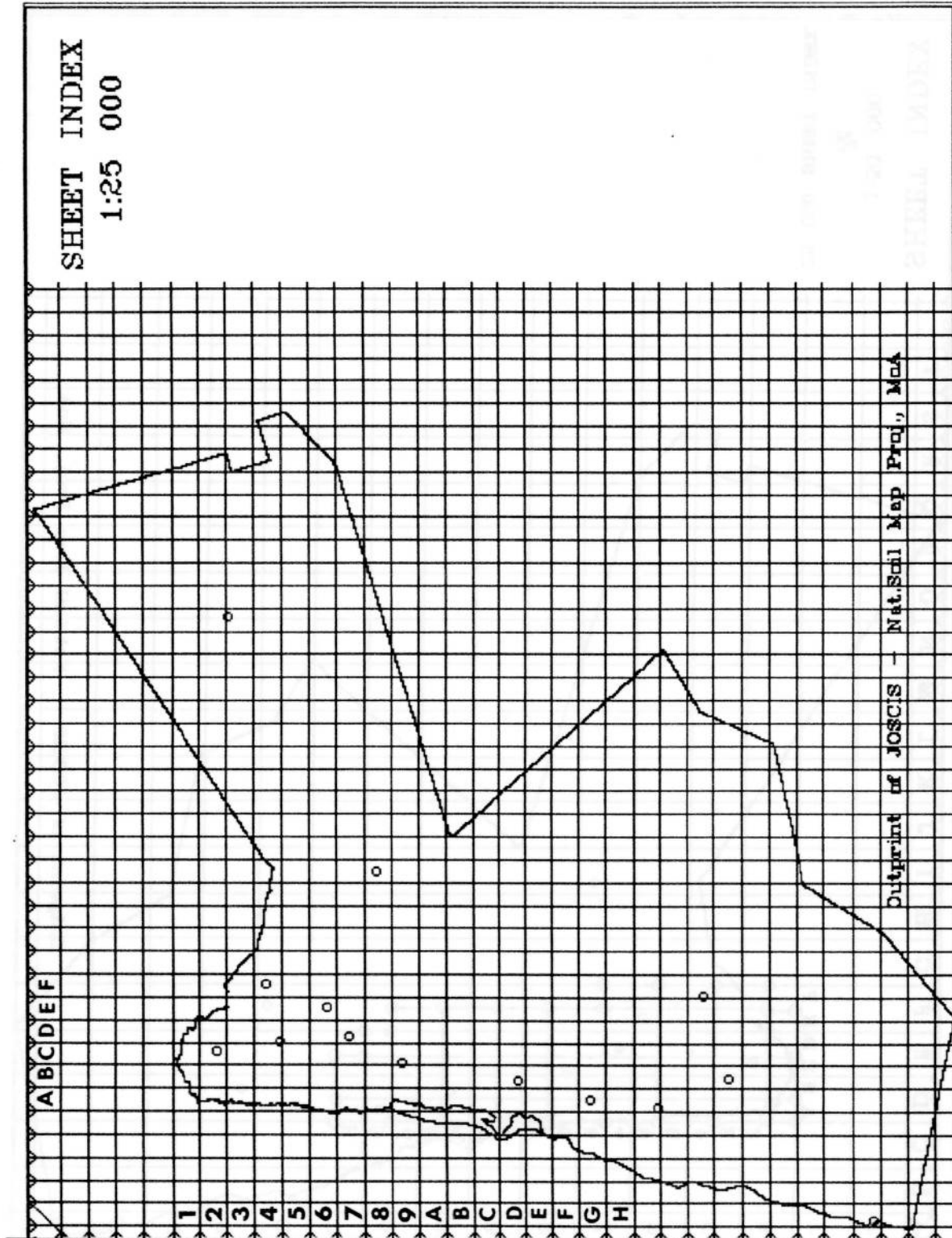
JOSGIS 1.0

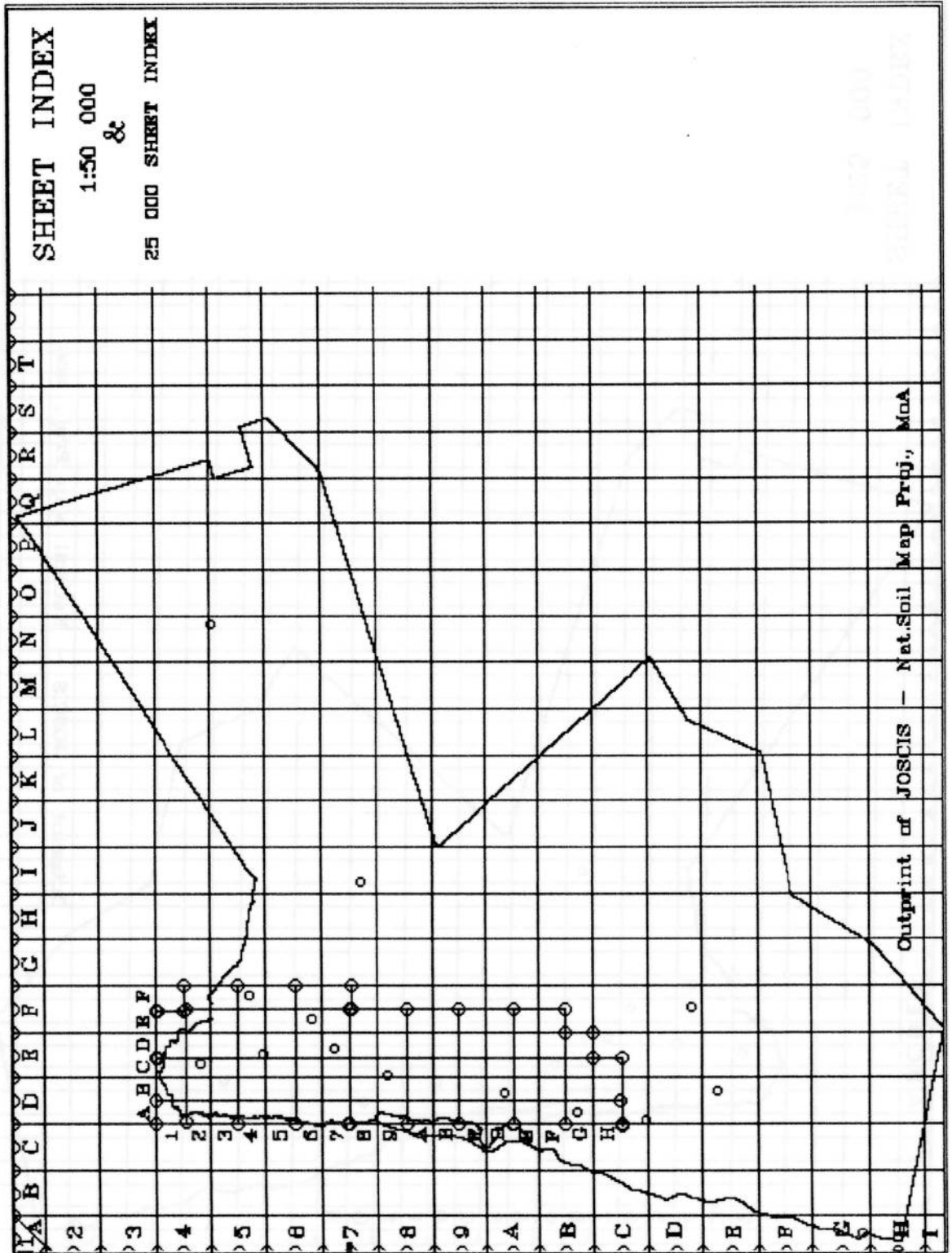
SHEET INDEX

1:25 000 TOPO INDEX

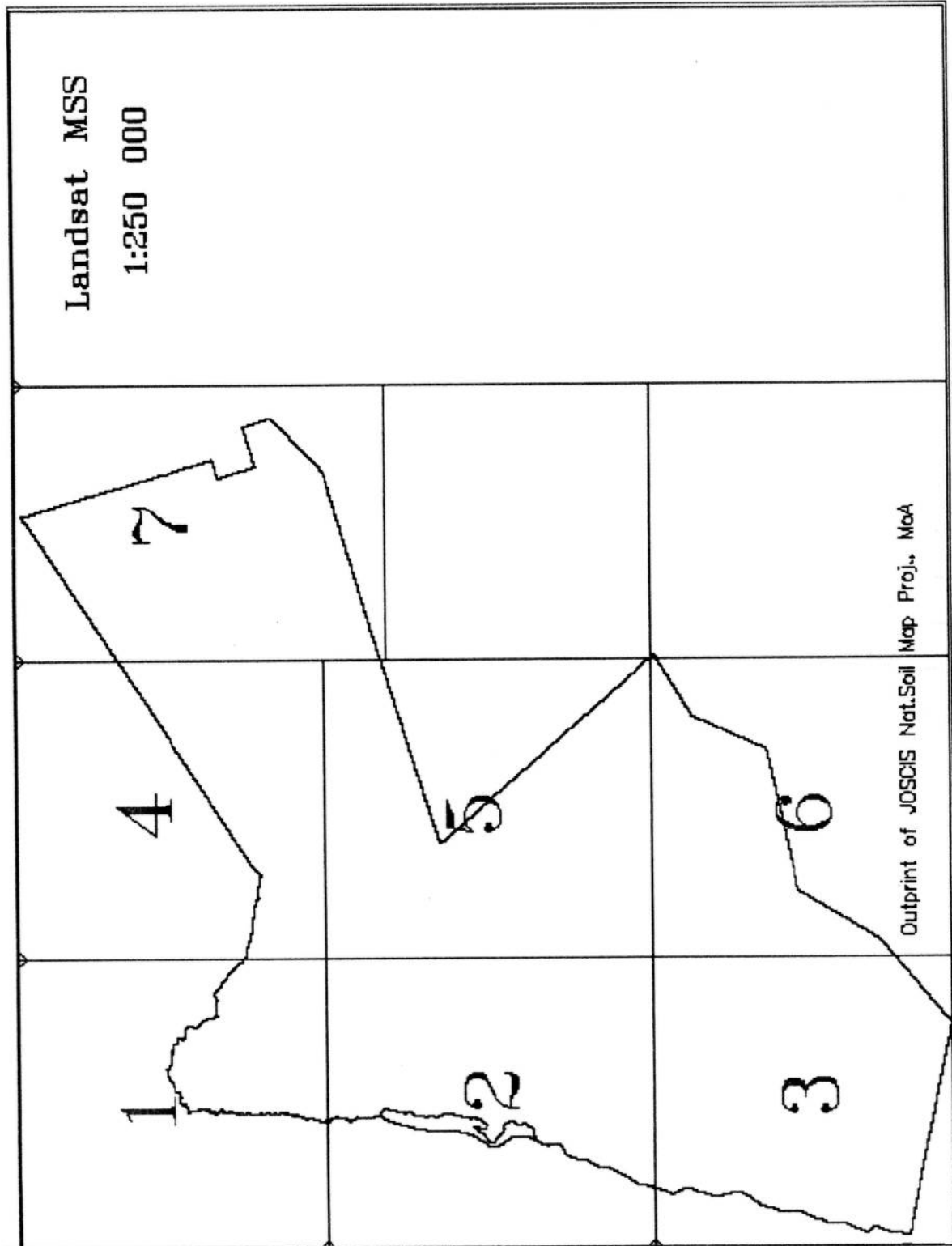
<u>Code</u>	<u>Name</u>	<u>No</u>
A1	Al Baqura	3155-III-NW
A2	Ash Shuna Ash Shamaliyya	3155-III-SW
A3	Al Mashari'	3154-IV-NW
A4	Kurayyima	3154-IV-SW
A5	Dayr Alla	3154-III-NW
A6	Damyah	3154-III-SW
A7	Al Karama	3153-IV-NW
A8	Sweima	3153-IV-SW
A9	Hamrat Ma'in	3153-III-NW
AA	Az Zara	3153-III-SW
AB	Araqib Faqou'	3152-IV-NW
AC	Ghor Al Mazra'h	3152-IV-SW
AD	Kathraba	3152-III-NW
AE	At Taybeh Al Janubiyah	3152-III-SW
AF	Amiya	3151-IV-NW
AG	At Tafila	3151-IV-SW
AH	Busaira	3151-III-NW
B1	Umm Qays	3155-III-NE
B2	At Tayyiba	3155-III-SE
B3	Dayr Abu Sa'id	3154-IV-NE
B4	Kufranjah	3154-IV-SE
B5	As Subayhi	3154-III-NE
B6	As Salt	3154-III-SE
B7	Ash Shuna Al Janubiyah	3153-IV-NE
B8	Al Rama	3153-IV-SE
B9	Ma'in	3153-III-NE
BA	Ash Shaqiq	3153-III-SE
BB	Al Mathlutha	3152-IV-NE
BC	Al Qasr	3152-IV-SE
BD	Al Karak	3152-III-NE
BE	Al Mazar Al Janubiyah	3152-III-SE
BF	Al Burbaita	3151-IV-NE
BG	Al 'Is	3151-IV-SE
BH	Al Qadisiyah	3151-III-NE
C1	Samar	3155-II-NW
C2	Irbid	3155-II-SW
C3	Al Mazar Ash Shamaliyya	3154-I-NW
C4	Suf	3154-I-SW

C5	Burma	3154-II-NW
C6	Suweilih	3154-II-SE
C7	Wadi Es Sir	3153-I-NE
C8	Na'ur	3153-I-SW
C9	Madaba	3153-II-NW
CA	Muleih	3153-II-SW
CB	Dhiban	3152-I-NW
CC	As Smakiyah	3152-I-SW
CD	Adr	3152-II-NW
CE	That Ras	3152-II-SW
CF	Muhyi	3151-I-NW
CG	Rujim Al Ahmar	3151-I-SE
CH	Jurf Ad Darawish	
D1	At Turra	3155-II-NE
D2	As Sarih	3155-II-SE
D3	Al Nu'ayyima	3154-I-NE
D4	Jarash	3154-I-SE
D5	Jubba	3154-II-NE
D6	Berain	3154-II-SE
D7	Amman	3153-I-NE
D8	Khraibat As Suq	3153-I-SE
D9	Al Jiza	3153-II-NE
DA	Umm Er Risas	3153-II-SE
DB	Salyah	3152-I-NE
DC	Qasr Al Bashir	3152-I-SE
DD	Jabal Al Hummar	3152-II-NE
DE	Qasr Abu Rukba	3152-II-SE
DF	Al Hamidiyah	3151-I-NE
DG	Al Hisa	3151-I-
E1	Tall Thayil	3255-III-NW
E2	Ar Ramtha	3255-III-SW
E3	Fa'	3254-IV-NW
E4	Al Manshiyya	3254-IV-SW
E5	Balama	3254-III-NW
E6	Zarqa	3254-III-SW
E7	Sahab	3253-IV-NW
E8	Al Muwaqqar	3253-IV-SW
E9	Qasr Al Mushatta	3153-II-NW
EA	Dhaba'	3153-II-SW
EB	Rujim Qiyal	3252-IV-NW
EC	Swaqa	3252-IV-SW
ED	Al Qatrana	3252-III-NW
EE	Sad As Sultani	3252-III-SW
EF	Al Wadi Al Abyad	3251-IV-NW
F2	Jabir	3255-III-SE
F3	Al Mughayyir	3254-IV-NE
F4	Al Mafraq	3254-IV-SE
F5	Al Khirba As Samra	3254-III-NE
F6	Khaw	3254-III-SE
F7	Jabal Al Ghabawi	3253-IV-NE





JOSGIS 1.0



National Soil Map and Land Use Project

Ministry of Agriculture, Jordan

J O S C I S

Jordan Soil and Climatic Information System

G I S

V O L U M E

Digitization

Processing

Print &
Plot

Map
Database

Settings &
Backup

SETTINGS of SPANS

SPANS 5 is described in detail in the original 4 volumes of 'SPANS - MANUAL'. This Section explains specific settings for the GIS application in Jordan in combination with JOSGIS.

1) Colours and palette:

No.	Colour	R	G	B
1	Brown	85	0	0
2	Dark red	170	0	0
3	Red	255	0	0
4	Orange	255	85	0
5	Dark yellow	255	170	0
6	Light yellow	255	255	0
7	Light green	0	255	0
8	Dark green	0	170	0
9	Very dark green	0	85	0
10	Very dark blue	0	0	85
11	Dark blue	0	0	170
12	Blue	0	0	255
13	Light blue	0	170	255
14	Grey	170	170	170
15	White	255	255	255

This information is stored in files 'C:\SPANS521\PALET.DAT' and 'C:\SPANS521\JORDAN\PALET.DAT'

Remark:

Do not delete a single global palette through option: Visualize - Palette - Colour - Delete, because you will delete the entire (!) global palette ! This is a bug in SPANS 5.

If you do so, restore the previous global palette (file 'palet.dat') in directory \SPANS521 by copying the backup version back to \SPANS521:

copy \spans521\palet.da_ \spans521\palet.dat,
or using an external backup from floppy disk or tapestreamer.

2) Defined windows:

Following windows are defined:

00-frame	Entire Jordan in 1 sheet	
A-frame	Jordan according to old 1:250,000 topo maps (14 sheets)	
P	Jordan in 3 sheets:	p1...p3
Q	Jordan in 6 sheets	q1...q6
R	Jordan in 10 sheets	r1...r9,ra
S	Jordan in 33 sheets	s1...s9,sa...sx

It is recommended to use a combination of letter 'T' and another letter / number for temporary window definitions:

T	Temporary windows	t1...t9,ta...tz,tt etc.etc.
---	-------------------	-----------------------------

See Section G 4.1 of this Volume for the mapped definition of these windows, and how to use and to define windows.

This information is stored in SPANS library file 'SPANS.DAT', but can be exported from the library to the ASCII file 'C:\SPANS521\JORDAN\WIN.REP', and can be imported from ASCII file 'C:\SPANS521\JORDAN\WINDIC.INP' (see following Chapter).

3) SPANS Library:

The SPANS library contains information about:

- Maps
- Legends
- Windows
- Browse files (slide shows)
- Classifications

The library is stored in files 'SPANS.DAT', 'SPANS.DBD', 'SPANS.KEY'.

This information can be retrieved individually ('exported') by: Transfer - Export - Library - {filename}, which will create:

- File 'map.rep' with all map titles and references to legends
- File 'leg.rep' with all legends
- File 'win.rep' with all windows definitions
- File 'bro.rep' with all slide shows references
- File 'class.rep' with all classifications

The REP files can be copied to INP files, then edited (for example, with Q editor), and re-imported to SPANS by: Transfer - Import - Library - {filename}:

- File 'map.rep' --> 'mapdict.inp'
- File 'leg.rep' --> 'legdict.inp'
- File 'win.rep' --> 'windict.inp'
- File 'bro.rep' --> 'brodict.inp'
- File 'class.rep' --> 'clasdict.inp'

Be sure to have always a valid backup of:

- SPANS.*
- *.REP !

See Section G 6.2 of this Volume !

If GIS data, legends etc. got corrupted, restore this information:

a) either:

from individual INP files:

Copy INP file from backup to \SPANS521\JORDAN\ subdirectory, then
'Transform - Import - Library - {filename}'

b) or:

from 'SPANS' library files:

Copy SPANS.* files from backup to \SPANS521\JORDAN\ subdirectory

4) Current Universe Definition:

This definition of the universe is stored in file 'CURPARAM.DAT' and can be retrieved by program 'CURRENT'.

The definition of universe 'jordan' for example is:

Current System parameters are:

mapid : soi2tot
window id : 00

Origin of Universe

lon 34.9000 lat 29.1500

Quarter point of Universe

lon 37.4969 lat 31.4351

projection string 9 5 37.000000 31.628410 0.99980 500000.00 500000.00

conversion factor : 0.030707

5) SPANS Printer Drivers:

In the present setup, two printer drivers are installed for SPANS: One is for the HP IIP laser printer, the other one for the NEC Pinwriter P7 plus dot matrix colour printer. The drivers are stored in files 'printer.hp2' and 'printer.nec' respectively, and are copied to file 'printer.sys', the actual printer driver file being called up through a batch command.

Listing of 'printer.nec':

```
5 ID DRIVER BW PHEAD CHRW MODE DOTVPI HPI PERLN PRNNO READY B/Wrev Bios Imsize Name
```

```
L haloljtp 0 -1 -1 3 300 300 3150 0 90 1 0 0 HPlaserjet
P - 1 7 20000 -1 84 84 1108 0 90 1 0 0 PRISM
N - 0 16 3 -1 120 120 1632 0 90 1 0 0 NEC P3C
S - 1 8 7 -1 72 120 1632 0 90 1 0 0 STAR
C - 1 8 12 -1 72 120 1632 0 90 1 0 0 SMITH CORONA
E - 1 8 12 -1 90 120 1632 0 90 1 0 0 EPSON FX100
5 halofusu 0 24 9 7 180 180 2448 0 90 1 0 0 NEC P5XL
D halofusu 1 24 30000 7 180 180 2448 0 90 1 0 0 DL2400 FUJITSU
H halopjet 1 1 30000 1 180 180 1440 0 90 1 0 0 HP PaintJet ColorGraphics
6 halotk96 0 -1 -1 -1 120 120 1024 0 90 1 0 0 Tektronix 4696
3 halotk93 0 -1 -1 0 300 300 2439 0 90 1 0 0 Tektronix 4693d
X halolxcp 1 -1 -1 -1 300 300 2520 0 90 1 0 0 Xerox4050LaserCP M0del50
```

```
: file PRINTER.SYS
```

```
:
```

```
:ID single character identifier for printer in use -
: should match first character after comment lines
```

```
:DRIVER name of halo driver (*.prn) or '.' if none
```

```
:
```

```
:SPANS PRINTING PARAMETERS
```

```
:
```

```
:BW 1 supported in SPANS Black/White printing, 0 not
```

```
:PHEAD pins per head
```

```
:CHRW character width
```

```
:
```

```
:HALO PRINTING PARAMETERS
```

```
:
```

```
:MODE patrr[7] index for dots per inch
```

```
:DOTVPI actual vertical dots per inch
```

```
:DOTHPI actual horiz dots per inch
```

```
:PERLN actual dots per line
```

```
:PRNNO patrr[16] port no (0 == LPT1, 1 == LPT2, 2 == LPT3)
```

```
:READY value returned by printer if it is ready for printing
```

```
:B/Wrev patrr[3] black/white reversal (0 == perform reversal, 1 == don't)
```

```
:Bios patrr[6] bios flag (0 == use bios, 1 == use DOS)
```

```
:Imsize patrr[2] Image orientation (0 == normal, 1 == landscape)
```

```
:name name of printer
```

In 'printer.hp2', first symbol, which is '5' in 'printer.nec', is replaced with a 'L'.

6) SPANS Screen Drivers:

In the present setup, two screen drivers are installed for SPANS: One is for the storage of browse files as CUT files (Dr.Halo compatible format), the other one for PIC files. They are stored in files 'boards.cut' and 'boards.pic' respectively. The actual screen driver file is 'boards.sys'.

Listing of 'boards.cut':

```
: file BOARDS.SYS
:
: This file tells SPANS which graphics card and locator device are in use.
: SPANS will not run if the ID in this file indicates a graphics board other
: than the one actually used.
:
: These lines beginning with a colon are comments, and are ignored by SPANS.
:
: The first line not having a colon in column one indicates the type of
: locator device by means of the single digit in column one:
: 0 = keyboard,
: 1 = HALO mouse driver, such as HALOMSMI.COM or HALOSUMI.COM,
: 2 = Microsoft Compatible driver supplied with mouse, such as Logitech's
:   MOUSE.COM or Genius mouse's GMOUSE.COM.
: See the appendix in the reference manual for other important information
: on using a mouse.
:
: The first character of the next line not having a colon in column one is the
: ID of the board type being used. This character may be edited if you change
: board types and do not wish to go through the entire installation procedure.
:
: SPANS will read this ID character, then scan down the first column of the
: remaining rows in the file until it finds a match. The first row containing
: a match will be read for the driver file's root name (field #3, *.dev) and
: the parameters for that particular graphics board. This driver file must be
: present in the SPANS directory.
:
: Additional remark by GERHARD (31/12/92):
: Column 'Type' indicates browse file format:
:       1 for CUT files (for Dr.Halo)
:       0 for BIC/PIC files (more flexible on graphics cards)
```

0

X Id	Seg	Dev	Mode	Asp	Maxcol	colstep	Type	Plan	Colort	Repal	Board
S	9	haloscio	0	1.000	16	16	0 0	2	0		SCION PC 640
T	10	halotecom	6	0.833	16	85	0 0	0	0		TECMAR GRAPHICS MASTER
E	0	haloibme	4	0.729	16	85	0 1	1	1		IBM EGA
W	0	haloawon	4	0.729	16	85	0 1	1	1		ATI EGA WONDER
I	0	haloavip	0	1.0000	16	85	0 1	1	1		VIP
8	0	-	0	1.000	256	1	1 0	0	2		IBM 8514
P	10	-	0	1.000	256	1	1 0	0	2		PRO-1280
Q	10	-	0	1.000	256	1	1 0	0	2		SGT PEPPER
R	0	halo9t	0	1.000	16	16	0 0	3	0		NUMBER NINE 2048x4
N	0	halonine	0	0.945	256	1	0 0	0	2		NO. NINE REVOLUTION 512x32 @ A000/C000
9	0	nined0e4	0	0.945	256	1	0 0	0	2		NO. NINE REVOLUTION 512x32 @ D000/C400
Z	0	nined0cc	0	0.945	256	1	0 0	0	2		NO. NINE REVOLUTION 512x32 @ D000/CC00
V	0	haloevaa	6	1.0000	16	85	0 1	1	1		EVA 480
X	0	haloibmv	7	1.0000	16	85	1 1	1	1		VGA

7) Other SPANS setting files:

univ.dat	in \SPANS521\	List and definition of universes
projmast.dat	in \SPANS521\	Data of master projections
project.dat	in \SPANS521\	Data of selected projections
project.dat	in \SPANS521\	Data of custom projections
		(can be deleted with 'project.exe')

See also Section G 3.7 with explanation of universe definitions.

BACKUP of SPANS

Data & Settings

1) Digitized input data:

C:\DIGDAT\nnnn*.*

For each digitized map sheet, there are 7 files:

HDR
HST
CRD
DIR
FMT,

and after export:

VEC
VEH

as explained in Section G 2.4 of this Volume

Backup procedure

for large maps (total file size > 1 MB) with CP Backup (PcTools):

Utilities

Backup ... (CP Backup)

If target drive is to be changed: <ALT> T

Option (<ALT> O)

Selection options (S)

Include/exclude files (I)

If files are already listed: Clear list (<ALT> L)

Type name of map file

example: C:\digdat\digdat6\riv2*.*

Ok (<ALT> O)

Start Backup <F5>

Backup procedure

for small maps in DOS:

copy \digdat\aaaa*.* A:*.*

where aaaa: name of the entire map

example: copy \digdat\soi1*.* A:*.*

Backups should be done during digitization and after completion of digitization.

2) Map files in SPANS:

C:\spans521\jordan*.MAP

Backup procedure with CP Backup (PcTools):

Utilities

Backup ... (CP Backup)

If target drive is to be changed: <ALT> T

Option (<ALT> O)

Selection options (S)

Include/exclude files (I)

If files are already listed: Clear list (<ALT> L)

Type: C:\spans521\jordan*.MAP

Ok (<ALT> O)

Start Backup <F5>

Backup should be done every 2 months

Should fit on 4 or 5 HD disks

3) Browse files in SPANS:

C:\SPANS521\JORDAN\ *.CUT

***.PIC**

***.BIC**

Backup procedure with CP Backup (PcTools):

Utilities

Backup ... (CP Backup)

If target drive is to be changed: <ALT> T

Option (<ALT> O)

Selection options (S)

Include/exclude files (I)

If files are already listed: Clear list (<ALT> L)

Type: C:\spans521\jordan*.?IC, and

Type: C:\spans521\jordan*.CUT

Ok (<ALT> O)

Start Backup <F5>

Backup should be done every 2 months

Should fit on 2 or 3 HD disks

4) Settings of universe in SPANS:

C:\SPANS521\JORDAN\

- *.BAK
- *.CMD
- *.DAT (except SPANS.DAT)
- *.EXE
- *.DBD
- *.ERR
- *.GER
- *.KEY
- *.PNT
- *.RCL
- *.REP
- *.TBA
- *.TBB
- EQUATION.*

Backup procedure in DOS:

copy C:\spans521\jordan*.BAK A:*.*

and repeat for all files / extensions as listed above

Backup should be done every 2 months

Will fit on 1 HD disk

5) Library of universe in SPANS:

C:\SPANS521\JORDAN\

- SPANS.DAT
- SPANS.DBD
- SPANS.KEY

Backup procedure with CP Backup (PcTools):

Utilities

Backup ... (CP Backup)

If target drive is to be changed: <ALT> T

Option (<ALT> O)

Selection options (S)

Include/exclude files (I)

If files are already listed: Clear list (<ALT> L)

Type: C:\spans521\jordan\spans*.*

Ok (<ALT> O)

Start Backup <F5>

Backup should be done every 2 months

Will fit on 1 HD disk

6) Settings of SPANS:

C:\SPANS521\
 *.SYS
 *.DAT
 BOARDS.*
 PRINTER.*
 PALET.*

Backup procedure in DOS:

```
copy \spans521\*.SYS A:*. *
copy \spans521\*.DAT A:*. *
copy \spans521\boards.* A:*. *
copy \spans521\printer.* A:*. *
copy \spans521\palet.* A:*. *
```

Backup should be done every 2 months
 Will fit on 1 HD disk

See also Section G 6.1 of this Volume

7) Program of digitizing module:

C:\TYDIG*. *

Backup procedure with CP Backup (PcTools):

Utilities

Backup ... (CP Backup)

If target drive is to be changed: <ALT> T

Option (<ALT> O)

Selection options (S)

Include/exclude files (I)

If files are already listed: Clear list (<ALT> L)

Type: C:\tydig*. *

Ok (<ALT> O)

Start Backup <F5>

Backup should be done every 6 months
 Will fit on 1 HD disk

8) Program of SPANS:

C:\SPANS521*.*

Backup procedure with CP Backup (PcTools):

Utilities

Backup ... (CP Backup)

If target drive is to be changed: <ALT> T

Option (<ALT> O)

Selection options (S)

Subdirectory inclusion (U), has to be without tickmark

Include/exclude files (I)

If files are already listed: Clear list (<ALT> L)

Type: C:\spans521*.*

Ok (<ALT> O)

Start Backup <F5>

Backup should be done every 6 months

Will fit on 1 HD disk

Remark: There is no need to backup VEC/VEH/TOP/VTX/... files in SPANS,
because they can be easily recreated.

to program of SPANS

2/2/2002/1*

Backup procedure with CP Backup (PST/2002)

Change

Backup... (CP Backup)

If report error is to be changed - ALT - T

(Type ALT - T)

Select... (P)

Print every... (P) to be without technical

Technical... (P)

If this... (ALT - T) *

Type... (ALT - T) *

(ALT - T) *

New Backup... (P)

Backup should be done every... (P)

will save... (P)

Remark: There is no need to backup VTC/VPI/TOR/VTX... This is SPANS

because they can be easily restored

BACKUP of DIGITAL MAPS

Digitized maps are stored in their raw form (as digitized, each sheet in 7 files with extensions CRD, DIR, FMT, HDR, HST, and VEC, VEH, see Section G 2.4 of this Volume).

For access by the digitizing program 'Tydig', they have to be in subdirectory \DIGDAT\, but for easier reference and better retrieval performance, they are stored - after completed digitization - in subdirectories **under** \DIGDAT\, i.e. in directory \DIGDAT\digdat1\ etc.

The backup is done for large maps (> 1 MB) through CP Backup (see column Mode above: CP) or for smaller maps through DOS-copy command (see column Mode above: DOS). In the later case, they are sometimes combined with other small maps together on one disk.

This listing reflects the status of digital maps as of 1/8/93.

'Short name' consists of four letters, which stand for the name ('topic') of the map. The name of the digitized map file consists of these four letters, followed by a two-letter code, which indicates row and column of that sheet.

Short Name	Additionally derived maps	Files	Size (kB)	Mode (DOS or CP Backup)	Directory \digdat\
adm1		49	1295	DOS	digdat1
altx		126	9436	CP (4 disks)	digdat1
apno		70	196	DOS: apno/aqf/bcli/dewm/drai/fst1	digdat1
aqf	aqf__5	14	190	DOS: apno/aqf/bcli/dewm/drai/fst1	digdat1
bcli		7	120	DOS: apno/aqf/bcli/dewm/drai/fst1	digdat1
dewm		7	34	DOS: apno/aqf/bcli/dewm/drai/fst1	digdat1
drai	drai__5	7	100	DOS: apno/aqf/bcli/dewm/drai/fst1	digdat1
fst1		7	61	DOS: apno/aqf/bcli/dewm/drai/fst1	digdat1
gel1	gel1__5	189	28008	CP (10 disks)	digdat1
arid		308	1152	CP (1 disk)	digdat2
gov1		7	111	DOS: gov1/grw1/grwb/imag/out.	digdat2
grw1		7	121	DOS: gov1/grw1/grwb/imag/out.	digdat2
grwb	grwb__5	7	287	DOS: gov1/grw1/grwb/imag/out.	digdat2
imag		7	19	DOS: gov1/grw1/grwb/imag/out.	digdat2
out.		168	409	DOS: gov1/grw1/grwb/imag/out.	digdat2
phsg		7	77	DOS: phsg/prc1/prc2/reg2/regx	digdat2

prc1		7	97	DOS: phsg/prc1/prc2/reg2/regx	digdat2
prc2		17	163	DOS: phsg/prc1/prc2/reg2/regx	digdat2
reg2		14	142	DOS: phsg/prc1/prc2/reg2/regx	digdat2
regx		14	136	DOS: phsg/prc1/prc2/reg2/regx	digdat2
fore	fore__a/b/d/e/5	399	20565	CP (8 disks)	digdat3
rrls	rrls__5	7	77	DOS: rrls/sabs/sagr/slgs/sowd/vegx/wldr/z...	digdat3
sabs		5	15	DOS: rrls/sabs/sagr/slgs/sowd/vegx/wldr/z...	digdat3
sagr		7	257	DOS: rrls/sabs/sagr/slgs/sowd/vegx/wldr/z...	digdat3
slgs		7	222	DOS: rrls/sabs/sagr/slgs/sowd/vegx/wldr/z...	digdat3
sowd		7	68	DOS: rrls/sabs/sagr/slgs/sowd/vegx/wldr/z...	digdat3
sys2		77	5993	CP (3 disks)	digdat3
vegx		7	195	DOS: rrls/sabs/sagr/slgs/sowd/vegx/wldr/z...	digdat3
wldr	wldr__5	7	30	DOS: rrls/sabs/sagr/slgs/sowd/vegx/wldr/z...	digdat3
zero		10	151	DOS: rrls/sabs/sagr/slgs/sowd/vegx/wldr/z...	digdat3
cat2	cat2__5	21	358	DOS: cat2/exs1/gov2/pr2x	digdat4
exs1		7	55	DOS: cat2/exs1/gov2/pr2x	digdat4
gov2		105	440	DOS: cat2/exs1/gov2/pr2x	digdat4
pr2x		35	149	DOS: cat2/exs1/gov2/pr2x	digdat4
urb1		112	391	CP (1 disk)	digdat4
veg2	veg2__a	91	1786	CP (1 disk)	digdat4
gov3		91	313	DOS	digdat5
irr1		14	173	DOS: irr1/pr2d/z...	digdat5
pr2d		224	1101	DOS: irr1/pr2d/z...	digdat5
riv1		56	4751	CP (2 disks)	digdat5
roa1		91	2383	CP (1 disk)	digdat5
roa2		49	2163	CP (1 disk)	digdat5
soi1		70	12710	CP (4 disks)	digdat5
soi2		70	9063	CP (3 disks)	digdat5
vill		91	439	CP (1 disk)	digdat5
zbor		7	13	DOS: irr1/pr2d/z...	digdat5
zout		7	10	DOS: irr1/pr2d/z...	digdat5
zplo		7	64	DOS: irr1/pr2d/z...	digdat5
zroa		7	14	DOS: irr1/pr2d/z...	digdat5
zsoi		7	26	DOS: irr1/pr2d/z...	digdat5
bitl		7	70	DOS: bitl/carb/oilx/phos/smpa	digdat6
carb		7	49	DOS: bitl/carb/oilx/phos/smpa	digdat6
oilx		7	18	DOS: bitl/carb/oilx/phos/smpa	digdat6
phos		7	16	DOS: bitl/carb/oilx/phos/smpa	digdat6
riv2		91	6216	CP (2 disks)	digdat6
smpa		7	61	DOS: bitl/carb/oilx/phos/smpa	digdat6
soi3		63	551	CP (1 disk)	digdat6

National Soil Map and Land Use Project

Ministry of Agriculture, Jordan

J O S C I S

Jordan Soil and Climatic Information System

G I S

V O L U M E

Glossary of GIS Terms

GLOSSARY of GIS Terms

Aggregation:	Combination of ranges of attribute values into specified single attribute values
Arc:	A sequence of vertices, or the linked sequence of line segments defined by them. An arc may have associated geographical attributes
Area:	A two-dimensional spatial region that has associated geographical attributes. Although the high level geographical entities may consist of the areas bounded by several polygons; topologically, the single connected area bounded by a single closed polygon is fundamental
ASCII code:	American Standard Code for Information Interchange, a standard set of numeric codes representing alphanumeric characters
Attribute:	Non-graphic, non-geographic information associated with a point, line or area
Autocad:	Software for Computer Aided (Assisted Design), industrial standard
Band:	Wavelength, image of a specific wavelength
Basemap:	Map of entire project area, containing only one mapping unit
BIC	Binary picture file format for graphical data, used in SPANS
Boundary map:	Map drawn by the plotter showing all mapping units delineated by their boundaries, with or without labels
Browse:	Fast retrieval
Buffer:	Predefined amount of memory that is reserved to store data as it is sent from the computer to peripheral device, usually a plotter or printer or: Area that extends specified equal distance in all directions from a point or line
Calibration point:	Three fixed points on a map with operate as reference points to all features to be digitized (in SPANS)
CDF	Comma delimited format - each character is surrounded by a special delimiter usually an apostrophe character and followed by a comma, for example 'G432',16.95
Centroid:	Point in mapping unit containing information about attribute (mapping unit number, or similar)
Chloropleth map:	Map with units of equal value separated by (abrupt) boundaries; opposite to isoline map
Classification:	Grouping of values into defined classes
Cleaning:	Deletion of superfluous information from a file
Climatic Suitability:	Judgment of suitability of climate for a particular crop or land use
Control point:	Point with well defined geographical references (latitude and longitude) which serves as geographical calibration for an entire map sheet or image (in SPANS)
Coordinates:	Pairs of numbers (x,y) that uniquely identify a location
Corridor:	Area that extends specified equal distance in all directions from a line
Crop requirements:	Quantitative description of environmental requirements of crop

- Cursor: 1.(general) a visible symbol (usually blinking) that indicates where the next character will be input into the computer
2.(digitizing) a hand-held devices for entering data from a digitizer
- CUT File format created by a paint package called Dr Halo; it is unique in that the palette information for the image data is not stored in a file header but in separate palette file with PAL extension
- DBMS Database management system
- Digital elevation model: DEM Computer model to calculate metric terrain features, e.g. altitude, slope gradient or exposition
- Digital terrain model: DTM Computer graphic facility to display terrain in a three dimensional view, and modify the displayed view
- Digitization: Process to enter a map into the GIS, i.e. transfer into digital mode
- Digitizing tablet: A flat, electrically sensitive surface that can be configured to respond as a command-entry and coordinate-selection device
- Directory: Hierarchical division system on computer storage media
- Dongle An hardware device similar to an RS232 connector which is connected to an output port on the computer. A dongle is needed to run SPANS
- DOS: Disk operating system, dominant on PC computers
- DPI: Dots per inch, a measure of the degree of resolution in dot-matrix and laser printers
- DXF: ASCII (or optional binary) format for drawing interchange files, acronym for Drawing (sometimes called Document) eXchange Format; file-name extension of disk files that use this format
- Enclosing polygon: Mapping unit which surrounds another unit
- Entry: Transfer of data in digital format
- Eosat: Company marketing the information products of Landsat satellites
- Erdas: Software for remote sensing and interpretation, industrial standard
- Export: Transfer of information to external, alien software format
- External centroid: Centroid referring to mapping unit surrounding a mapping unit
- Feature code: Attribute (mapping unit number) assigned to a mapping unit
- Function keys: Special keys on computer keyboards to execute specific functions
- Generalisation: Aggregation of units, to produce more simple maps, with a smaller number of mapping units
- General database: Attribute files which are common to a large number of data files, such as legends of maps, lookup tables, authors etc.
- Geographical information system: GIS: Set of software and hardware for collecting and analyzing spatial information for particular applications
- GIF Graphics Image Format is a sophisticated format for exchange of graphical data
- Graticule: Coordinate system
- Grid cell: Unit of rectangular raster on maps; basic (smallest) element of spatial information and display unit
- Hatching: Cartographic way of display of a mapping unit, superimposing a unit with a specific line feature
- Image: Satellite reception of a specific area (sheet) in a specific band
- Image processing: Processing of satellite data and interpretation
- Input level: Material input to improve agricultural productivity
- Island: Mapping unit completely surrounded by one (!), 'perforated' mapping unit; precisely, a polygonal network or the area contained within the network
- Isopleth map: Map displaying lines connecting points of equal value; opposite to 'choropleth map'
- JOSCIS: Jordanian Soil and Climatic Information System, documented in this Manual
- JTM: Jordanian Transverse Mercator System, coordinate system applied in Jordan

Land Characteristic:	Attribute of the land which can be measured or estimated, and which can be employed as a means of describing land qualities
Land Evaluation:	Procedure to assess the suitability of land for particular land uses
Land Quality:	Attribute of the land which acts in a distinct manner in its influence on the suitability of land for specific crop
Landsat:	The generic name for a series of earth resources scanning satellites launched by the USA
Latitude:	The angular distance of a point on the Earth's surface along a meridian N or S of the equator
Level code:	Alternative system to feature code to store information about attributes (mapping unit numbers) assigned to a mapping units
Library:	A collection of standard, often used computer subroutines, or symbols in digital form
Line:	A one-dimensional spatial curve that may have associated geographical attributes. A line feature can be represented by a segment, an arc, or several arcs
Longitude:	The angular distance of a point on the Earth's surface East or West of a central meridian (the Greenwich Meridian)
Mapping unit:	Area drawn on a thematic map with well defined parameters (attributes)
Matrix:	Two-dimensional array
Menu bar:	Listing of options on a computer screen
Modelling:	Attempt to emulate (ecological) processes using mathematical algorithms
Module:	A separate and distinct piece of hardware or software that can be connected with other modules to form a system
Mouse:	An input device, consisting of a hand-held puck (along with a special underlying surface on some models), that, when moved on the desktop, causes movement of the cursor and the crosshairs on the display monitor
Node:	The point at which arcs (lines, chains, strings) in a polygon network are joined; nodes carry information about the topology of the polygons
Overlay:	The processing of layering digital representations of various spatial data so that each position in the area can be analysed according to these data
Palestine grid:	Coordinate system applied previously in the Middle East
PCX	PC Paintbrush format is one of the oldest and most common raster formats available on PCs; it is simple to read and write, and most software that imports raster graphics support the PCX format
PIC	Picture file format used primarily for creating simple graphic files, for example from spreadsheet packages
PIX	Native format used by InSet and HiJaak software packages primarily for capturing screens
Plotter:	A device for producing hard-copy output by moving a pen across a flat surface
Polygon map:	Map of simple, i.e. non-self-intersecting polygons (closed arcs)
Polygon:	A closed series of arcs or vertices forming the boundary of connected single areas
Polyline:	A special line composed of one or more straight and/or curved line segments that are treated as a single drawing entity
Printer:	Output device
Probability:	Likelihood of a special event occurring (e.g. rainfall at a probability level of 75%)
Project:	Map sheet (in SPANS); entire study area
Projection:	Conversion of globe coordinates to a two-dimensional, plane coordinate system
Proximity:	Nearness or closeness of two objects
Q:	Commonly used editing software
Quadtree level:	The maximum number of subdivisions that are imposed upon data when examined for non-homogeneity

Quadtree map:	Raster cell of variable size (but not aspect ratio) according to the homogeneity
Raster:	A regular grid of cells covering an area
Reclassification:	Re-assignment of codes attached to pixels of a raster map
Relational:	Referring to more than one file simultaneously
Resolution:	Smallest size of feature that can be mapped; equal to width of grid cell
Root directory:	The subdirectory that contains the first level of files on a disk, including the operating-system files and other subdirectories, and onto which the computer logs when it is booted
Scale:	Ratio of distance on ground to map
Show:	Collection of fast display graphic files
Slide:	Browse file
Soil Suitability:	Judgment or suitability of soil for a particular crop or land
SPANS	SPatial ANalysis System; commercial GIS software package for personal computers
Spatial:	With relation to the area; on a mapping approach
Subdirectory:	Hierarchical division system on computer storage media
Toggle:	On/off switch
TYDAC	Company developing and marketing SPANS GIS, now called INTERA TYDAC Inc
TYDIG:	Digitizing module of SPANS
Universe:	Logical grouping of data files in SPANS, similar to a DOS subdirectory
UTM:	Universal Transverse Mercator Grid System: Global grid system with equidistant grid lines between 80 N and 80 S with the origin of the equator (labeled km 0 in the northern hemisphere) and the central meridian: 0, 6E, 12E, 18E etc. for the individual zones (labeled km 500)
Vector:	Quantity having both magnitude and direction
Weeding:	Deletion of superfluous information from a file
Window:	Defined part of a map of the entire universe (in SPANS)
X-axis:	Axis that, when displayed in plan view, increments coordinates horizontally and to the right
Y-axis:	Axis that, when displayed in plan view, increments coordinates vertically and toward the top of the display
Zoom	<i>Zoom in</i> magnifies a portion of the image in the active view; <i>zoom out</i> reverses magnification of the image in the active view