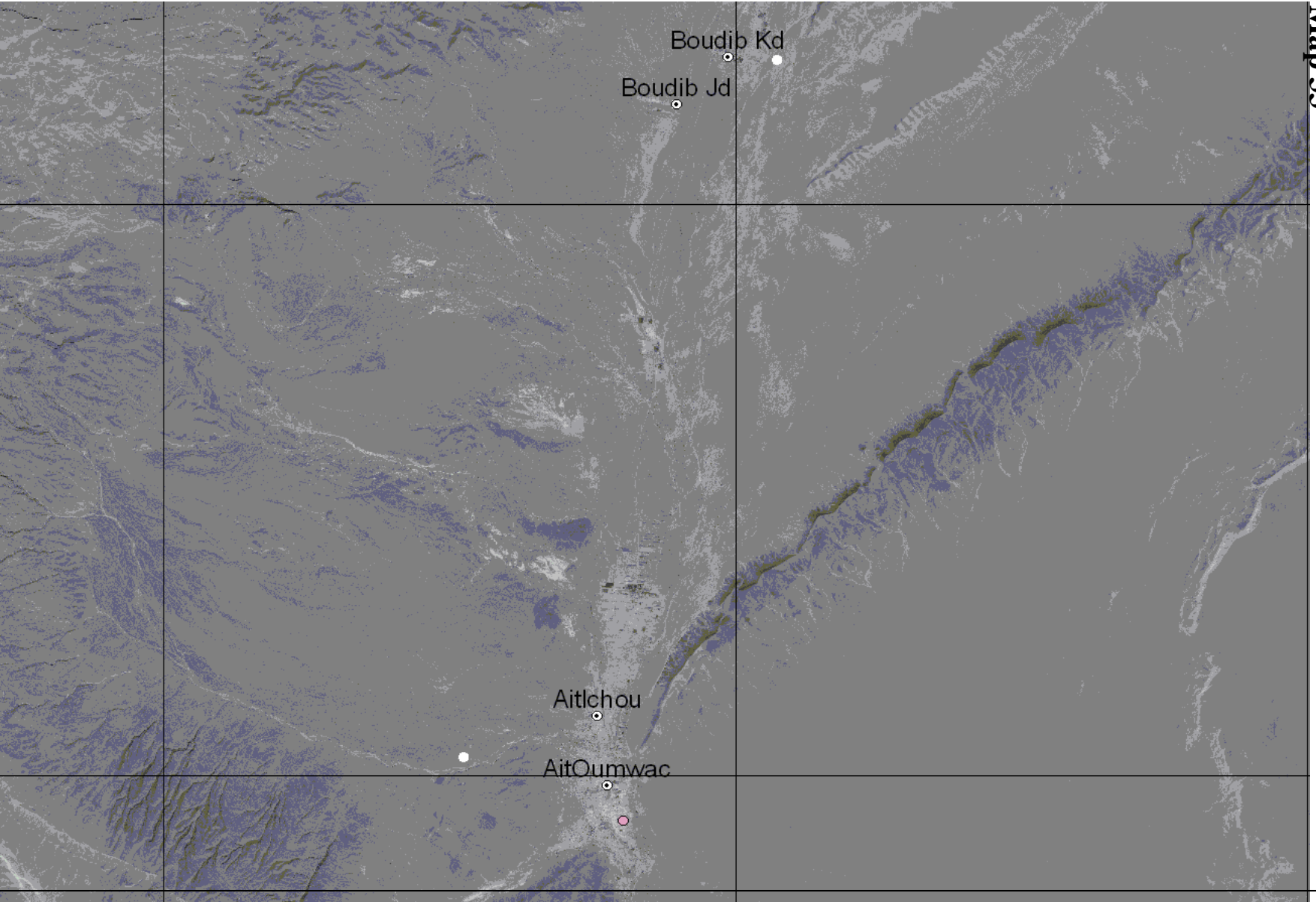
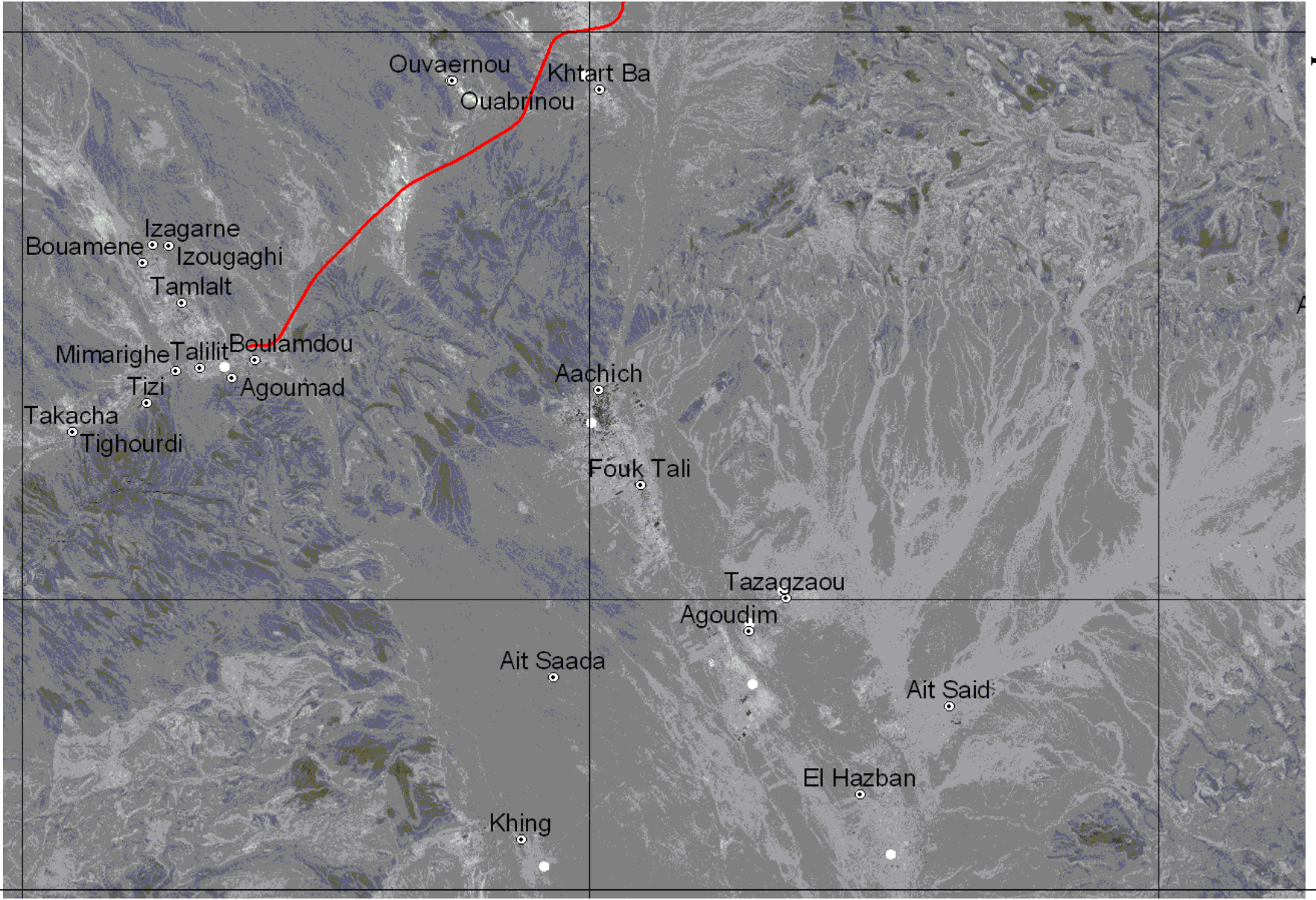
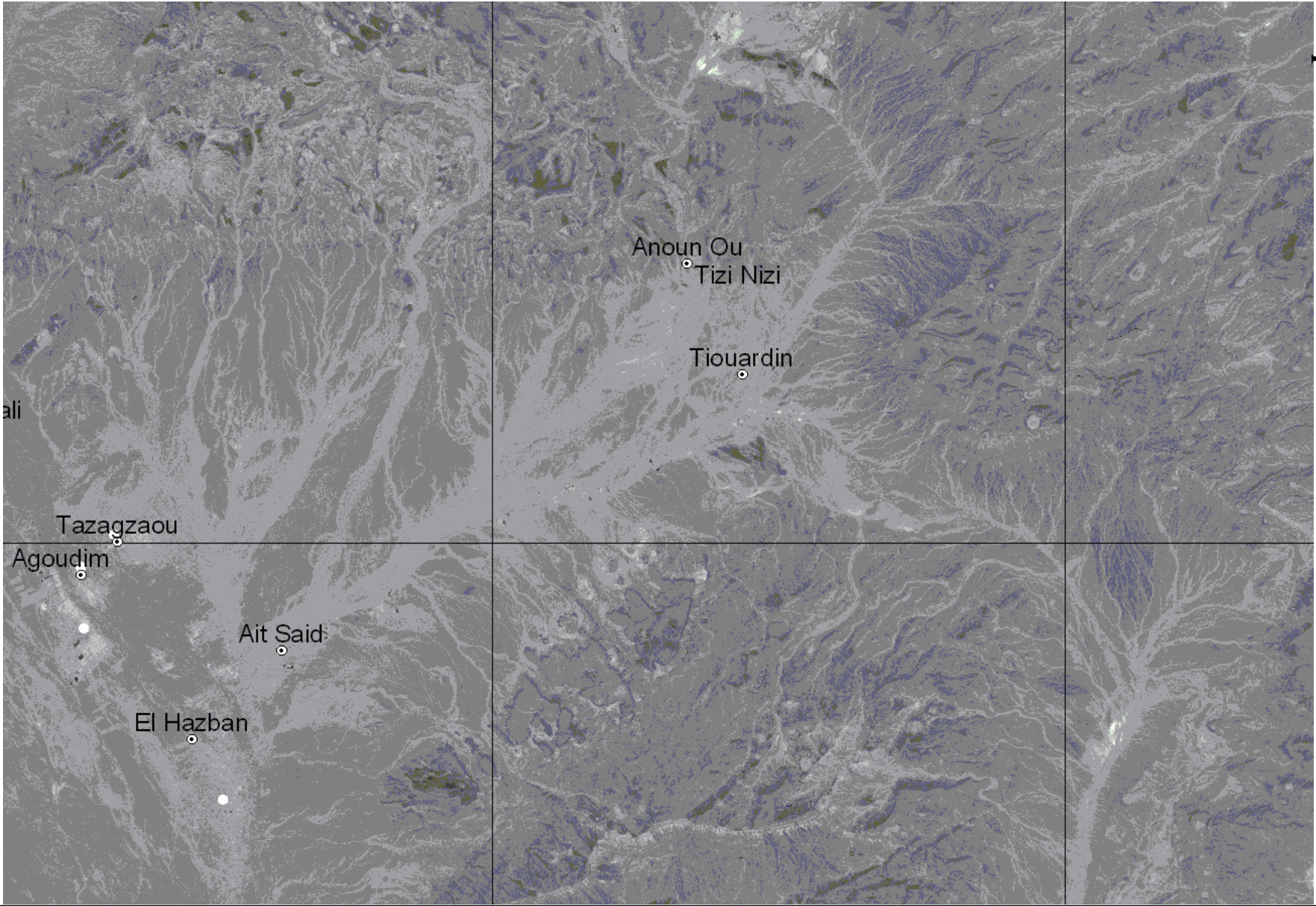


1 : 100,000

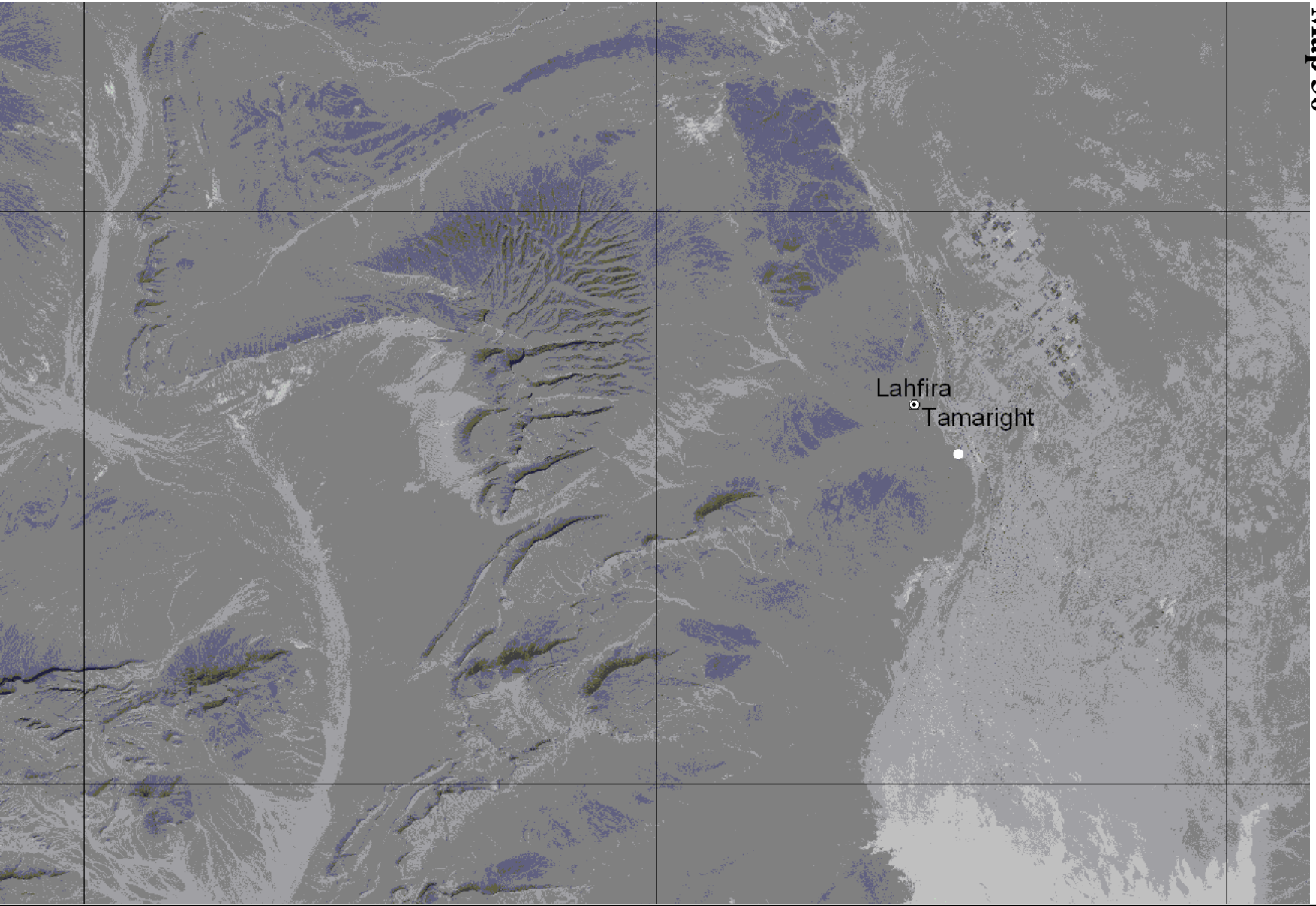


Map 34

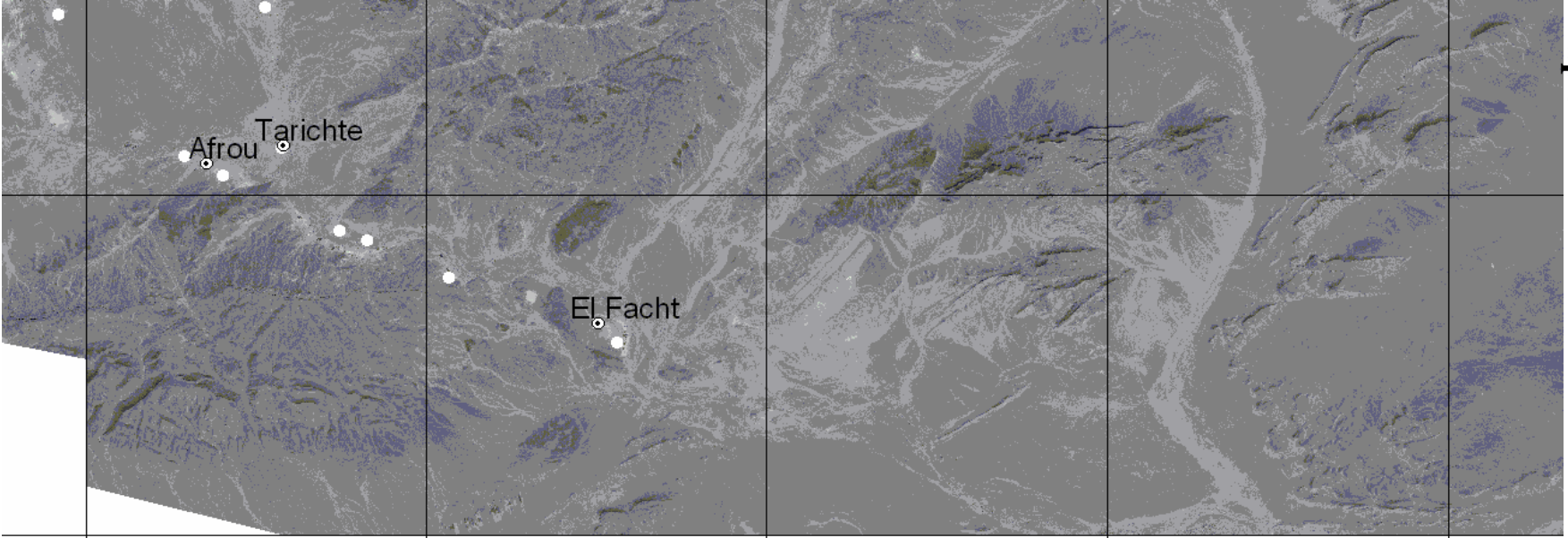




1 : 100,000



1 : 100,000



Tint Rajd

Takacha
Adane
Tifakhsit

Daou Mejr

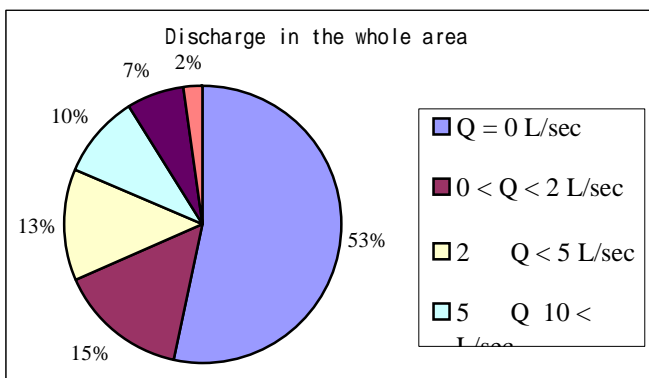
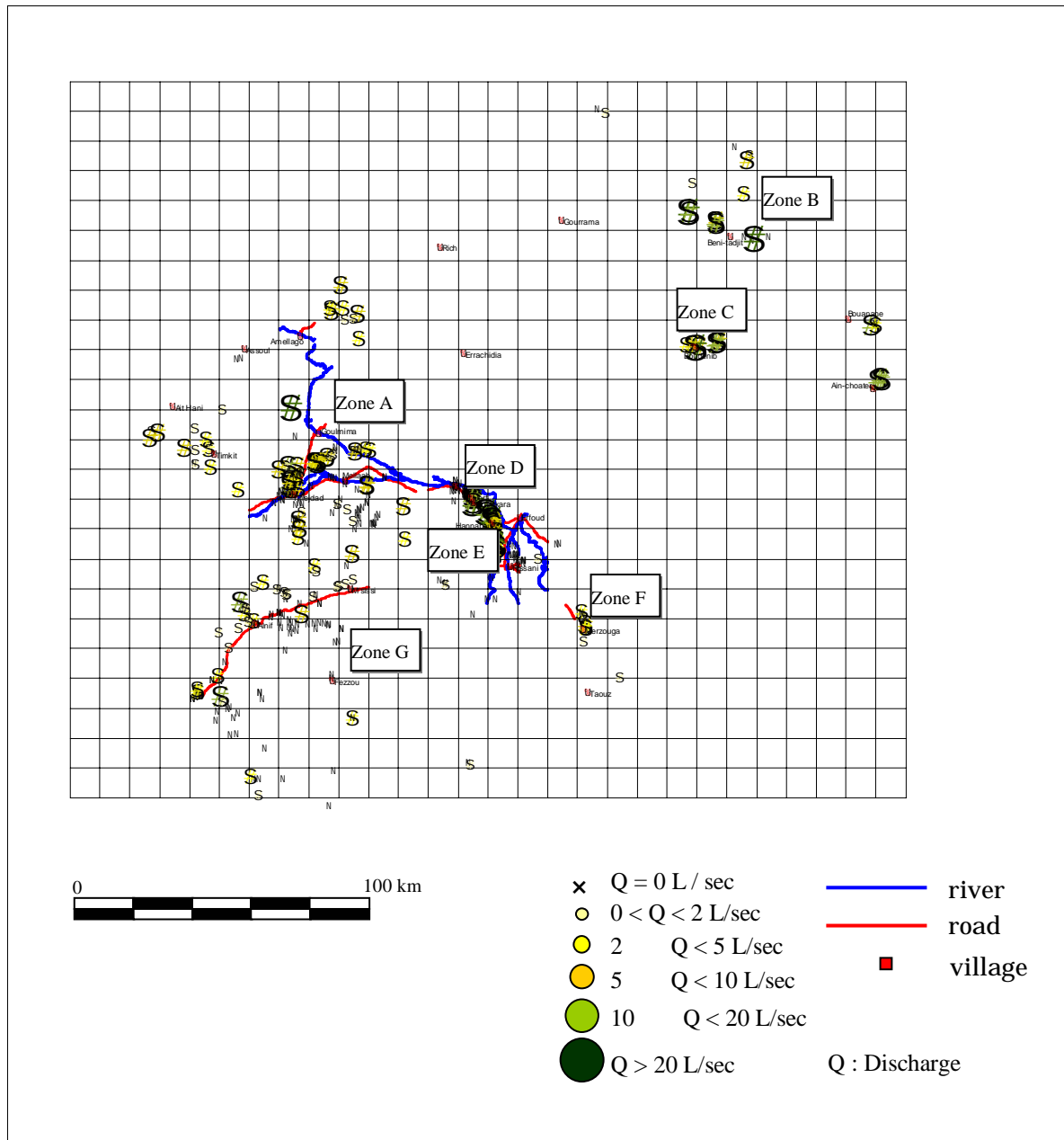
Tissamoum

Tamassint

1 : 200,000

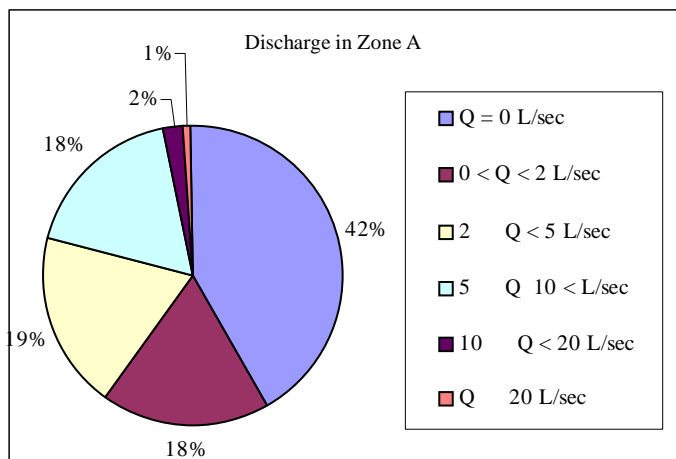
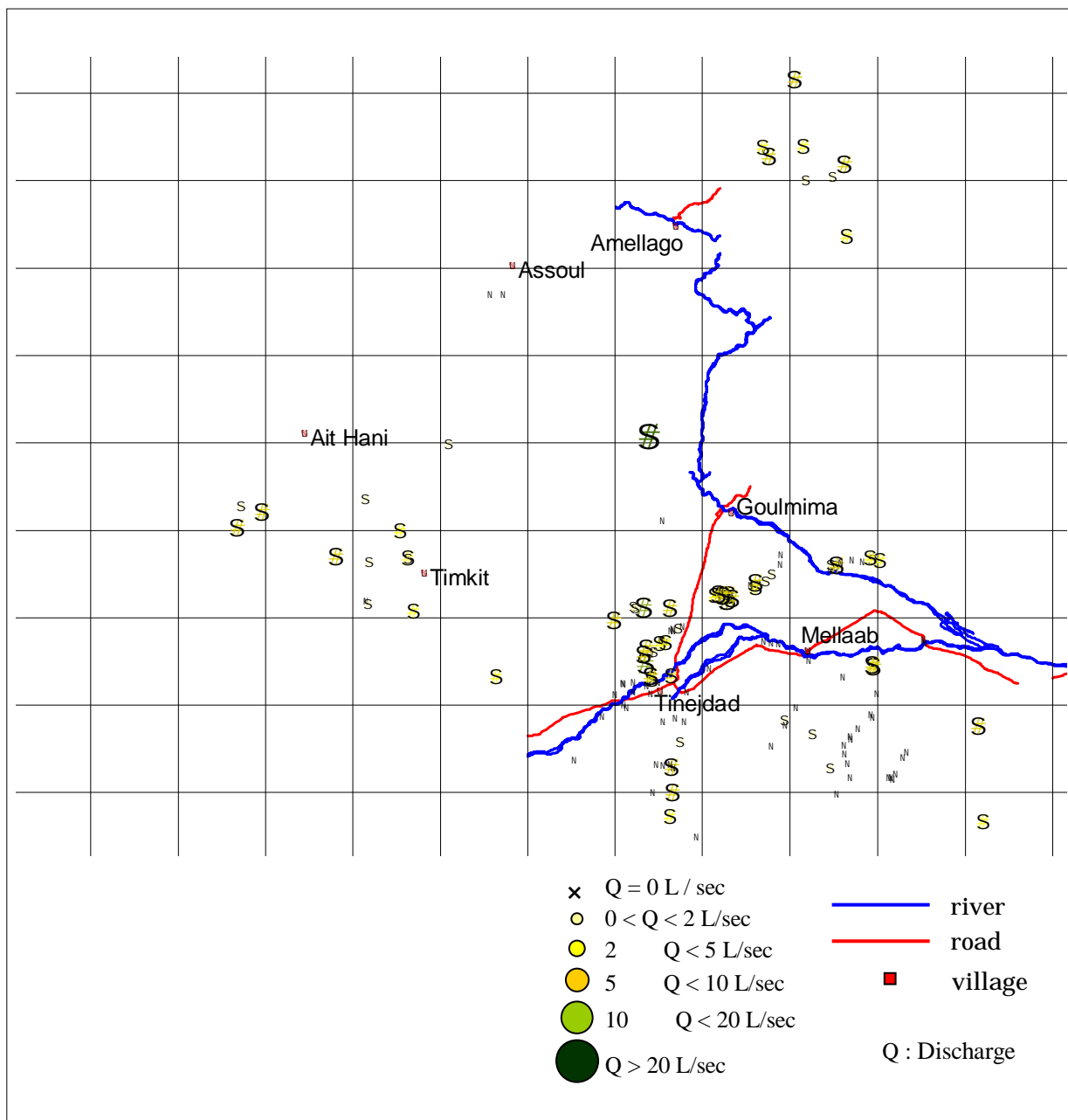
1. Discharge of khettara water

1-1 Whole area



Total number of khettara: 410
 Total discharge: 1123.9 L/sec
 Khettaras which has water flow : 191
 Average of discharge of 191 khettaras: 5.88 L/sec

1-2 Zone A



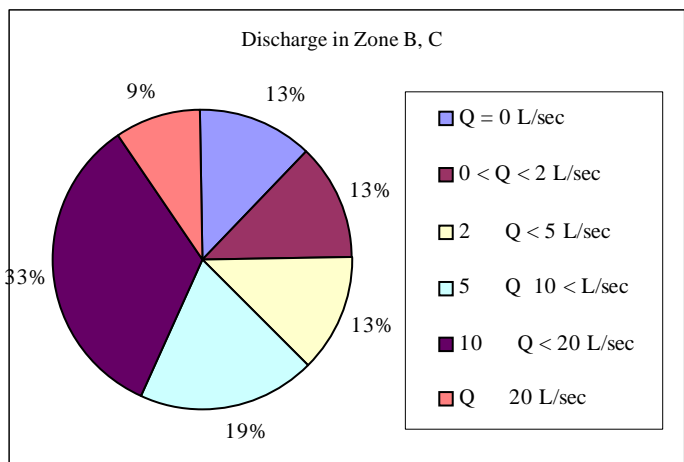
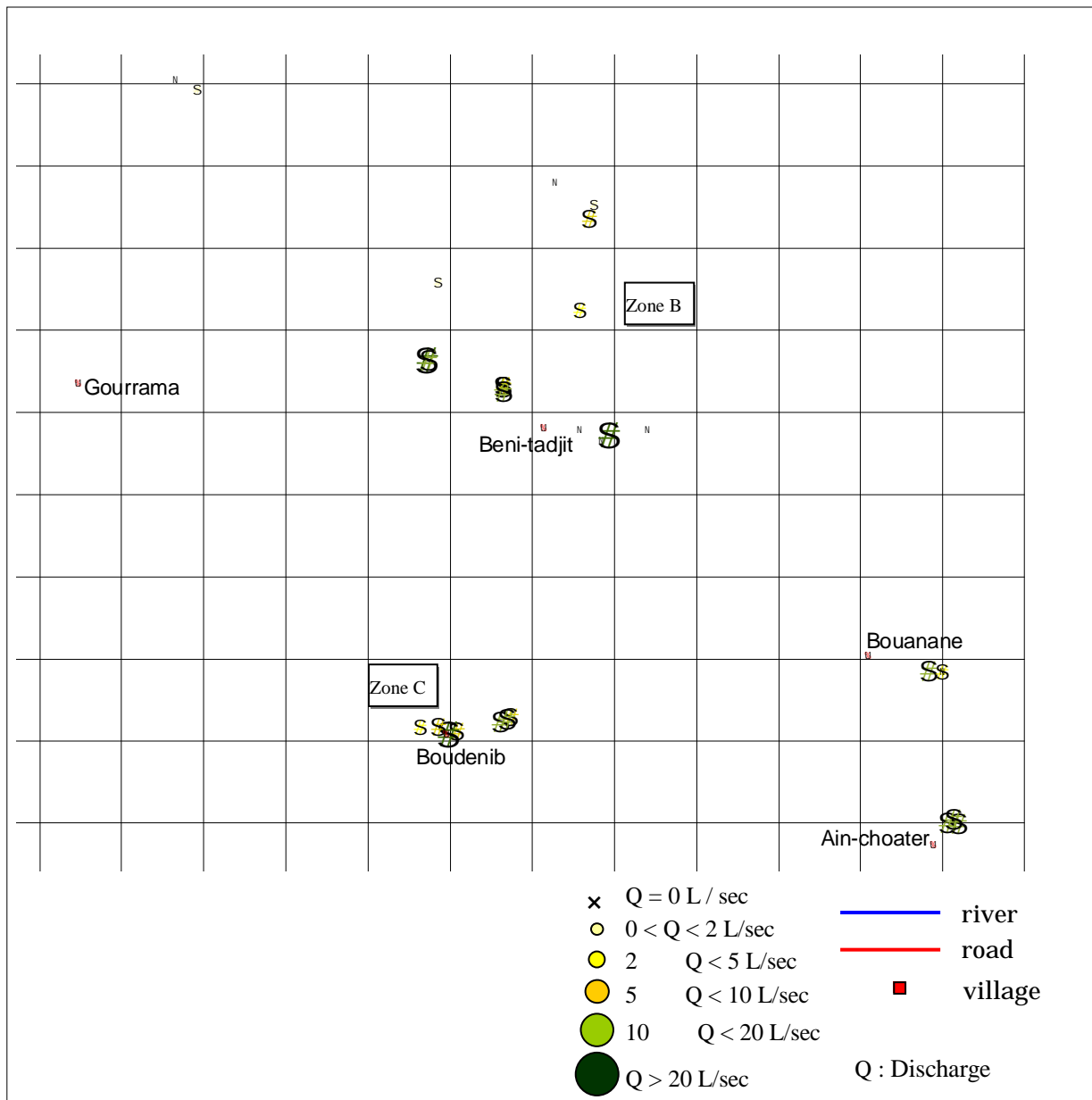
Number of khattars in Zone A : 137

Total discharge in Zone A : 345.15 L/sec

Number of Khettaras which has water flow: 80

Average of discharge of 80 khettaras: 4.31 L/sec

1-3 Zone B, C



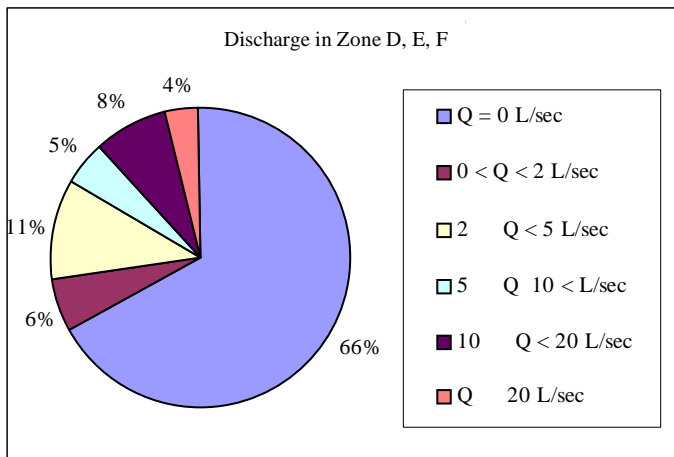
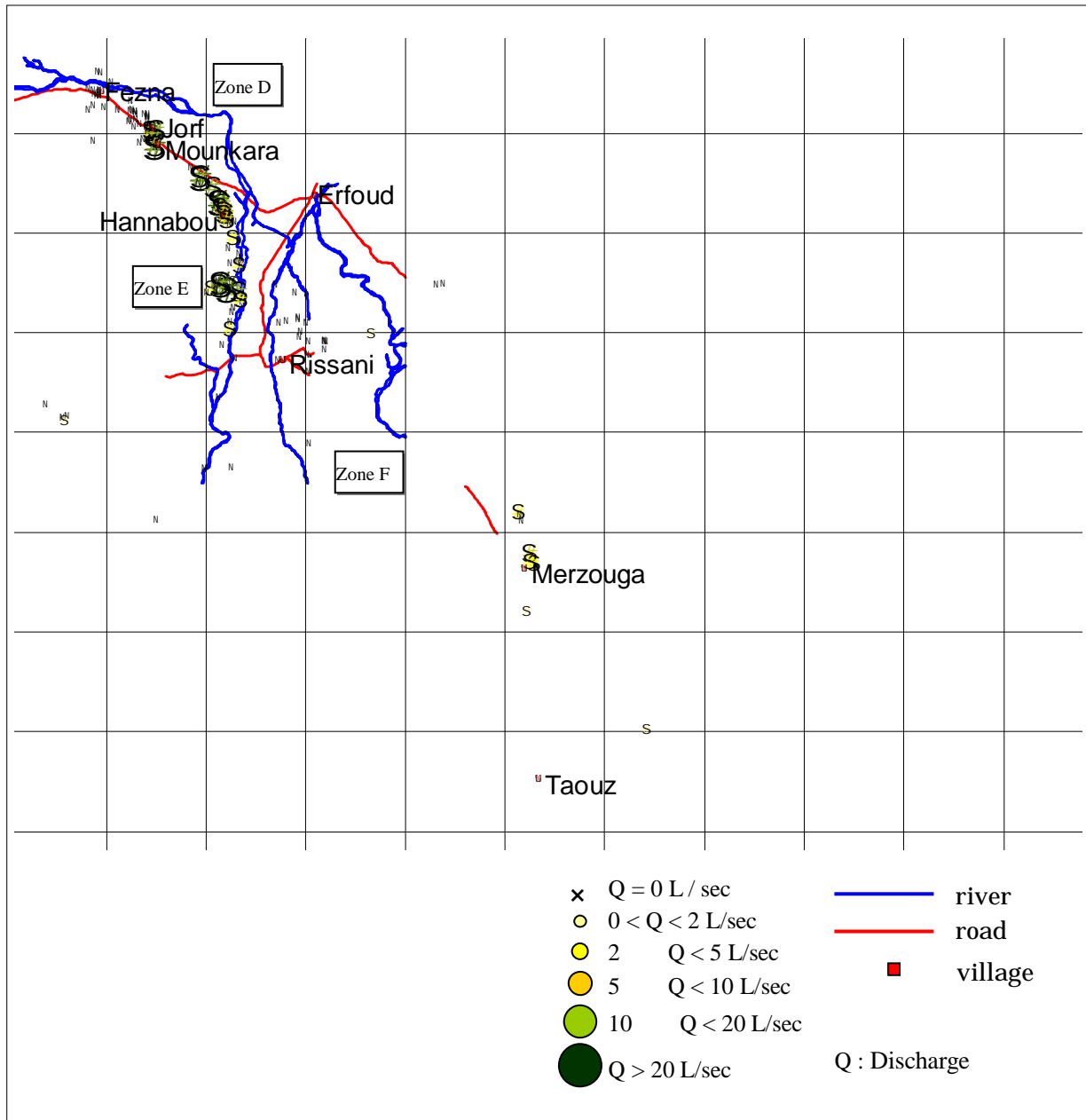
Number of khattars in Zone B, C : 137

Total discharge in Zone B, C : 291.1 L/sec

Number of khattaras which has water flow: 28

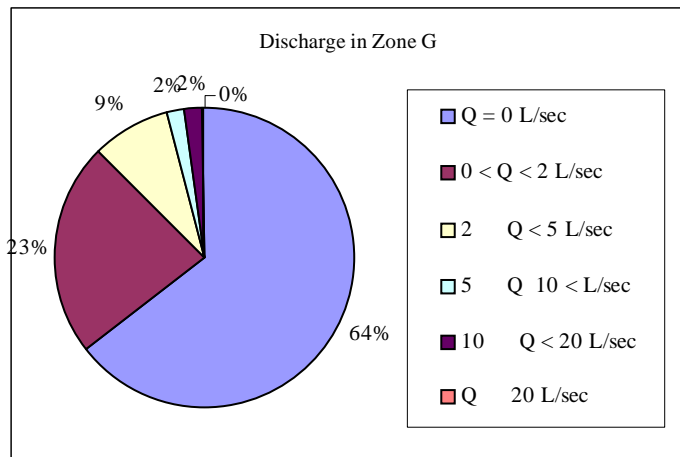
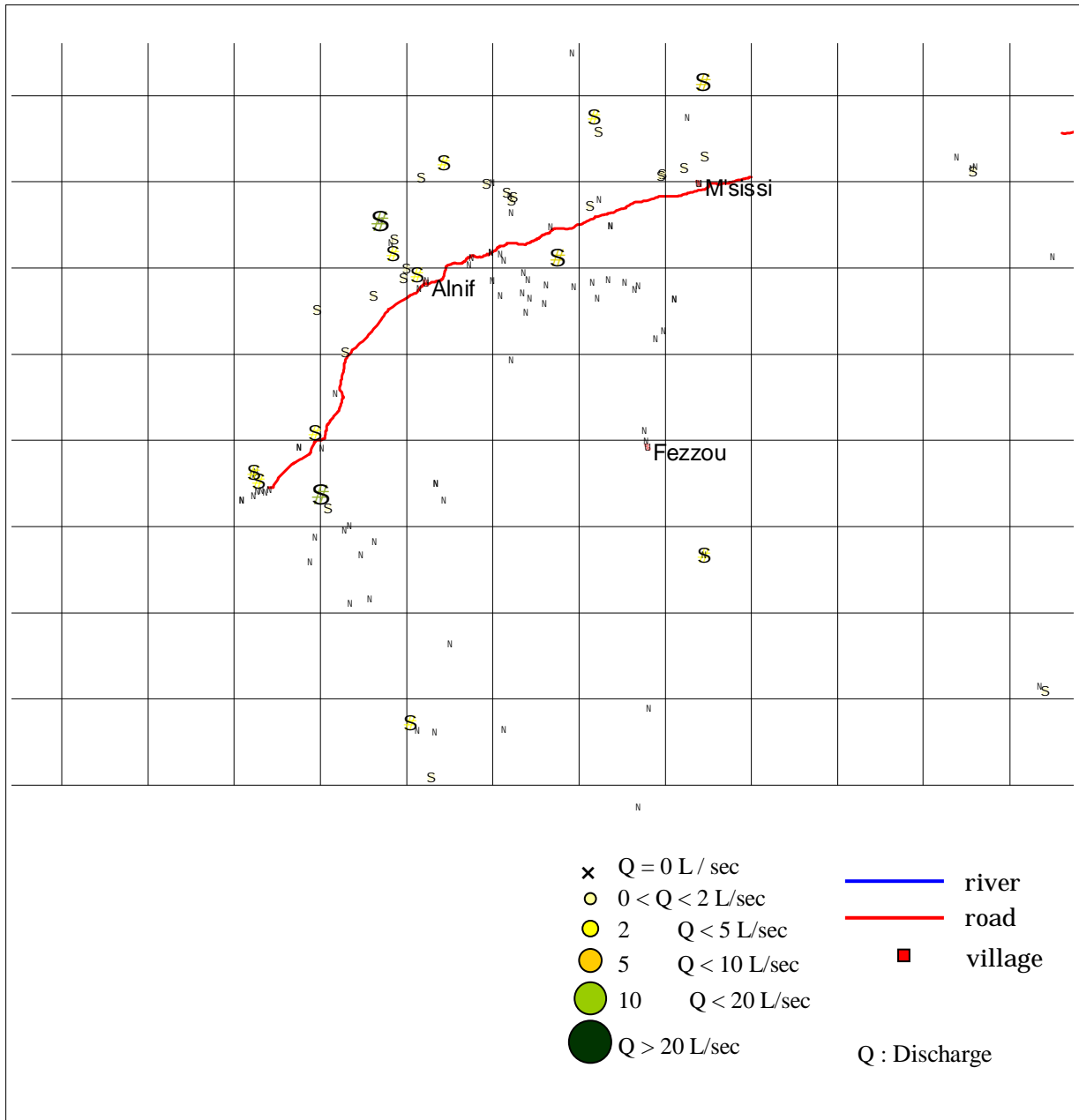
Average of discharge of 28 khattaras: 10.40 L/sec

1-4 Zone D, E, F



Number of khettars in Zone D, E, F : 137
 Total discharge in Zone D, E, F : 409.2 L/sec
 Number of khettaras which has water flow : 46
 Average of discharge of 46 khettaras: 8.90 L/sec

1-5 Zone G



Number of khettars in Zone G : 137

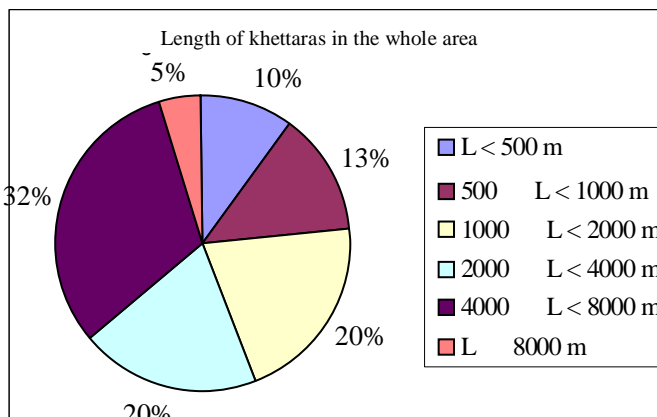
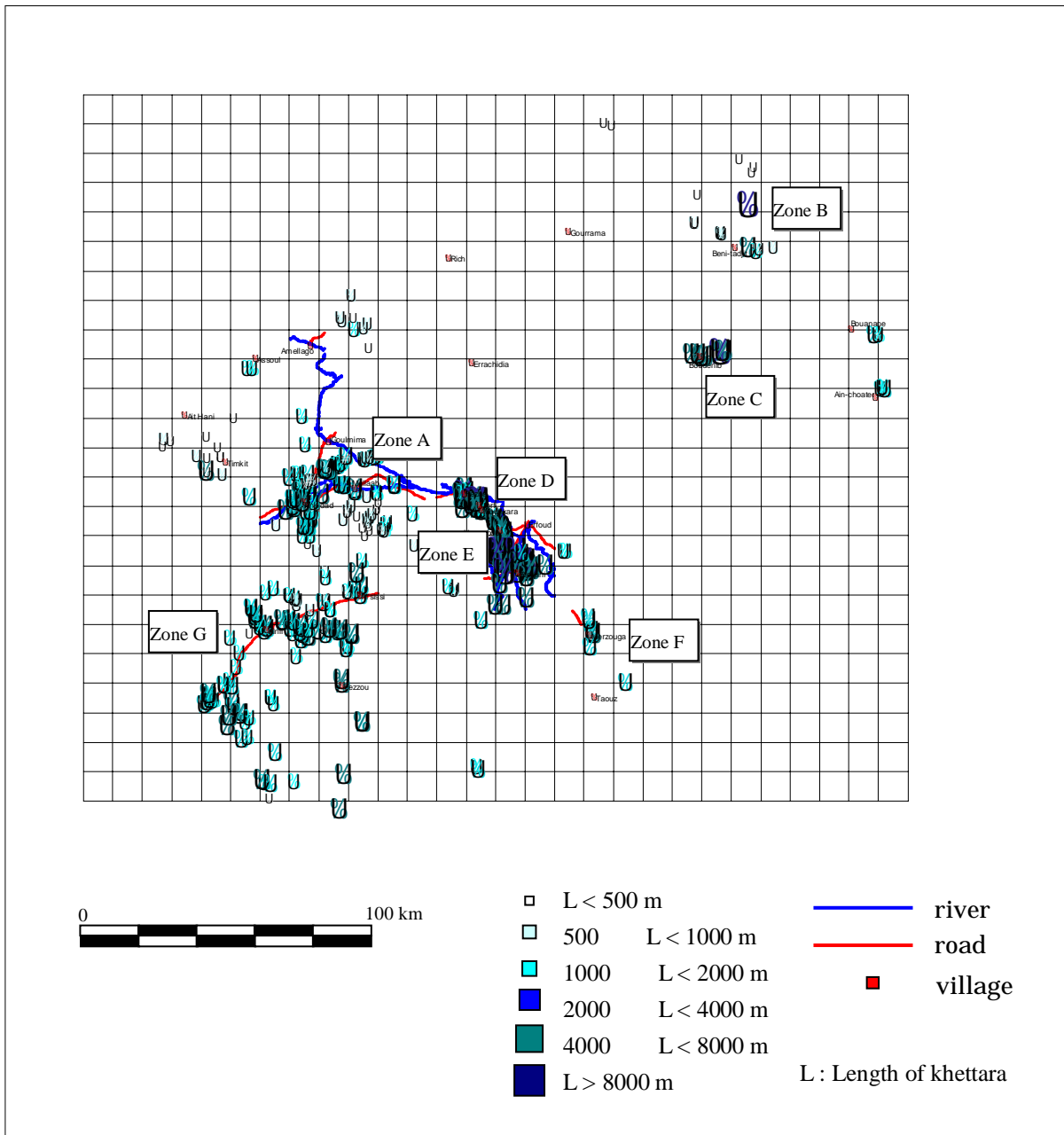
Total discharge in Zone G: 78.4 L/sec

Number of khettaras which has water flow: 37

Average of discharge of 37 khettaras: 2.1 L/sec

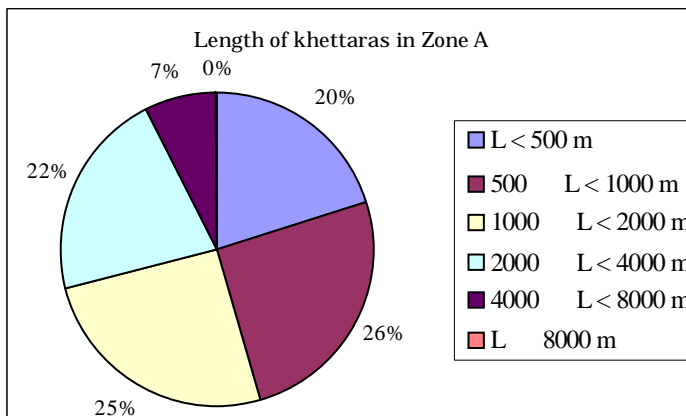
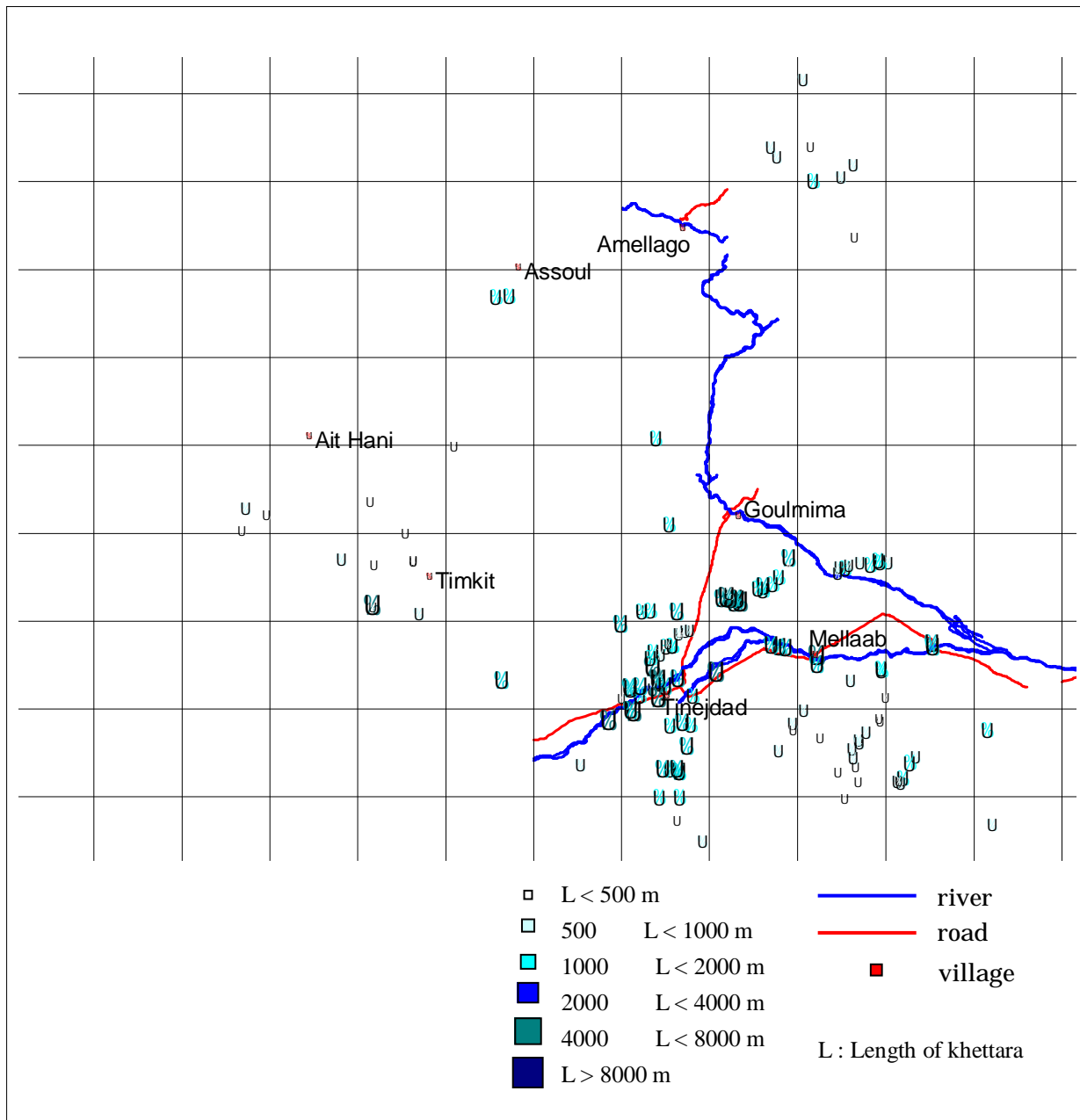
2. Khattara length

2-1 Whole area



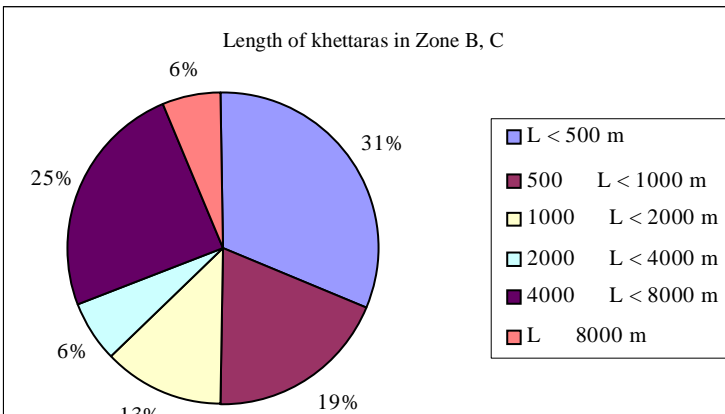
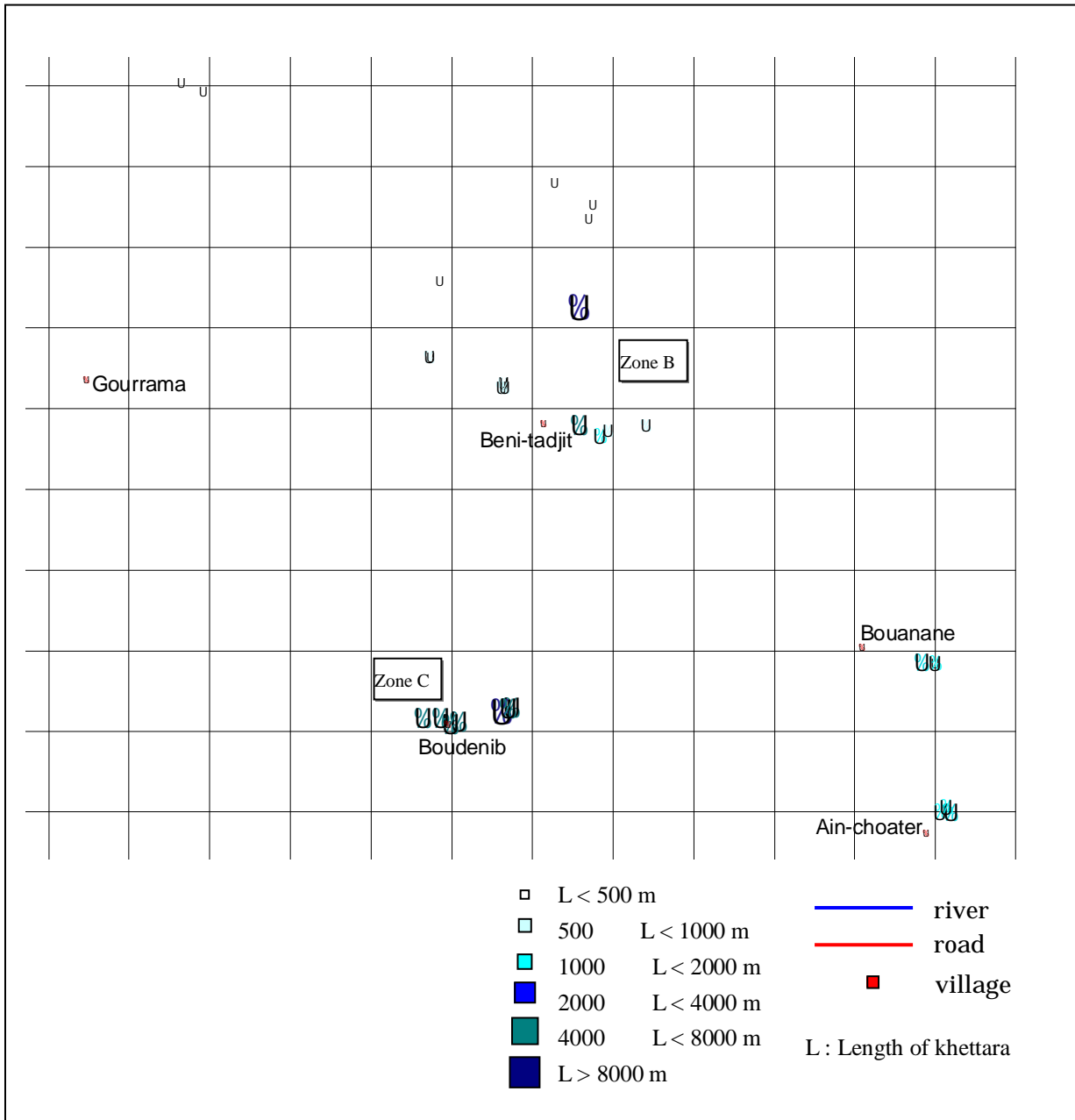
Number of khattaras in the whole area : 410
 Total length of khattaras in the whole area : 1,307,914 m
 Average length of khattaras in the whole area : 1,583 m

2-2 Zone A



Number of khettaras in Zone A: 137
 Total length of khettaras in Zone A : 216,831 m
 Average length of khettaras in Zone A : 1,583 m

2-3 Zone B, C

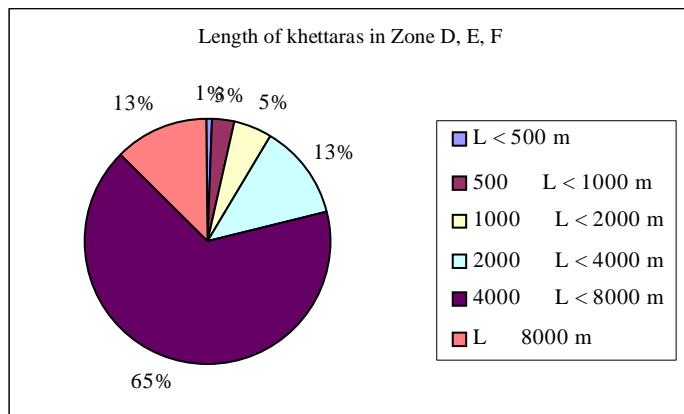
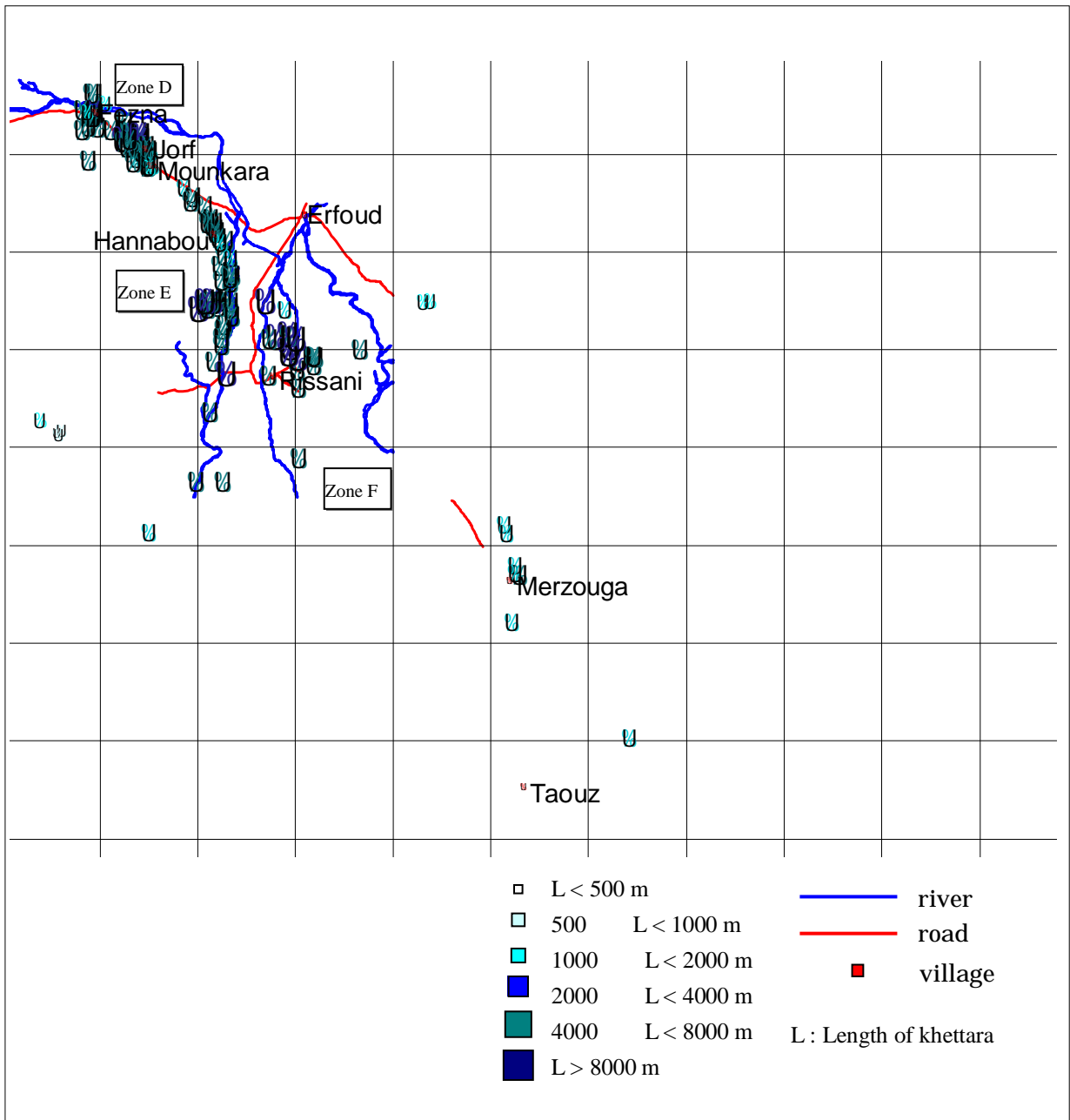


Number of khettaras in Zone B, C
: 32

Total length of khettaras in Zone B, C
: 78,828 m

Average length of khettaras in Zone B, C
: 2,463 m

2-4 Zone D, E, F

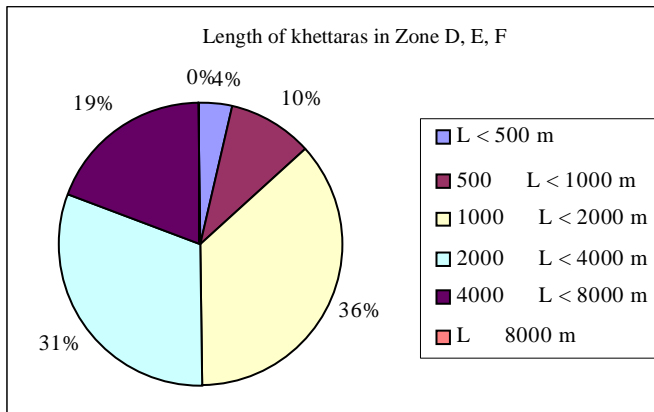
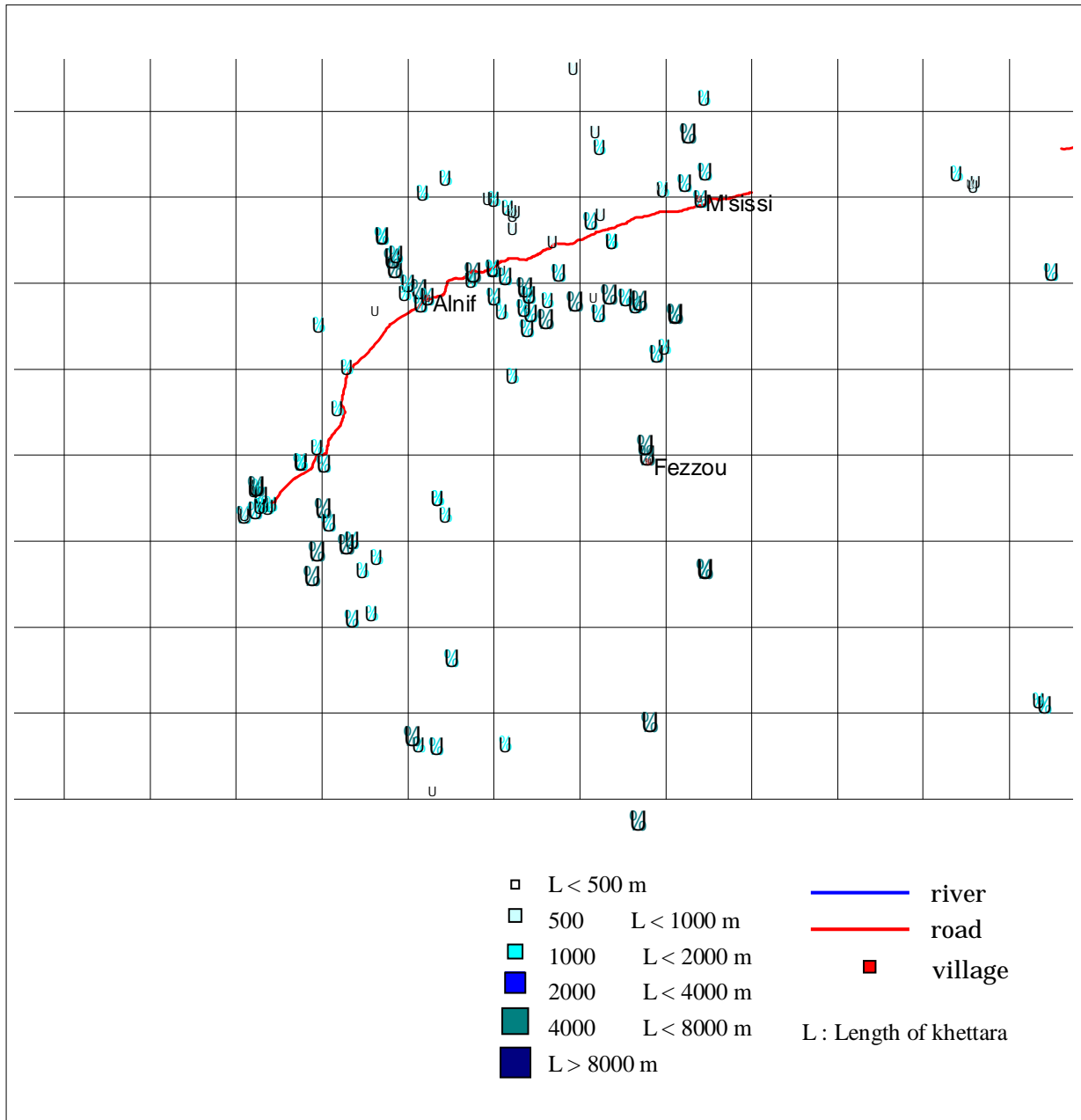


Number of khettaras in Zone D, E, F : 138

Total length of khettaras in Zone D, E, F: 759,675 m

Average length of khettaras in Zone D, E, F: 5,505m

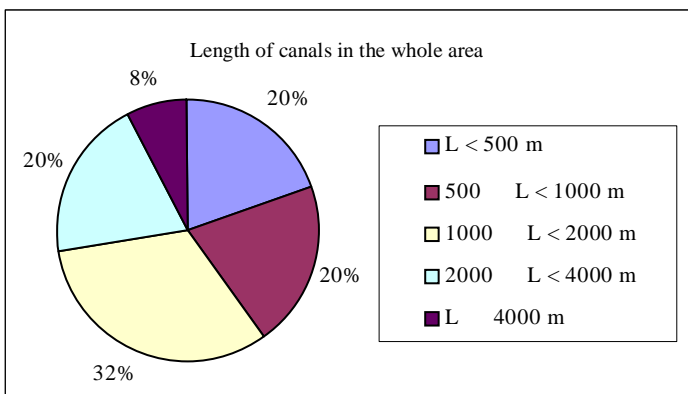
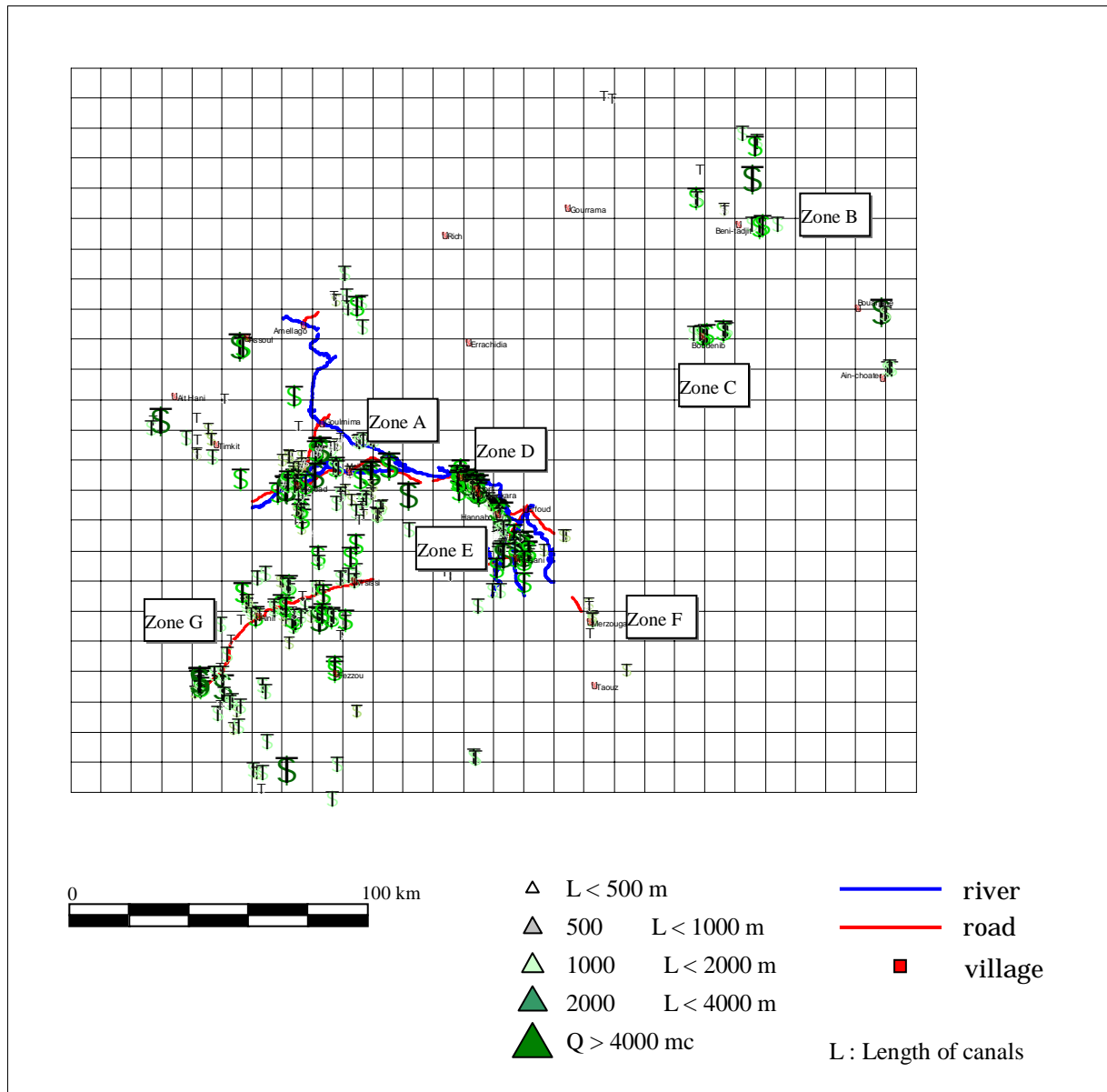
2-5 Zone G



Number of khettaras in Zone G: 103
 Total length of khettaras in Zone G : 252,580 m
 Average length of khettaras in Zone G : 2,452 m

3. Canal length

3-1 Whole area

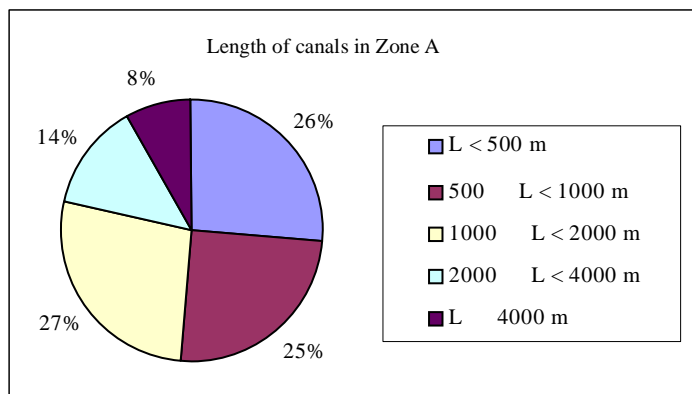
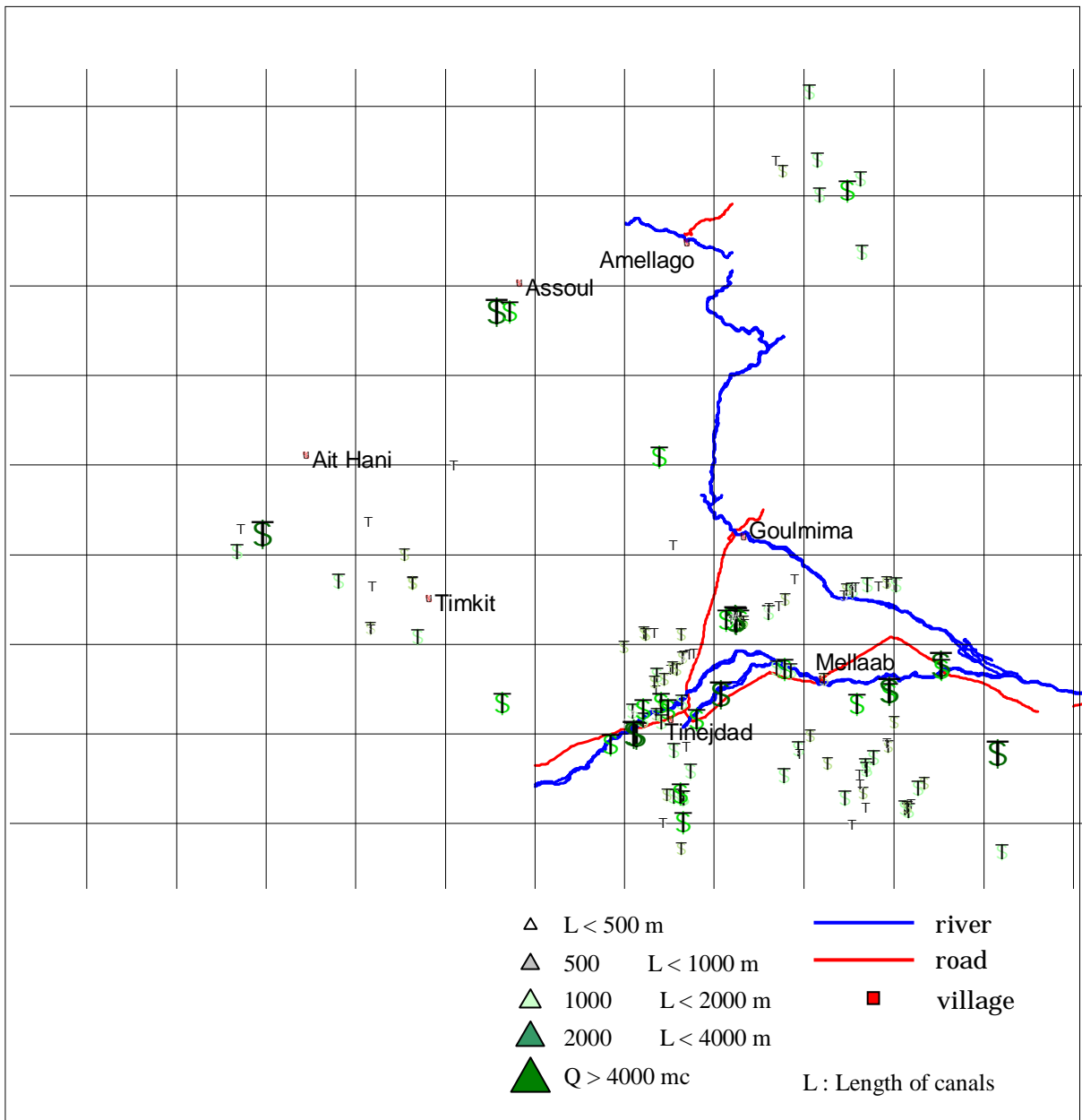


Number of khattaras in the whole area : 410

Total length of canals in the whole area : 573,728 m

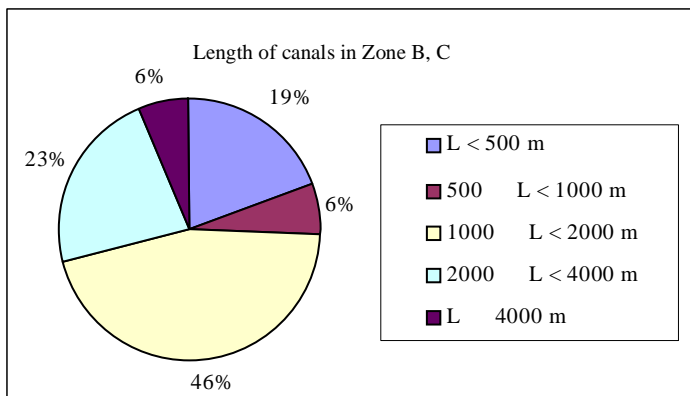
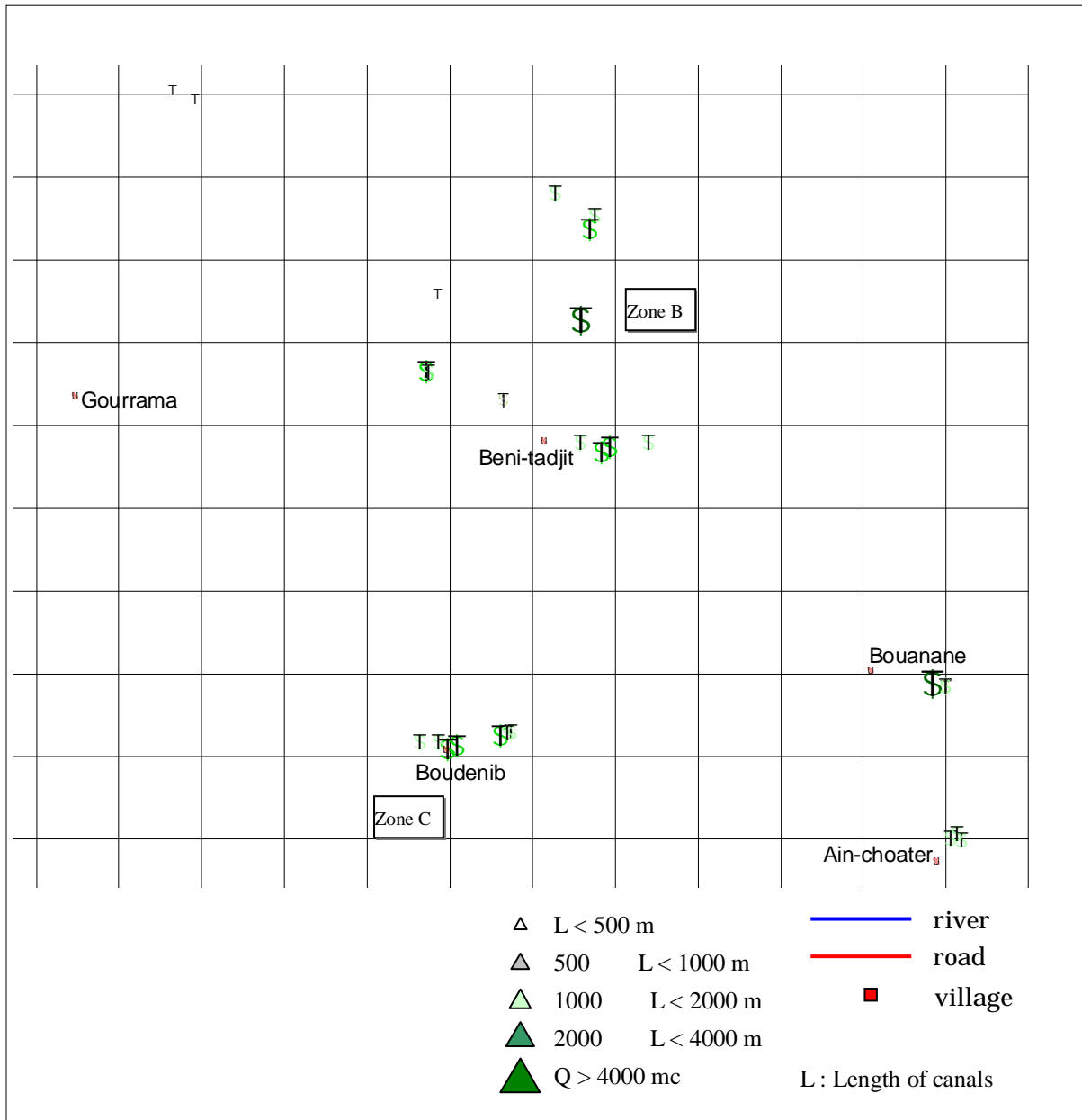
Average length of canals in the whole area: 1,399 m

3-2 Zone A



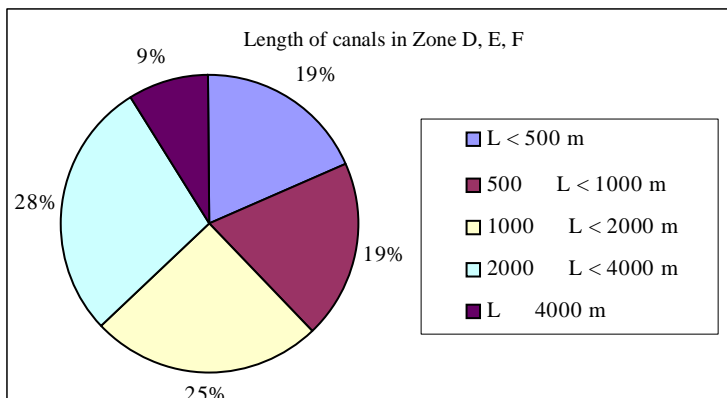
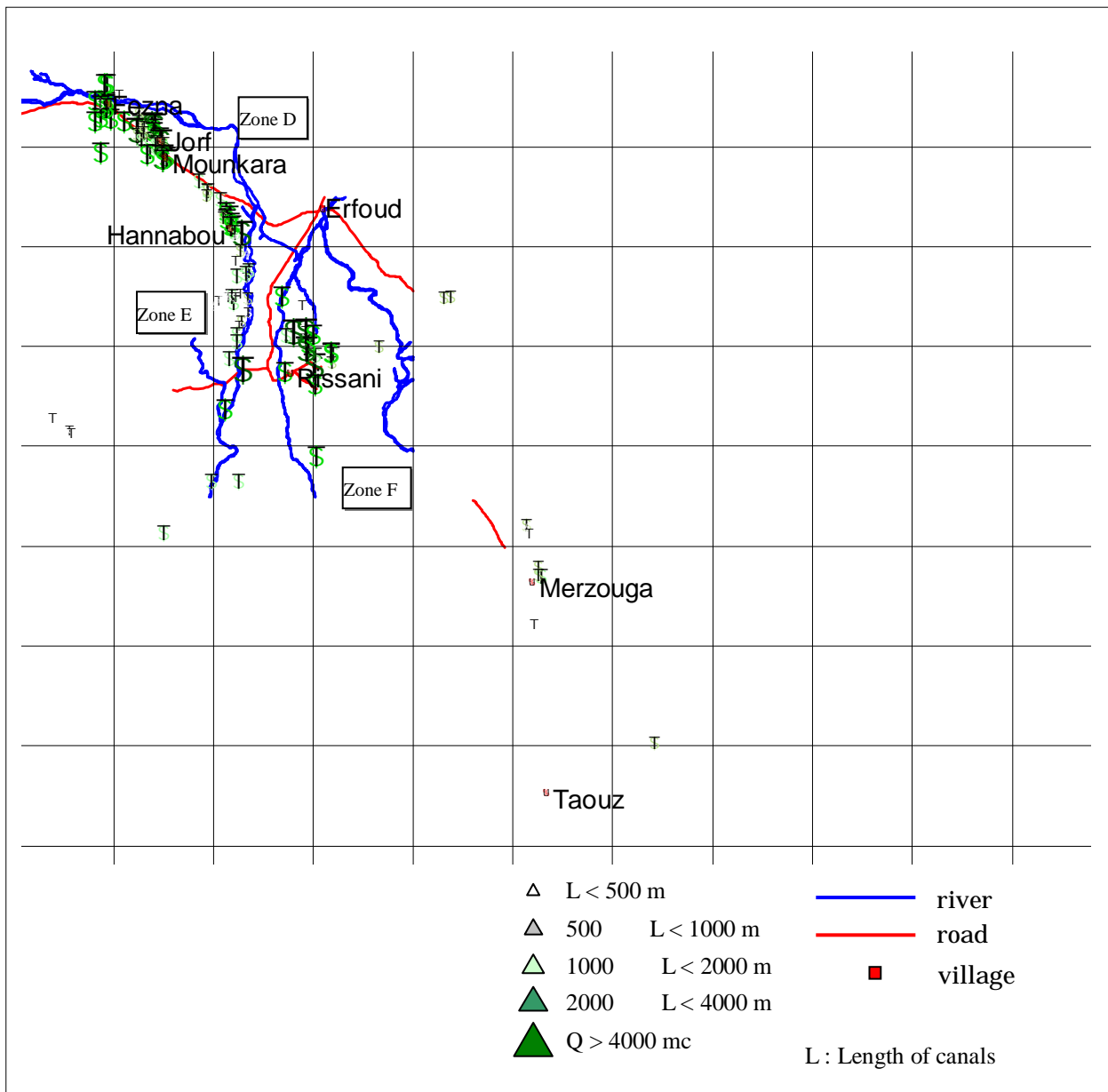
Number of khetarras in Zone A: 137
 Total length of canals in Zone A : 165,622 m
 Average length of canals in Zone A : 1,209 m

3-3 Zone B, C



Number of khetaras in Zone B, C : 32
 Total length of canals in Zone B, C : 48,073 m
 Average length of canals in Zone B, C : 1,502 m

3-4 Zone D, E, F

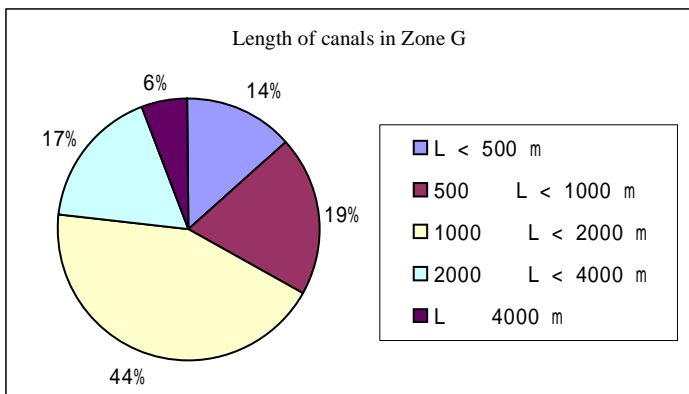
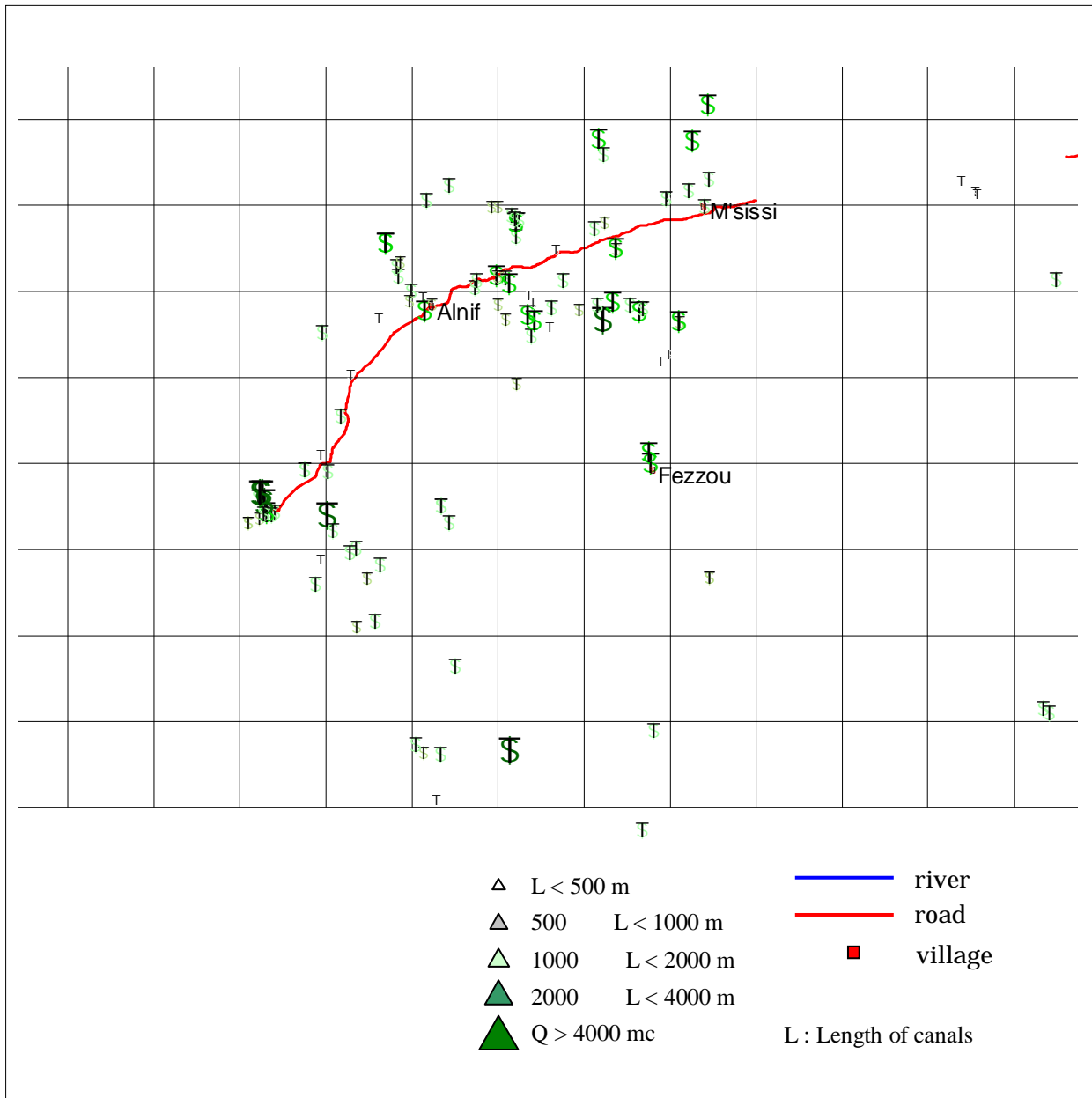


Number of khetaras in Zone D, E, F:
138

Total length of canals in Zone D, E, F
: 209,604 m

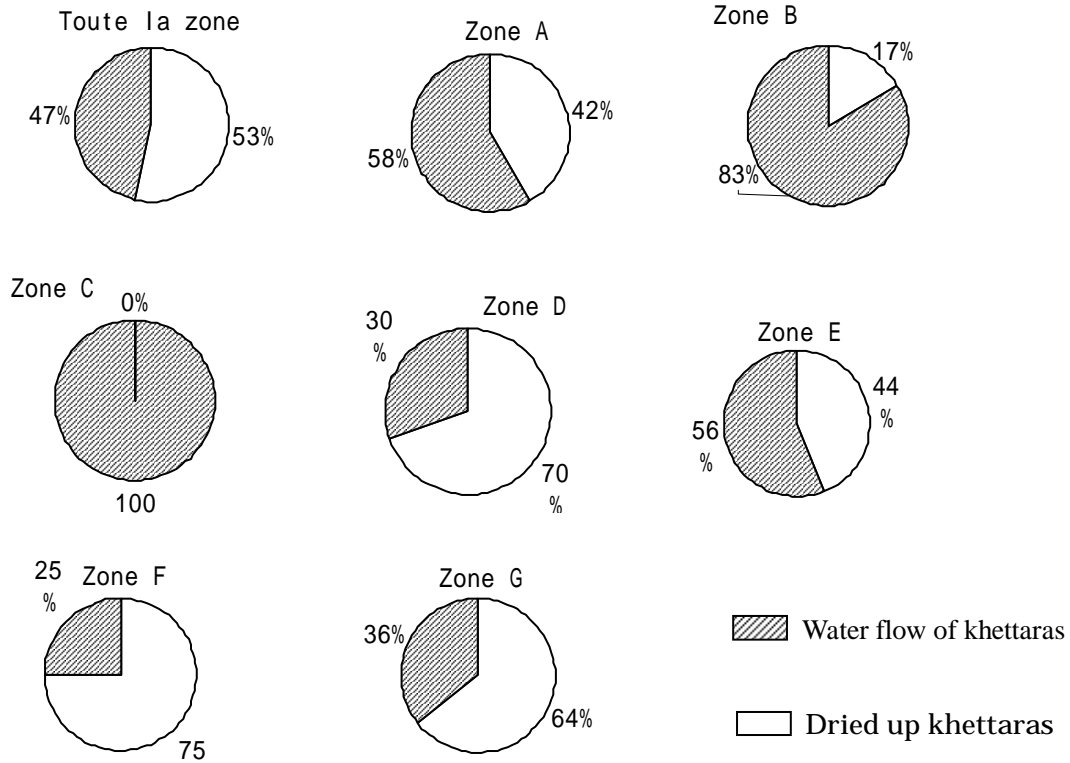
Average length of canals in Zone D, E, F:
1,519 m

3-5 Zone G



Number of khetaras in Zone G: 103
 Total length of canals in Zone G : 150,429 m
 Average length of canals in Zone G : 1,460 m

4. Water Flow of Khettara



5. Rehabilitation of Khettaras

The following table shows number of khettaras, which has water flow, and their rehabilitated portion are less than 30 % of total length of each khettara

	Full zone	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F	Zone G
Number of khettaras	410	137	24	8	69	25	44	103
Number of khettara, which has water flow	191	80	20	8	21	14	11	37
$Q > 0, M < L * 0.3$	142	54	19	6	17	11	9	26
$Q > 2, M < L * 0.3$	86	33	15	6	16	8	4	4
$Q > 5, M < L * 0.3$	61	23	12	6	14	4	1	1

Q : Khettara water discharge (litter / second)

M: Length of rehabilitation of each khettara

L: Length of khettara

6. Situation of Infrastructure

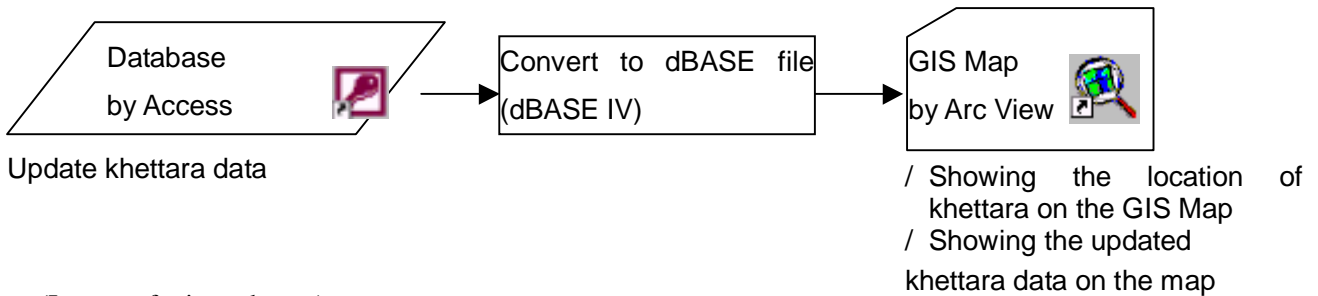
The following table shows the percentage of inhabitant, who were satisfied with social infrastructure, such as road, schools, sanitary service, electronic facilities and telecommunication.

Unit: %

	Full zone	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F	Zone G
Road	36.0	28.0	29.2	87.5	6.1	92.0	45.2	45.6
Schools	62.0	39.4	79.2	100.0	43.9	96.0	88.1	76.7
Sanitary service	17.8	20.5	45.8	25.0	21.2	24.0	21.4	1.9
Electronic facility and telecommunication	55.3	44.7	66.7	100.0	98.5	100.0	64.3	20.4

7. Manual of Khettara Database

7.1 Flow of procedure



(In case of minor change)

In case that few records of Access database are changed or updated, it is better to update the dBASE file directly by Arc View application.

7.2 Procedures

(1) To make dBASE file

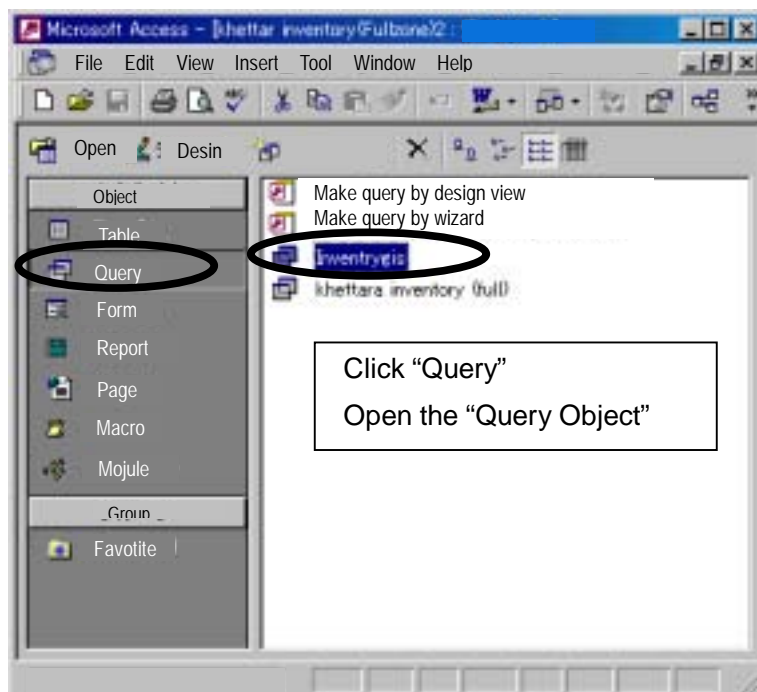
- 1) Open the Access file
- 2) Open the “Query object” in the Access file

“Query” has the function to select the necessary “field”.

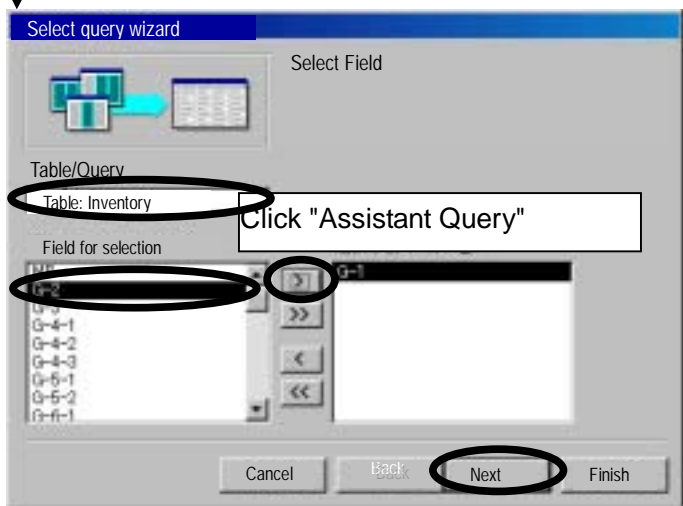
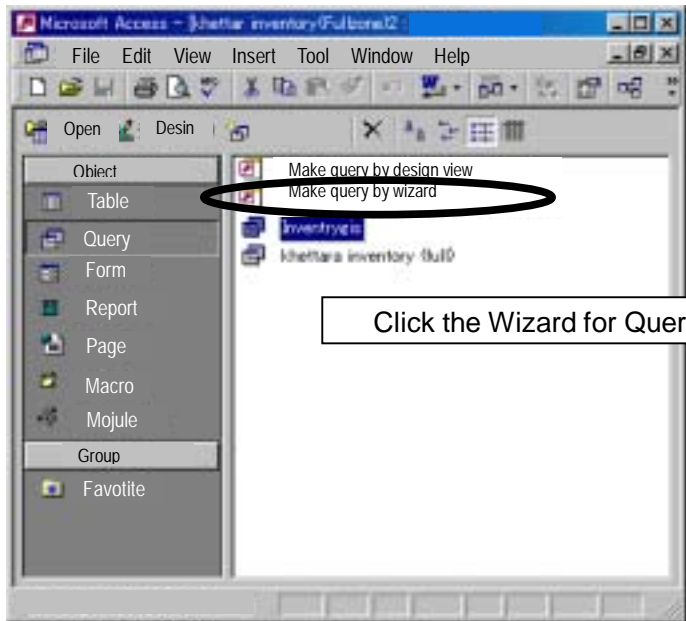
Fields

	G-1	G-2	G-3		
Records	A-1				
	A-2				
	A-3				

Two kinds of “Query object” has already been prepared. One object, named “Khettara inventory (full)”, contains all fields, and the other one, named “khettara gis”, contains selected 30 fields. “khettara gis” is a sample of “Query Object” to select fields. If you want to show all fields in the database on the Map by Arc View, it is necessary to choose Query object “Khettara inventory (full)”. To show selected field, “khettara gis” are chosen.



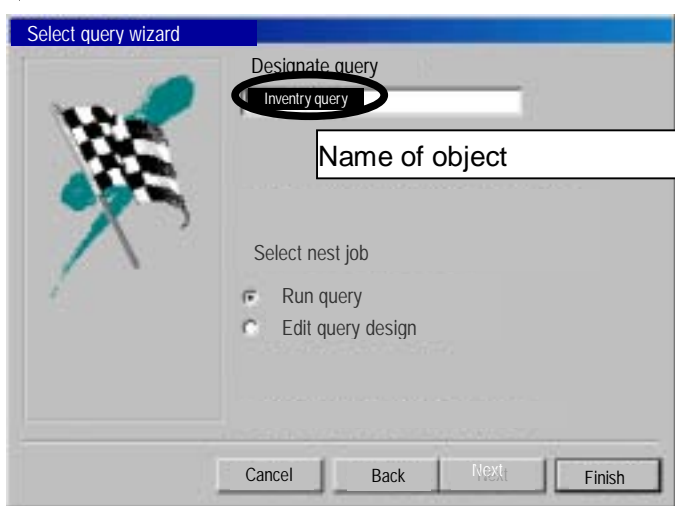
3) To make Query for selecting fields

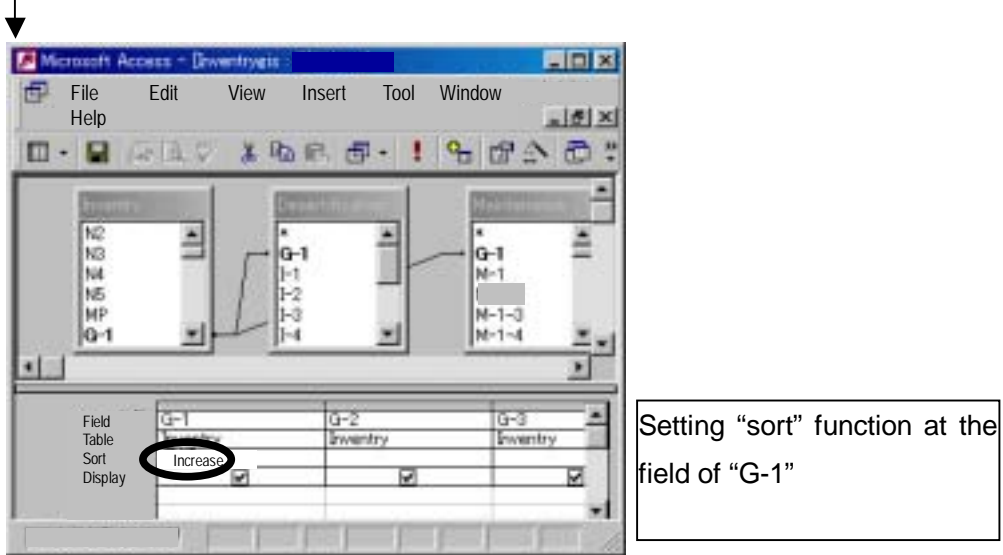
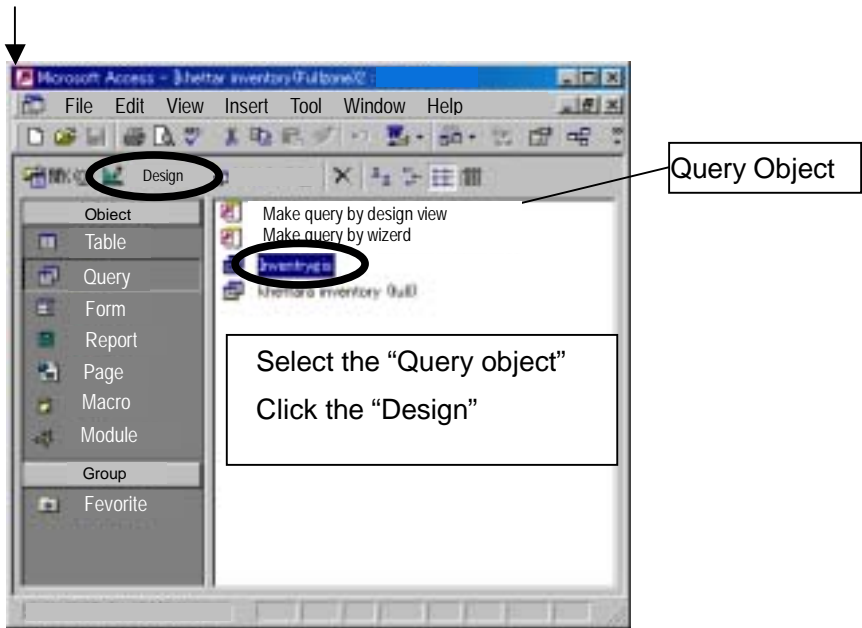


Select the " Table " contains the necessary data
 Select the necessary field
 Click
 Selected field is shown.

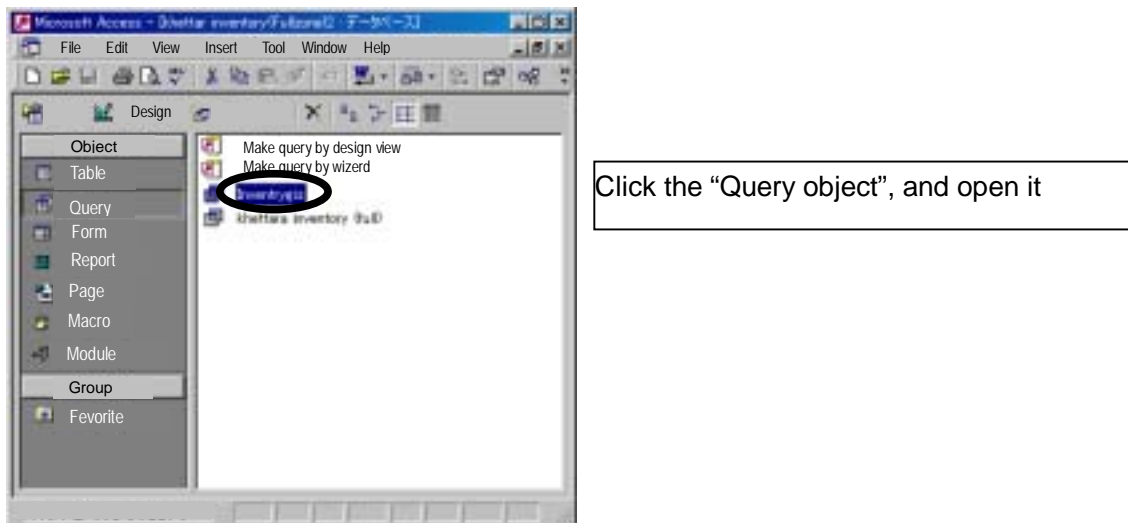
Repeat the procedure of and

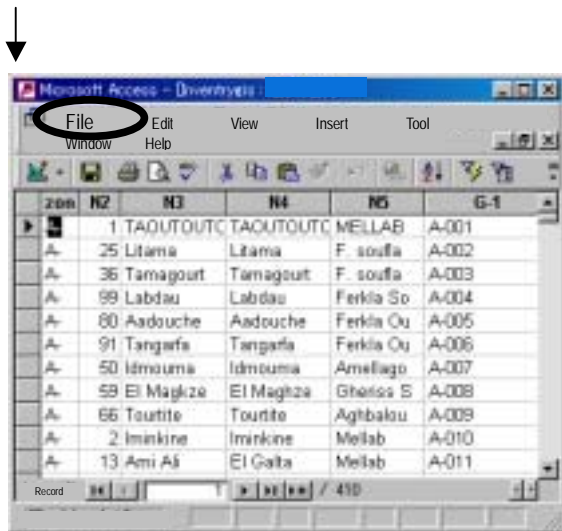
After selecting necessary fields, Click here



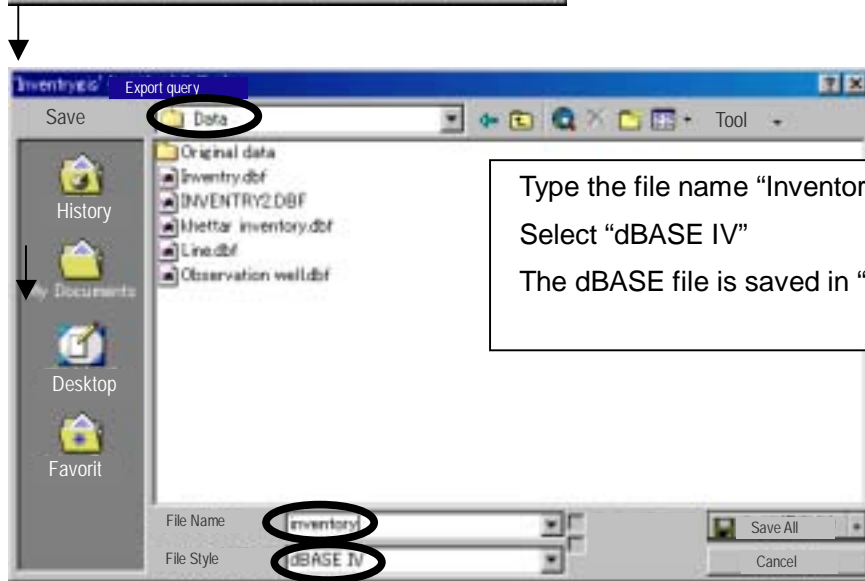


4) Export the "Query Object" to dBASE file (in the case of "khattara gis" as the "Query Object")





Click file menu, and click “Export”



Type the file name “Inventory”
 Select “dBASE IV”
 The dBASE file is saved in “C:\morocco\data”

5) Export the “Query Object” to dBASE file (in the case of “Khattara inventory (full)” as the “Query Object”)

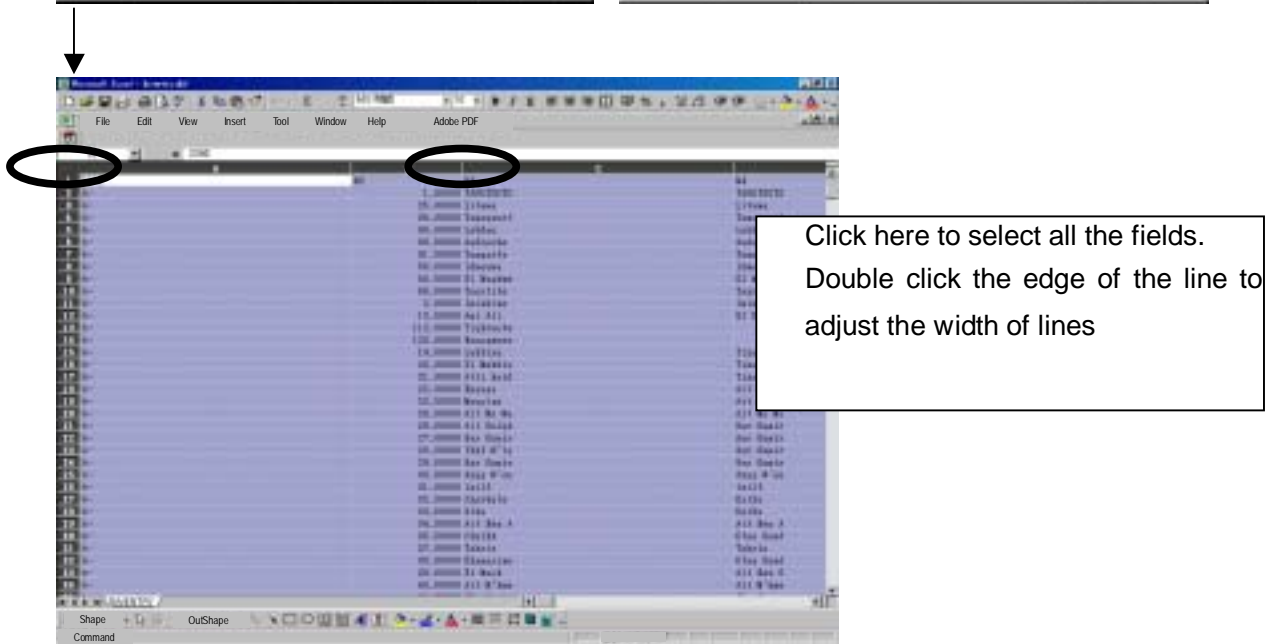
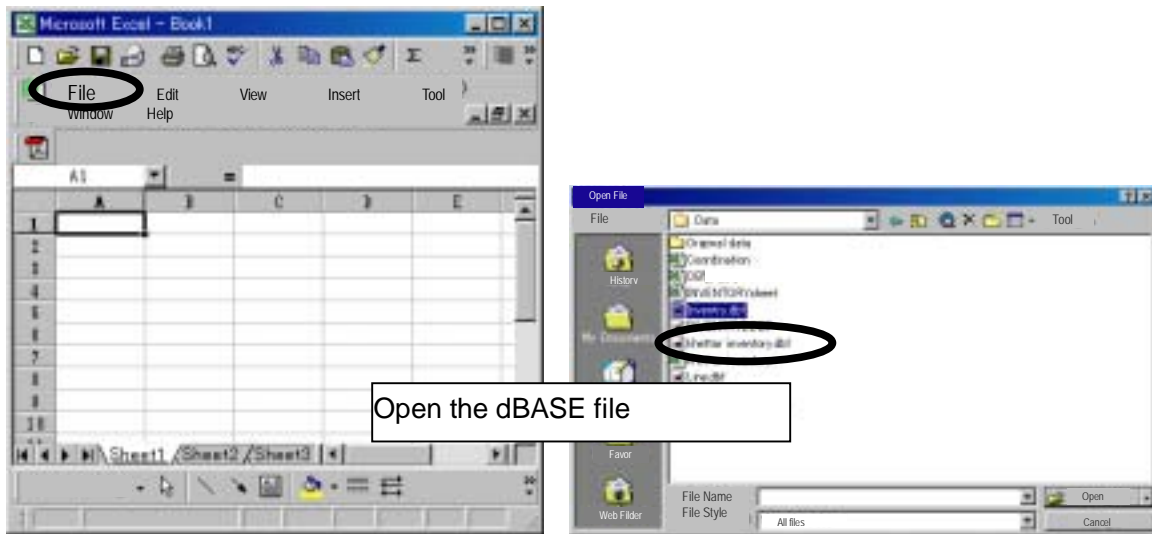
Export to Excel file

Open the Excel file and save it as the dBASE IV file by Excel Application.

It is not possible to export the table containing all the fields to dBASE IV file caused by contained too many fields. About 60 fields are contained in the database. It is possible to convert dBASE file from Access file, if the selected fields are less than around 30 fields.

6) Compile the dBASE file

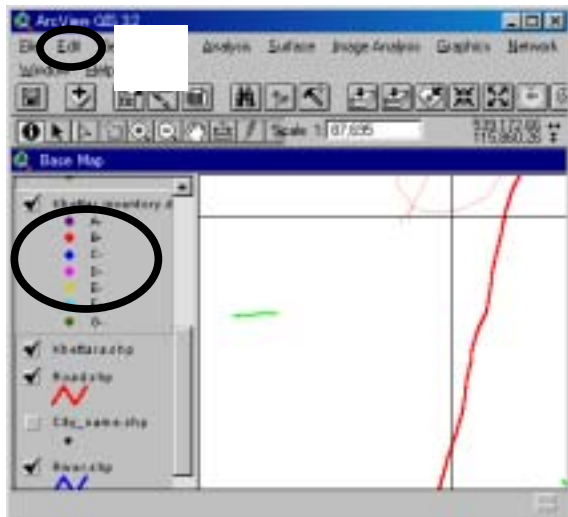
The following procedure is necessary to reduce the file size of dBASE file and to adjust the width of lines.



(2) Connecting the updated khettara data in Arc View

1) Open the “shape file”

2) Delete the old theme and dBASE file



Select the theme

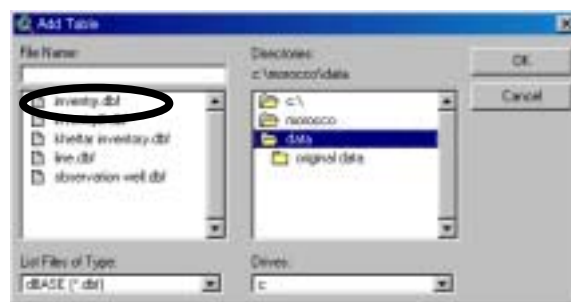
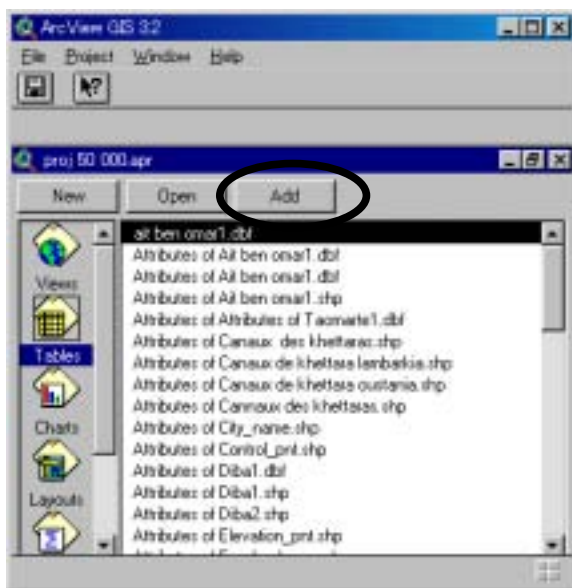
Click “edit” and click the “Delete the theme”

Click “tables”

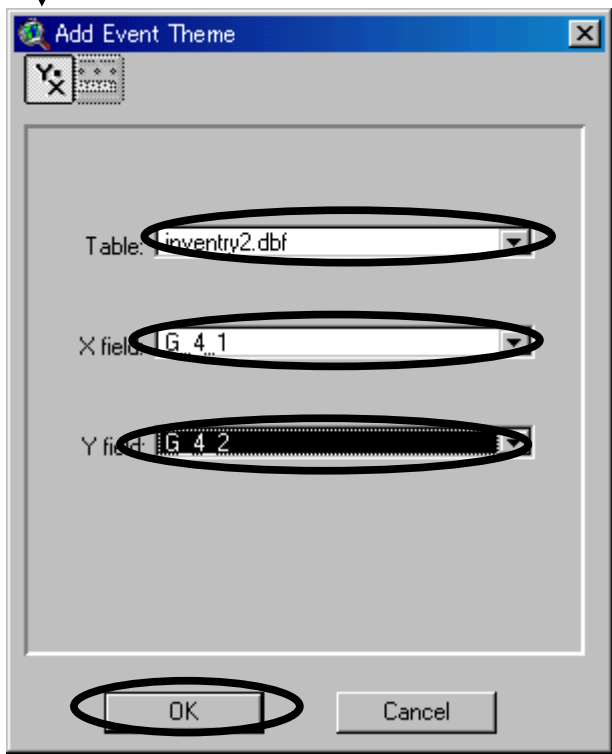
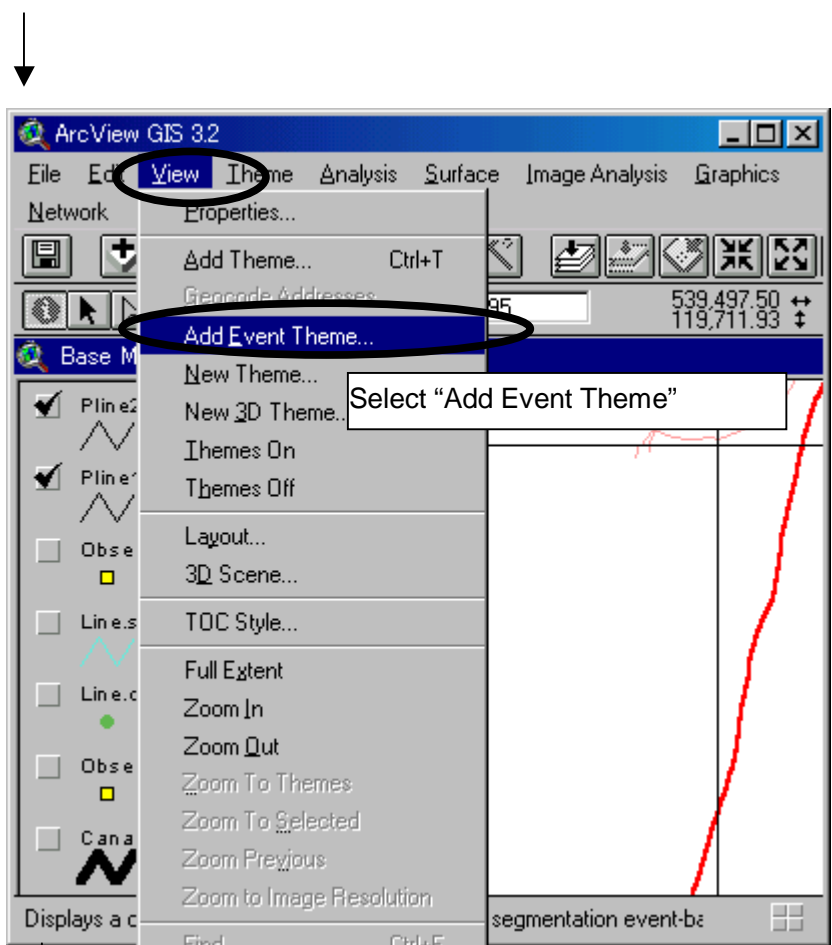
Select the old dBASE file, named “Khettara inventory”, and delete it.

dBASE file itself in the folder, named “data” (C:/morocco/data) is also necessary to delete.

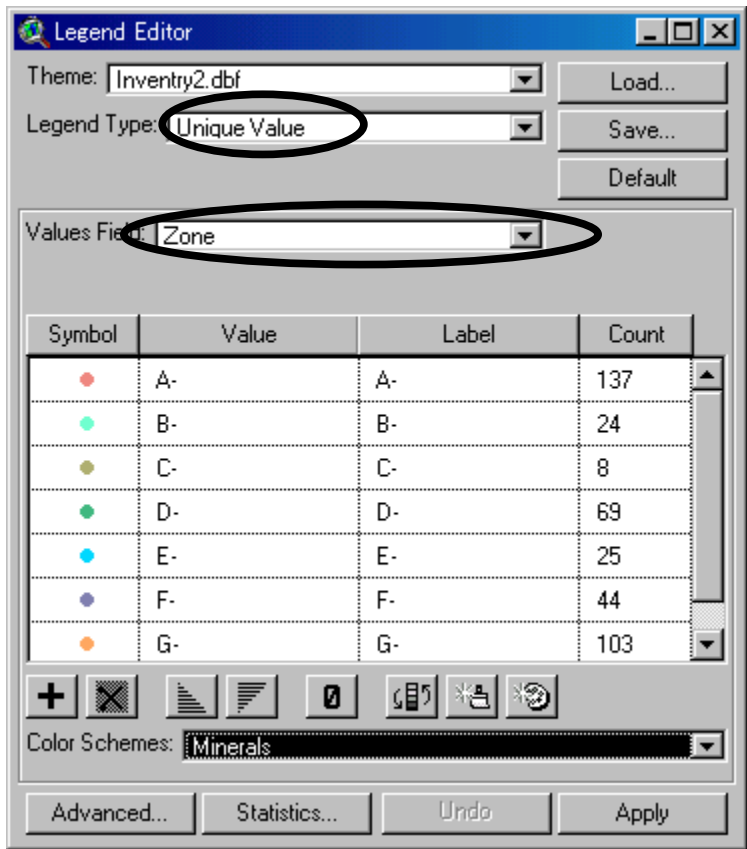
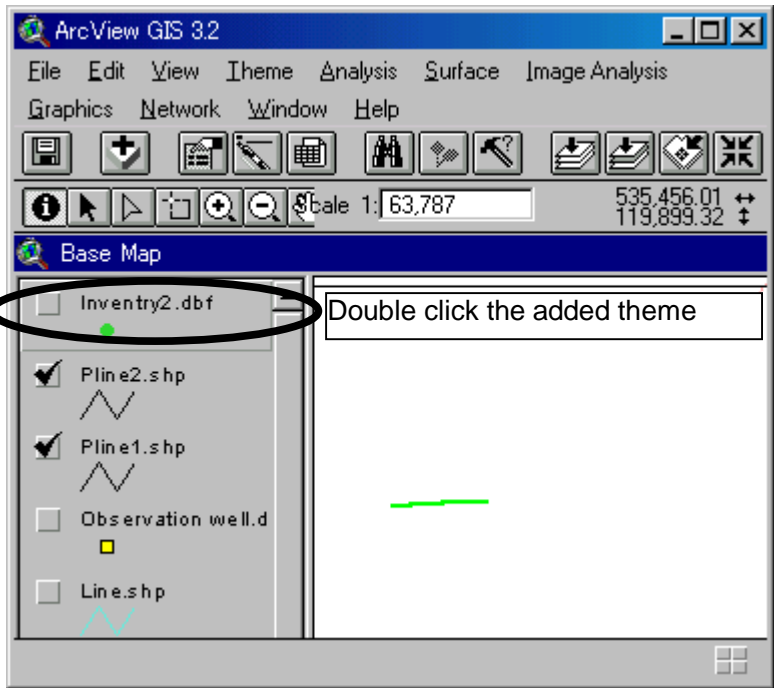
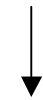
3) Add the updated dBASE file



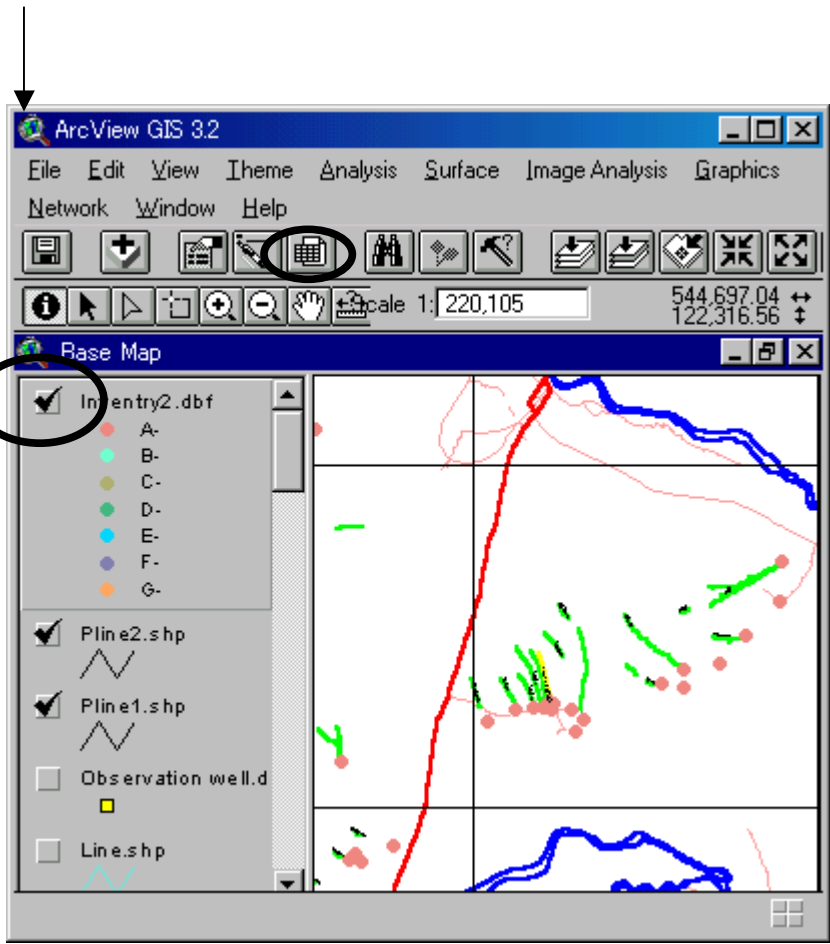
Click “Add” and select updated dBASE file



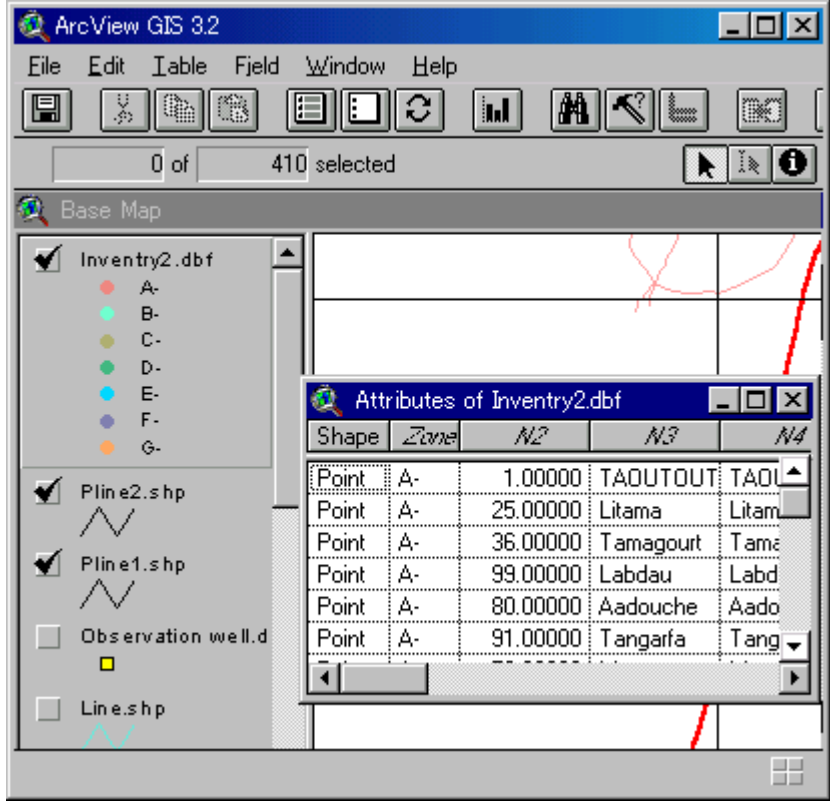
Select updated dBASE file
 Select "G-4-1" as X cordination
 Select "G-4-2" as Y cordination
 Click "OK"



Select "Unique Value"
Select "Zone"

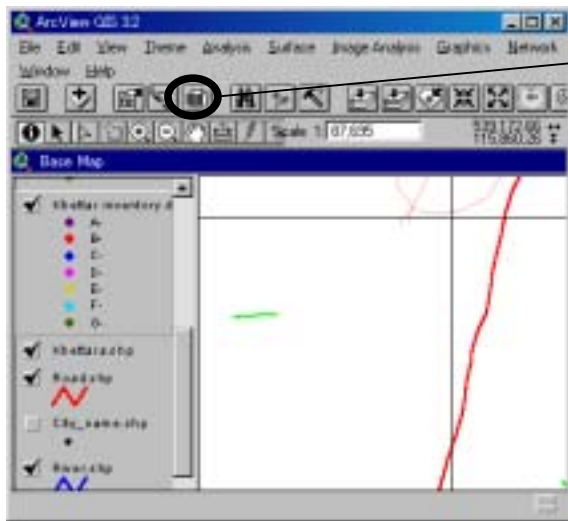


The location of khettara are shown by click the check box
 Click here to show the table

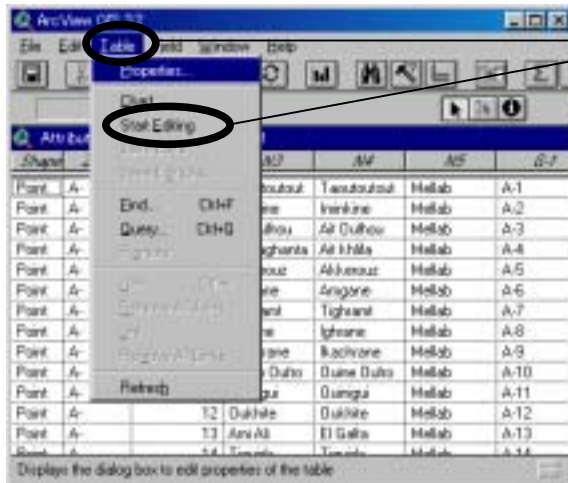


Updated table is shown on the map.

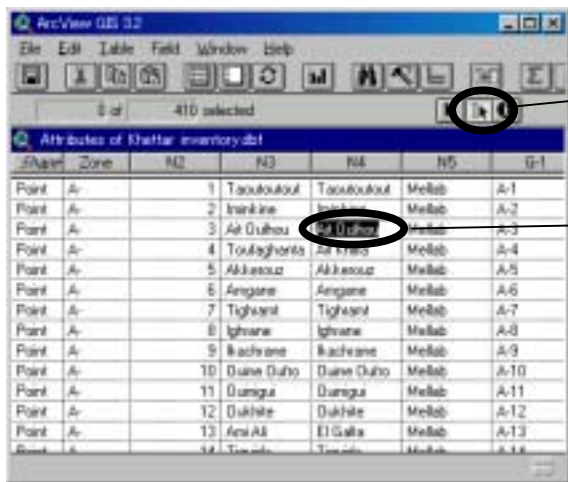
< To update the data by Arc View Application >



Click here and open the table



Click the "Table" menu, and click "Start Editing"



Click

Select the cell to be updated