

DeSurvey

A Surveillance System for Assessing and Monitoring Desertification

Module 1.4. GROUND-BASED LAND CONDITION ASSESSMENT

WP 1.4.2. Fine scale ground-based land condition (LC) assessment

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Database of new datasets for LEIS-PATTERN application to the chosen ROSELT sites

Website: <http://www.desurvey.net>

ftp (Module 1.4. – WP 1.4.2.): <http://www.ambiotek.com/desurvey>

TABLE OF CONTENTS

1. INTRODUCTION	3
2. THE www.ambiotek.com/desurvey FTP SITE.....	3
2.1. Database	3
2.2. Current structure of the main folders in the FTP in each study site.....	4
2.2.1. Mecheria - Algeria.....	4
2.2.2. Oued Mird - Morocco	5
2.2.3. Ferlo - Senegal	5
2.2.4. Oum Zessar - Tunisia.....	6
2.2.5. Menzel Habib - Tunisia.....	7
3. NEW DATA AVAILABLE FOR THE PATTERN MODEL	8
3.1. ALL SITES: data from global datasets.....	8
3.1.1. Remote sensing data.....	8
3.1.1.1. Algeria.....	8
3.1.1.2. Morocco: Oued Mird catchment	9
3.1.1.3. Senegal: Ferlo catchment	9
3.1.1.4. Tunisia: Oum Zessar catchment.....	10
3.1.1.5. Tunisia: Menzel Habib catchment.....	10
3.2. Locally derived Geographical Information System (GIS) data.....	11
3.2.1. GIS data for the Mecheria, Algeria	11
3.2.2. GIS data for the Oued Mird catchment, Morocco.....	12
3.2.3. GIS data for the Ferlo catchment, Senegal.....	12
3.2.4. GIS data for the Oum Zessar watershed (Jeffara), Tunisia.....	13
3.3. Climate data.....	15
3.3.1. Algeria: Mecheria catchment.....	15
3.3.1.1. Toffset data.....	15
3.3.1.2. Rcorrf data.....	15
3.3.2. Morocco: Oued Mird catchment	16
3.3.2.1. Toffset data.....	16
3.3.2.2. Rcorrf data.....	17
3.3.3. Senegal: Ferlo catchment.....	18
3.3.3.1. Toffset data.....	18
3.3.4.2. Rcorrf data.....	18
3.3.4. Tunisia: Oum Zessar catchment.....	19
3.3.4.1. Toffset data.....	19
3.3.4.2. Rcorrf data.....	21
3.3.5. Tunisia: Menzel Habib catchment.....	24
3.3.5.1. Toffset data.....	24
3.3.5.2. Rcorrf data.....	24
4. NEW DATA AVAILABLE FOR THE LEIS MODEL	24
5. IDENTIFICATION OF NEW USEFUL DATA AS INPUT IN THE PATTERN MODEL.....	27
5.1. Summary of the relation between the new available data and the input data required for the PATTERN model for all sites	27

LIST OF TABLES

Table 1 Available ASTER data for Mecheria: map and time coverage.....	9
Table 2 Available ASTER data for Oued Mird: map and time coverage	9
Table 3 Available ASTER data for Ferlo: map and time coverage	10
Table 4 Available ASTER data for Oum Zessar: map and time coverage	10
Table 5 Available ASTER data for Menzel Habib: map and time coverage	11
Table 6 New available GIS processing data for the Mecheria catchment	11
Table 7 New available GIS final data for the Mecheria catchment	11
Table 8 New available GIS processing data for the Oued Mird catchment.....	12
Table 9 New available GIS final data for the Oued Mird catchment.....	12
Table 10 New available GIS raw data for the Ferlo catchment	12
Table 11 New available GIS processing data for the Ferlo catchment	12
Table 12 New available GIS final data for the Ferlo catchment.....	13
Table 13 New available GIS raw data for the Oum Zessar catchment	13
Table 14 New available GIS processing data for the Oum Zessar catchment	14
Table 15 New available GIS final data for the Oum Zessar catchment.....	14
Table 16 Raw data for the calculation of the Toffset maps	15
Table 17 Raw, processing and final data for the calculation of the Rcorrf maps	16
Table 18 Raw data for the calculation of the Toffset maps	16
Table 19 Raw, processing and final data for the calculation of the Rcorrf maps	17
Table 20 Raw data for the calculation of the Toffset maps	18
Table 21 Raw, processing and final data for the calculation of the Rcorrf maps	18
Table 22 Raw, processing and final data for the calculation of the Toffset maps	19
Table 23 Raw, processing and final data for the calculation of the Rcorrf maps	21
Table 24 Raw data for the calculation of the Toffset maps	24
Table 25 Raw, processing and final data for the calculation of the Rcorrf maps	24
Table 26 LEIS available data for Jeffara (Tunisia)	26
Table 27 Summary of the relation between the available data and the input data required for the PATTERN model for all sites	28

Work Package 1.4.2: Fine scale modelling of land condition changes

1. INTRODUCTION

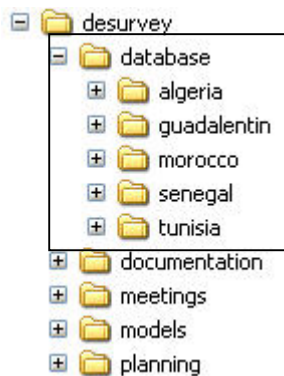
The present document is an update of the previous deliverable 1.4.2.2 (<http://www.ambiotek.com/desurvey/>, March 2006). The new available raw, processing and/or final data for the LEIS-PATTERN model is reported for each study site. Even though the LEIS-PATTERN coupled model is currently being developed with the aim of being applied to the following North-African catchments: Mecheria (Algeria), Oued Mird (Morocco), Ferlo (Senegal), Menzel Habib and Oum zessar (Tunisia), it will be first applied to those sites with best available data.

2. THE www.ambiotek.com/desurvey FTP SITE

The ftp site: www.ambiotek.com/desurvey was set up for managing the datasets for the LEIS-PATTERN coupled model from each study site (username: desurveyproj, password: des05).

2.1. Database

The *Database* is structured on the basis of the several North African sites where the LEIS-PATTERN coupled model will be applied, in order to have all the data from each site organized as much as possible in the same way. Thus, the folders in the *Database* directory are: **Algeria**, **Morocco**, **Tunisia** and **Senegal** (North-African study sites), and the **Guadalentin** (South Spain). The structure within each of these folders is standard and it has been made to be helpful for organising, interchanging, copying, storing, and managing the data in general. There will be two separate datasets, one for the PATTERN model and another for the LEIS model.



For the PATTERN model, the data of each site will be organized according to their stage of readiness for their application in the LEIS-PATTERN model into the directories: raw, processing and final.

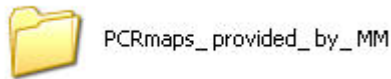


Data available for each site, which needs further processing before being able to be used in the model, will be copied and stored by each partner in the **raw** directory. Data under

processing will be stored in the **processing** directory, whereas data in their final format for its direct application in the model will be in the **final** folder. However, each of these directories has several folders and data is copied to them according to the kind of variables they represent: climate, groundwater, infrastructure, landuse, soil_and_topography, imagery (for remote sensing data) and docs (for word or excel documents).



For each study site, the **processing** directory has an additional folder: PCRmaps_provided_by_MM, which contains data produced on the basis of remote sensing (but not imagery) and other global datasets rather than locally sourced data.

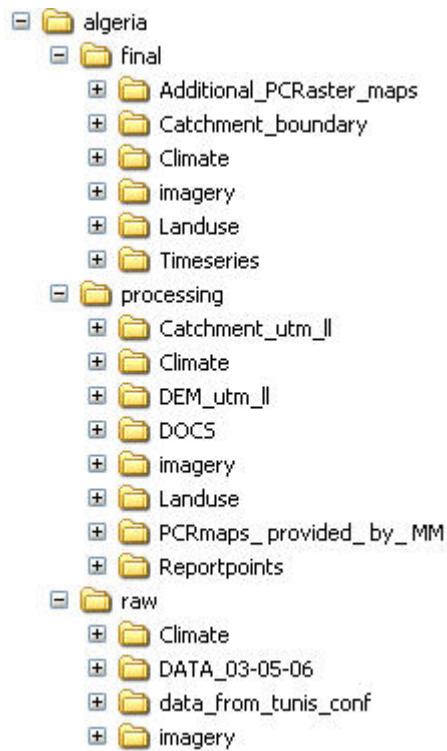


Likewise, the **final** directory has two additional folders: *Additional_PCRaster_maps*, where the following maps in PCRaster format will be stored: reportpoints.map, order.map, hillsl.map, clone maps (scalar and Boolean), and the *Timeseries*, where the time series files needed in the model will be copied: time.tss and metinput.tss.

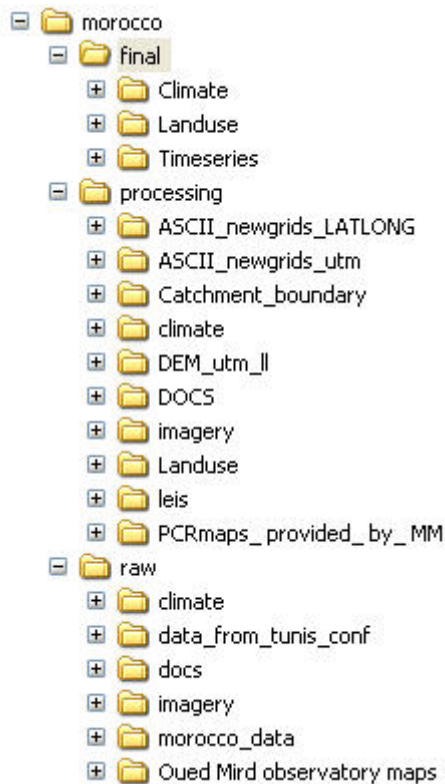
2.2. Current structure of the main folders in the FTP in each study site

From the overall standard FTP structure for each site, only those directories which currently contain data are displayed.

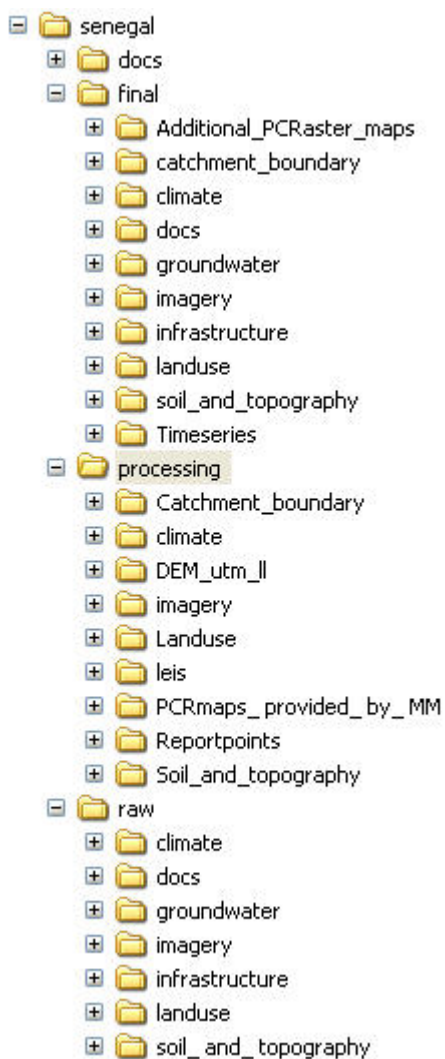
2.2.1. Mecheria – Algeria



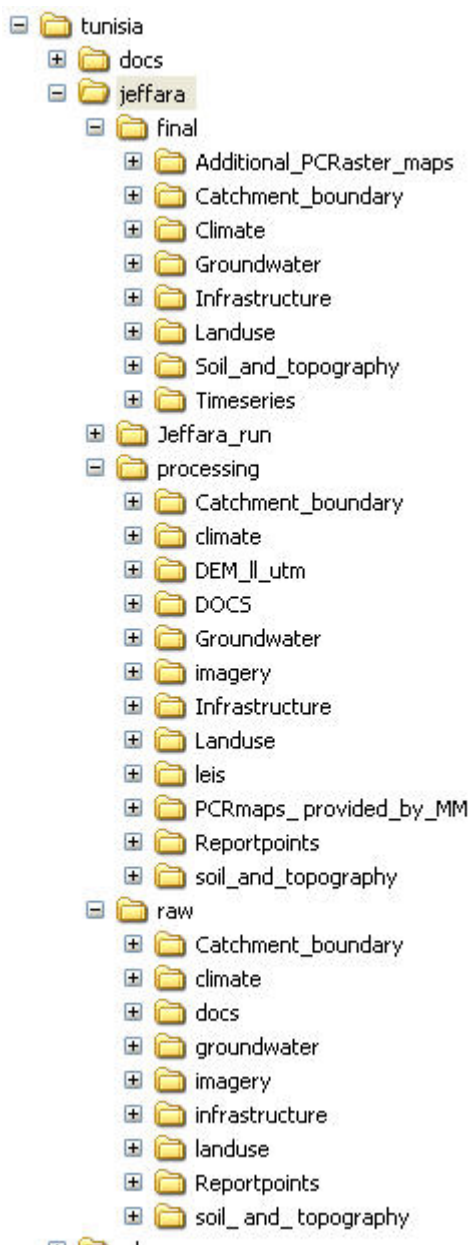
2.2.2. Oued Mird – Morocco



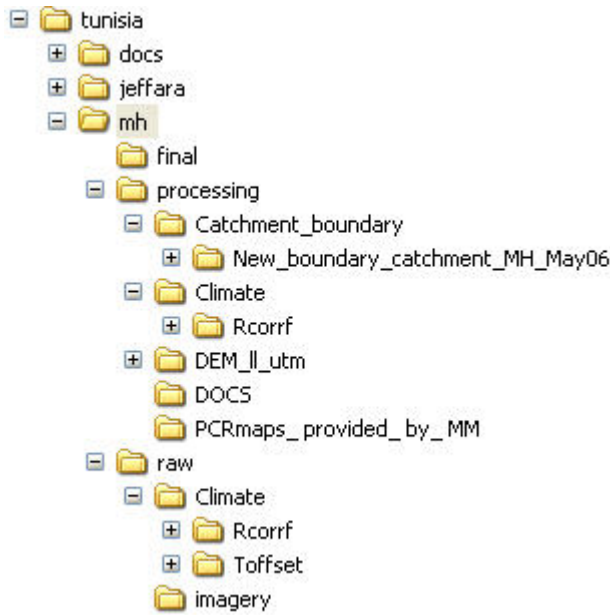
2.2.3. Ferlo – Senegal



2.2.4. Oum Zessar – Tunisia

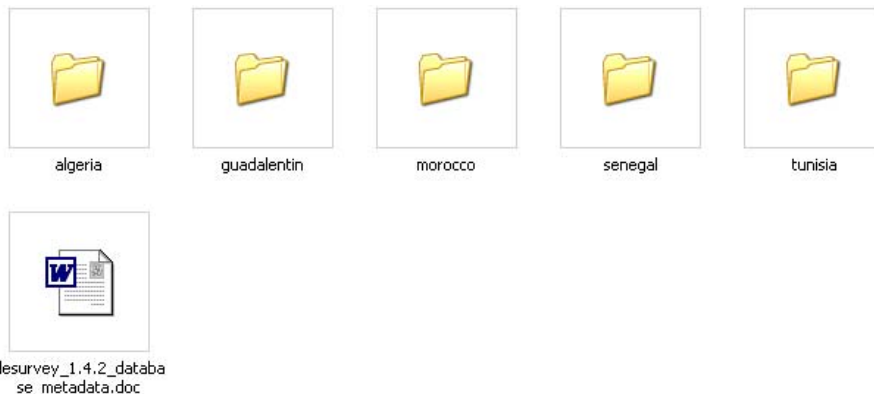


2.2.5. Menzel Habib – Tunisia



3. NEW DATA AVAILABLE FOR THE PATTERN MODEL

This section presents, in the form of tables, all of the new data available for application in the PATTERN model for the target catchments in Algeria, Morocco, Senegal and Tunisia. The copy of this document delivered at www.ambiotek.com/desurvey (D1.4.2.3) represents the update of the state of the database in month 16 of the project.



3.1. ALL SITES: data from global datasets

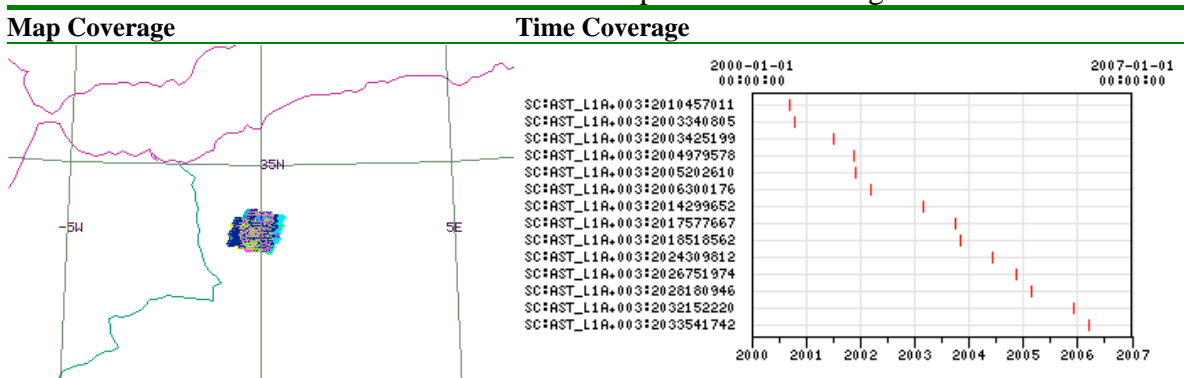
3.1.1. Remote sensing data

ASTER data are available for each site and will be evaluated for use with the PATTERN model. However, these data will not be available in the FTP due to re-distribution restrictions.

3.1.1.1. Algeria: Mecheria catchment

The new available remote sensing data for the Algeria study catchment is presented in Table 1. The geographical projection is: **UTM, Zone 30N** and the datum: WGS84.

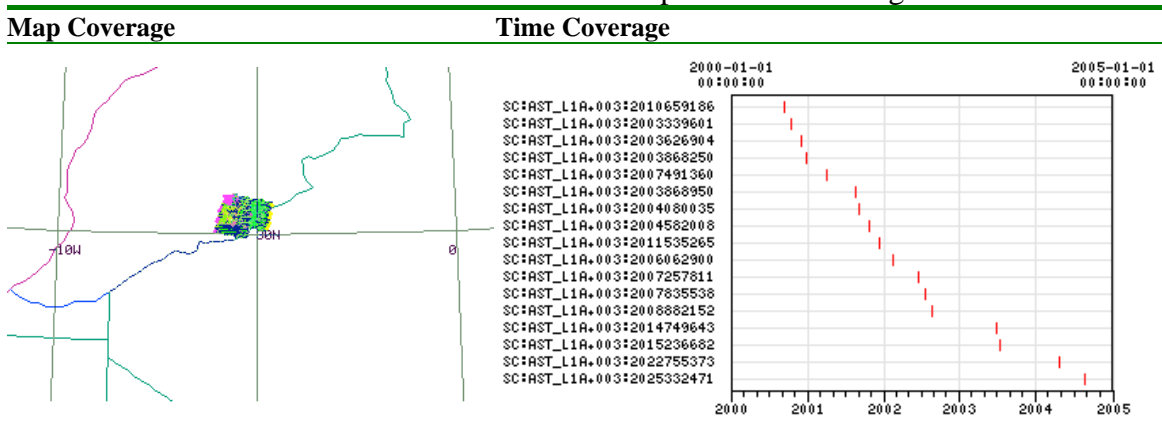
Table 1 Available ASTER data for Mecheria: map and time coverage



3.1.1.2. Morocco: Oued Mird catchment

The new available remote sensing data for the Oued Mird catchment is presented in Table 2. The geographical projection is: **UTM, Zone 30N** and the datum: WGS84.

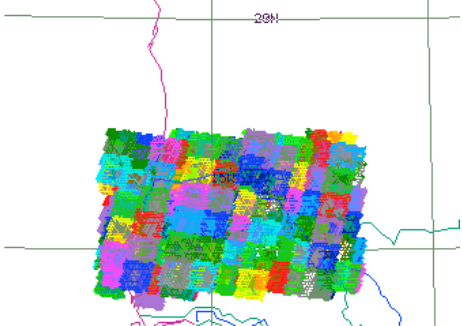
Table 2 Available ASTER data for Oued Mird: map and time coverage



3.1.1.3. Senegal: Ferlo catchment

The new available remote sensing data for the Ferlo catchment is presented in Table 3. The geographical projection is: **UTM, Zone 28N** and the datum: WGS84.

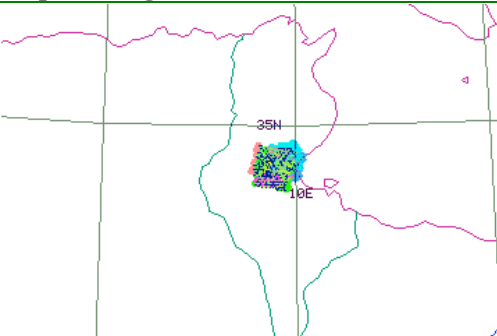
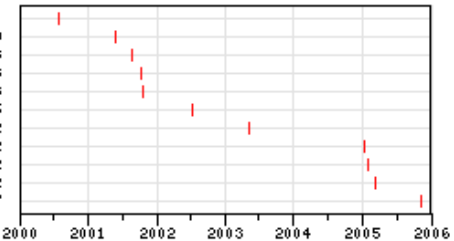
Table 3 Available ASTER data for Ferlo: map and time coverage

Map Coverage	Time Coverage
	<p>24 Jun 2000 to 28 Aug 2006 (screen capture is too large to show here)</p>

3.1.1.4. Tunisia: Oum Zessar catchment

The new available remote sensing data for the Oum Zessar catchment is presented in Table 4. The geographical projection is: **UTM, Zone 32N** and the datum: WGS84.

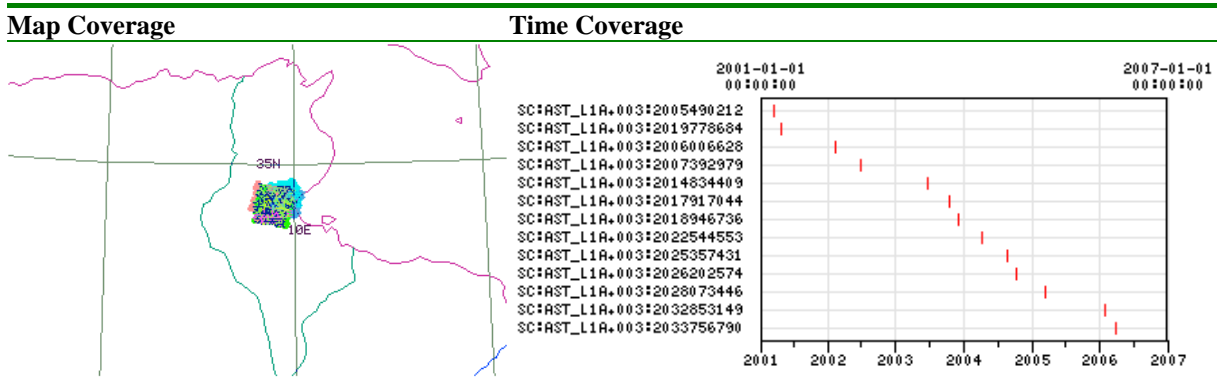
Table 4 Available ASTER data for Oum Zessar: map and time coverage

Map Coverage	Time Coverage
	<p>2000-01-01 00:00:00 to 2006-01-01 00:00:00</p> <p> SC:AST_L1A.003:2007747941 SC:AST_L1A.003:2003174869 SC:AST_L1A.003:2003894838 SC:AST_L1A.003:2004411703 SC:AST_L1A.003:2004781178 SC:AST_L1A.003:2007742795 SC:AST_L1A.003:2013397052 SC:AST_L1A.003:2027376932 SC:AST_L1A.003:2027719672 SC:AST_L1A.003:2028073422 SC:AST_L1A.003:2031711557 </p> 

3.1.1.5. Tunisia: Menzel Habib catchment

The available remote sensing data for the Menzel Habib catchment is presented in Table 5. The geographical projection is: **UTM, Zone 32N** and the datum: WGS84.

Table 5 Available ASTER data for Menzel Habib: map and time coverage



3.2. Locally derived Geographical Information System (GIS) data

For each target area the new available data is presented according to their location in the ftp site (raw, processing and final) and therefore on the basis of it readiness to be applied to the model. The raw data have information on the legend (if applicable), data name and format, the year that the data have been produced or obtained and the source of the data. The processing and final data have only information on the data name and format, and a general brief description. All the processing and final data presented have been created during the year 2006. For the Menzel Habib catchment, no new GIS data have been obtained or produced since the last Desurvey deliverable 1.4.2.2.

3.2.1. GIS data for the Mecheria catchment, Algeria

Projection: UTM, Zone: 30N
Datum: WGS84

Table 6 New available GIS processing data for the Mecheria catchment

Data name	Data format	Application in model
FTP site location: database\algeria\processing\landuse		
plusarea_ll.asc	ASCII	Landuse: plusarea.map
plusarea_ll.map	PCRaster map	
FTP site location: database\algeria\processing\reportpoints		
reportpoints	Raster grid	Additional PCRaster data:reportpoints.map
reportpoints.asc	ASCII	
Reportpoints_mecheria.dbf	DBF	
points	Raster grid	
points.shp	Shape/points	

Table 7 New available GIS final data for the Mecheria catchment

Data name	Data format	Description
FTP site location: database\algeria\final\landuse		
plusarea.map	PCRaster map	plusarea map
FTP site location: database\Tunisia\Jeffara\final\Additional_PCRaster_maps		
reportpointsnom.map	PCRaster map	reportpoints map

Readme_reportpoints.txt text

3.2.2. GIS data for the Oued Mird catchment, Morocco

Projection: UTM, Zone: 30N

Datum: WGS84

Table 8 New available GIS processing data for the Oued Mird catchment

Data name	Data format	Application in model
FTP site location: database\morocco\processing\landuse		
veget1_ll	Raster grid	Landuse: plusarea.map
veget1_ll.asc	ASCII	
veget1_ll.map	PCRaster map	

Table 9 New available GIS final data for the Oued Mird catchment

Data name	Data format	Description
FTP site location: database\morocco\final\landuse		
veget_nom.map	PCRaster map	plusarea map

3.2.3. GIS data for the Ferlo catchment, Senegal

Projection: UTM, Zone: 28N

Datum: WGS84

Table 10 New available GIS raw data for the Ferlo catchment

Data name	Data format	legend	Year	Source	Description
FTP site location: database\senegal\RAW\groundwater					
forage_meq.shp	shape/points		2006	CSE	Ion concentration in meq/l of the water of sampled drillings
forage_mgl.shp	shape/points		2006	CSE	Ion concentration in mg/l of the water of sampled drillings
hydrogeo_ferlo.shp	shape/lines	hydrogeologie.avl	1965	BRGM	Nature of the different aquifers of the Ferlo catchment
c_isopieze_nph.shp	shape/lines	maastrichtien.avl	2004	DGPRES	Piezometric level of the groundwater of maastrichtien
puits_meql.shp	shape/points		2006	CSE	Ion concentration in meq/l of the water of sampled wells
puits_mgl.shp	shape/ points		2006	CSE	Ion concentration in mg/l of the water of sampled wells

BRGM: Mine and geological research office, France

DGPRES: Water resource management and planning office, Senegal

CSE: Centre de Suivi Ecologique, Dakar, Senegal

Table 11 New available GIS processing data for the Ferlo catchment

Data name	Data format	Application in model
FTP site location: database\senegal\processing\landuse		
veget_ll	Raster grid	Landuse: plusarea.map
veget_ll.map	PCRaster map	

FTP site location: database\Tunisia\Jeffara\processing\reportpoints		
reportpoints	Raster grid	Additional PCRaster maps: reportpoints.map
reportpointscalar.asc	ASCII	
reportpointscalar.map	PCRaster map	
Reportpoints_ferlo.dbf	DBF	
Reportpoints_ferlo.xls	Excel	
points	Raster grid	
FTP site location: database\Senegal\processing\soil_and_topography		
soil_ll	Raster grid	Soil_and_topography: sand.map, silt.map, clay.map
soil_ll.asc	ASCII	
soil_ll.asc	PCRaster map	
clay_map	Raster grid	Soil_and_topography: clay.map
sand_map	Raster grid	Soil_and_topography: sand.map
silt_map	Raster grid	Soil_and_topography: silt.map

Table 12 New available GIS final data for the Ferlo catchment

Data name	Data format	Description
FTP site location: database\senegal\final\landuse		
veg_nom.map	PCRaster map	Landuse: plusarea map
FTP site location: database\senegal\final\Additional_PCRaster_maps		
reportpoints.map	PCRaster map	Additional PCRaster maps: reportpoints maps

3.2.4. GIS data for the Oum Zessar watershed (Jeffara), Tunisia

Projection: UTM, Zone: 32N

Datum: WGS84

Table 13 New available GIS raw data for the Oum Zessar catchment

Data name	Data format	Legend	Year	Source	Description
FTP site location: database\Tunisia\Jeffara\RAW\groundwater					
In salinity.zip:					salinity map
salinity_map.shp	shape/lines	Salinity_map.avl	2006	RDRW	
salinity_pts.shp	shape/points	Salinity_pts.avl	2006	RDRW	forages salinity
In Fault.zip:				Geology map	fault map
Fault.shp	shape/lines	failles.avl	2004	1:500 000	
In geology_Jun06:				Geology map	geology map
geology.shp	shape/polygon	geology.avl	2004	1:500 000	
FTP site location: database\Tunisia\Jeffara\RAW\reportpoints					
Outlets_SWAT_Patt					GPS positions
ern.xls	Excel				
In Outlets.zip:	shape/points				
outlets_pattern.shp			2004	Model SWAT	
FTP site location: database\Tunisia\Jeffara\RAW\soil_and_topography					
sol_NewAWCversio					soil classes
n25052006.xls	Excel		2004	IRA	
FTP site location: database\Tunisia\Jeffara\RAW\infrastructure					
In jessour-tabias.zip:					Jessours and tabias location
jess-tab.shp	shape/polygon	JSR_Tab.avl	2006	IRA	
In irrigation.zip:					Irrigated areas location
surf-irrig.shp	shape/points	Surf_irrig.avl	2006	IRA	

IRA: Arid Regions Institute

RDRW: Regional Direction of Resources in Waters

Table 14 New available GIS processing data for the Oum Zessar catchment

Data name	Data format	Application in model
FTP site location: database\Tunisia\Jeffara\processing\groundwater		
aquiferline.shp	shape/lines	Groundwater: aquifbdy.map
aquifbdy.asc	ASCII	
aquifbdy.map	PCRaster map	
geology_avl.asc	ASCII	Groundwater: geology.map
geology_id.asc	ASCII	
geology_id.map	PCRaster map	
geology_id	Raster grid	
FTP site location: database\Tunisia\Jeffara\processing\landuse		
plusareanum	Raster grid	Landuse: plusarea.map
plusareanum.asc	ASCII	
plusareanum.map	PCRaster map	
FTP site location: database\Tunisia\Jeffara\processing\infrastructure		
recharge	Raster grid	Infrastructure: recharge.map
recharge.asc	ASCII	
recharge_well	Raster gris	
FTP site location: database\Tunisia\Jeffara\processing\reportpoints		
reportpoints	Raster grid	Additional PCRaster maps: reportpoints.map
reportpoints.asc	ASCII	
reportpoints.map	PCRaster map	
Reportpoints_jeffara.dbf	DBF	
FTP site location: database\Tunisia\Jeffara\processing\soil_and_topography		
silt_sum, silt_sum.asc	Raster grid/ASCII	Soil_and_topography: sand.map, silt.map, clay.map
sand_sum, sand_sum.asc	Raster grid/ASCII	
clay_sum, clay_sum.asc	Raster grid/ASCII	
silt_jeffara.map	PCRaster map	
sand_jeffara.map	PCRaster map	
clay_jeffara.map	PCRaster map	
soil_2004	Raster grid	
silt_1, ..., silt_16	Raster grid	
sand_1, ..., sand_16	Raster grid	
clay_1, ..., clay_16	Raster grid	

Table 15 New available GIS final data for the Oum Zessar catchment

Data name	Data format	Description
FTP site location: database\Tunisia\Jeffara\final\groundwater		
geology.map	PCRaster map	geology map
aquifbdynom.map	PCRaster map	aquifer map
FTP site location: database\Tunisia\Jeffara\final\landuse		
plusarea.map	PCRaster map	plusarea map
FTP site location: database\Tunisia\Jeffara\final\infrastructure		
recharge.map	PCRaster map	recharge map
FTP site location: database\Tunisia\Jeffara\final\Additional_PCRaster_maps		
reportpointsnom.map	PCRaster map	reportpoints maps

FTP site location: database\Tunisia\Jeffara\final\soil_and_topography\texture

silt.map	PCRaster map	silt map
sand.map	PCRaster map	sand.map
clay.map	PCRaster map	clay.map

3.3. Climate data

The new climate data is presented per each target site in two main parts, one related to the development of the Toffset annual and monthly maps and the other to the Rcorr annual and monthly maps, using several methodologies and datasets in order to test which data is more accurate and reliable for using within the model at a later stage. Data are presented on the basis of their location in the ftp site.

The *Rcorr/Toffset* data is grouped in the ftp according to the method used in their calculation:

Annual_Rcorr/Toffset_partners: Annual total rainfall/temperature rcorr/toffset map calculated on the basis of the ground weather station data provided by the partners (climate data from AWS in the study area)

Annual_Rcorr/Toffset_partners+mm: Annual total rainfall/temperature rcorr/toffset map calculated on the basis of ground data provided by the partners and additional climate data provided by Dr.Mulligan

Monthly_Rcorr/Toffset_partners: Monthly rcorr/toffset maps calculated on the basis of ground weather station data provided by the partners

Monthly_Rcorr/Toffset_partners+mm: Monthly rcorr/toffset map calculated on the basis of ground data provided by the partners and additional climate data provided by Dr. Mulligan

Rain/Temp-Alt: Rcorr/Toffset maps created on the basis of Rainfall/Temperature-Altitude relationship. Only those months with a $R^2 > 0.7$ (or slightly smaller) have been calculated, and all of them using ground data from the partners only.

RS: Annual total rainfall and monthly rcorr maps created on the basis of Remote Sensing data

3.3.1. Algeria: Mecheria catchment

3.3.1.1. Toffset data

Table 16 Raw data for the calculation of the Toffset maps

FTP site location: database\algeria\raw\climate\Toffset

<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
wct_algeria.zip:				Complementary monthly
wct_algeria.shp	Shape/point			temperature data of several
readme.txt	text			locations in the catchments or its whereabouts

3.3.1.2.Rcorr data

Table 17 Raw, processing and final data for the calculation of the Rcorr maps

FTP site location: database\algeria\raw\climate\Rcorr				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
wrf_algeria.zip:				Complementary monthly rainfall
wrf_algeria.shp	Shape/point			data of several locations in the
readme.txt	text			catchments or its whereabouts
FTP site location: database\algeria\processing\climate\Rcorr				
FTP site location: database\algeria\FINAL\climate\Rcorr				
<i>File name</i>	<i>File format</i>	<i>Description</i>		
Readme_Folders_meaning.txt	txt	Information on the meaning of the different data in the several directories in the Rcorr folders under raw, processing and final in the ftp site		
FTP site location: database\algeria\processing\climate\Rcorr\RS				
<i>File name</i>	<i>File format</i>	<i>Description</i>		
trmm_algeria.zip:		Intermediate data:		
sumrainmmy	Raster grid	meanrmmo - monthly rainfall (mm) _1=january _12		
meanrmmo_1, ..., meanrmmo_12	Raster grid	=december		
rnpernhr_1, ..., rnpernhr_12	Raster grid	rnpernhr- rainfall per rain hour (a measure of		
readme.txt	text	intensity) (mm) _1=january _12 =december		
		sumrainmmy - annual total rainfall (mm)		
trmm_algeria_ASCII.zip:				
sumrainmmy.asc	ASCII			
meanrmmo_1.asc, ...,	ASCII			
meanrmmo_12.asc	ASCII			
rnpernhr_1.asc, ..., rnpernhr_12.asc	ASCII			
readme.txt	text			
FTP site location: database\algeria\processing\climate\Rcorr\Annual_Rcorr_partners				
<i>File name</i>	<i>File format</i>	<i>Description</i>		
rcorr_annual	Raster grid	Intermediate data for the calculation of the Annual		
rcorr_annual.asc	ASCII	rcorr map on the basis of ground station rainfall data		
Rcorr_annual.dbf	DBF	provided by the partners		
Rcorr_annual.xls	Excel			
FTP site location: database\algeria\FINAL\climate\Rcorr\Annual_Rcorr_partners				
<i>File name</i>	<i>File format</i>	<i>Description</i>		
rcorr_annual.map	PCRaster map	Final rcorr annual map calculated on the basis of ground station rainfall		
FTP site location: database\algeria\processing\climate\Rcorr\Annual_Rcorr_partners+mm				
<i>File name</i>	<i>File format</i>	<i>Description</i>		
rcorr_partmm	Raster grid	Intermediate data for the calculation of the Annual		
rcorr_partmm.asc	ASCII	rcorr map on the basis of ground station rainfall data		
rainfall_3+8_algeria.dbf	DBF	provided by the partners and additional climate data		
Rcorr_partmm.xls	Excel			
FTP site location: database\algeria\FINAL\climate\Rcorr\Annual_Rcorr_partners+mm				
<i>File name</i>	<i>File format</i>	<i>Description</i>		
rcorr_partmm.map	PCRaster map	Final rcorr annual map calculated on the basis of ground station rainfall and additional climate data		

3.3.2. Morocco: Oued Mird catchment

3.3.2.1. Toffset data

Table 18 Raw data for the calculation of the Toffset maps

FTP site location: database\morocco\raw\climate\Toffset				
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<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
wct_morocco.zip:				Complementary monthly
wct_morocco.shp	Shape/point			temperature data of several
readme.txt	text			locations in the catchments or its whereabouts

3.3.2.2. Rcorr data

Table 19 Raw, processing and final data for the calculation of the Rcorr maps

FTP site location: database\morocco\raw\climate\Rcorr				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
wcrf_morocco.zip:				Complementary monthly rainfall
wcrf_morocco.shp	Shape/point			data of several locations in the
readme.txt	text			catchments or its whereabouts
FTP site location: database\Tunisia\Jeffara\processing\climate\Rcorr\RS				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
trmm_jeffara.zip:				Intermediate data:
sumrainmmy		Raster grid		meanrmmo - monthly rainfall (mm)
meanrmmo_1, ..., meanrmmo_12		Raster grid		_1=january _12 =december
rnpernr_1, ..., rnpernr_12		Raster grid		rnpernr- rainfall per rain hour (a
readme.txt		text		measure of intensity) (mm)
				_1=january _12 =december
trmm_morocco_ASCII+PCRmaps.zip:				sumrainmmy - annual total rainfall
sumrainmmy.map		PCRaster map		(mm)
sumrainmmy.asc		ASCII		
meanrmmo_1.map, ..., meanrmmo_12.map		PCRaster map		
meanrmmo_1.asc, ..., meanrmmo_12.asc		ASCII		
rnpernr_1.asc, ..., rnpernr_12.asc		ASCII		
Monthly+annual_rcorr.map_from_Rsraindata.xls		Excel		
readme_monthly+annual_rcorr_from_Rsraindata.txt		text		
readme.txt		text		
FTP site location: database\morocco\FINAL\climate\Rcorr\RS				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
sumrainmmyrcorr.map		PCRaster mpa		Final annual and monthly rcorr
meanrmmo1.map, ..., meanrmmo12.map		PCRaster map		maps calculated on the basis of
readme_monthly+annual_rcorr_from_Rsraindata.txt		text		remote sensing data
FTP site location: database\morocco\processing\climate\Rcorr\Annual_Rcorr_partners				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
rcorr_annual		Raster grid		Intermediate data for the calculation
rcorr_annual.asc		ASCII		of the Annual rcorr map on the basis
Rcorr_annual.dbf		DBF		of ground station rainfall data
Rcorr_morocco.xls		Excel		provided by the partners
FTP site location: database\morocco\FINAL\climate\Rcorr\Annual_Rcorr_partners				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
rcorr_annual.map		PCRaster map		Final rcorr annual map calculated on
				the basis of ground station rainfall
FTP site location: database\morocco\processing\climate\Rcorr\Annual_Rcorr_partners+mm				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
rcorr_partmm		Raster grid		Intermediate data for the calculation
rcorr_partmm.asc		ASCII		of the Annual rcorr map on the basis
rainfall_3+11_morocco.dbf		DBF		of ground station rainfall data
Rcorr_partmm.xls		Excel		provided by the partners and
				additional climate data
FTP site location: database\morocco\FINAL\climate\Rcorr\Annual_Rcorr_partners+mm				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
rcorr_partmm.map		PCRaster map		Final rcorr annual map calculated on
				the basis of ground station rainfall
FTP site location: database\Tunisia\Jeffara\processing\climate\Rcorr\Monthly_Rcorr_partners				

<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr_1, ..., rcorr_12	Raster grid	Intermediate data for the calculation of the monthly rcorr map on the basis of ground station rainfall data provided by the partners
rcorr_1.asc, ..., rcorr_12.asc	ASCII	
Rcorr_monthly_calculations_partners.dbf	DBF	
Rcorr_monthly_calculations_morocco.xls	Excel	
Readme_rcorr_1-12.txt	text	
FTP site location: database\morocco\FINAL\climate\Rcorr\Monthly_Rcorr_partners		
<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr1.map, ..., rcorr12.map	PCRaster map	Final rcorr monthly maps calculated on the basis of ground station rainfall
Readme_monthly_rcorr1-12.txt	text	
FTP site location: database\morocco\processing\climate\Rcorr\Monthly_Rcorr_partners+mm		
<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr_1, ..., rcorr_12	Raster grid	Intermediate data for the calculation of the monthly rcorr map on the basis of ground station rainfall data provided by the partners and additional climate data
rcorr_1.asc, ..., rcorr_12.asc	ASCII	
rcorr_1.map, ..., rcorr_12.map	PCRaster map	
Rcorr_11+3_morocco_monthly.dbf	DBF	
Rcorr_11+3_morocco_monthly.xls	Excel	
Readme_monthly_rcorr.map_partners+mm.txt	text	
FTP site location: database\morocco\FINAL\climate\Rcorr\Monthly_Rcorr_partners		
<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr1.map, ..., rcorr12.map	PCRaster map	Final rcorr monthly maps calculated on the basis of ground station rainfall provided by the partners and additional climate data
Readme_monthly_rcorr.map_partners+mm.txt	text	

3.3.3. Senegal: Ferlo catchment

3.3.3.1. Toffset data

Table 20 Raw data for the calculation of the Toffset maps

FTP site location: database\senegal \raw\climate\Toffset				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
wct_senegal.zip:				Complementary monthly temperature data of several locations in the catchments or its whereabouts
wct_senegal.shp	Shape/point			
readme.txt	text			

3.3.3.2. Rcorr data

Table 21 Raw, processing and final data for the calculation of the Rcorr maps

FTP site location: database\Senegal\raw\climate\Rcorr				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
wcrf_senegal.zip:				Complementary monthly rainfall data of several locations in the catchments or its whereabouts
wcrf_senegal.shp	Shape/point			
readme.txt	text			
FTP site location: database\senegal\processing\climate\Rcorr\RS				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
trmm_senegal.zip:				Intermediate data: meanrmmo - monthly rainfall (mm) _1=janeury _12 =december rnperrnhr- rainfall per rain hour (a measure of intensity) (mm) _1=janeury _12 =december sumrainmmy - annual total rainfall (mm)
sumrainmmy	Raster grid			
meanrmmo_1, ..., meanrmmo_12	Raster grid			
rnperrnhr_1, ..., rnperrnhr_12	Raster grid			
readme.txt	text			
trmm_senegal_ASCII.zip: sumrainmmy.asc	ASCII			

meanrmmo_1.asc, ..., meanrmmo_12.asc	ASCII	
rnpernhr_1.asc, ..., rnpernhr_12.asc	text	
readme.txt		
FTP site location: database\senegal\processing\climate\Rcorr\Annual_Rcorr_partners		
File name	File format	Description
rcorrf_annual	Raster grid	Intermediate data for the calculation of the
rcorrf_annual.asc	ASCII	Annual rcorr map on the basis of ground station
Rcorr_senegal.dbf	DBF	rainfall data provided by the partners
Rcorr_senegal.xls	Excel	
FTP site location: database\senegal\FINAL\climate\Rcorr\Annual_Rcorr_partners		
File name	File format	Description
rcorrf_annual.map	PCRaster map	Final rcorr annual map calculated on the basis of ground station rainfall
FTP site location: database\senegal\processing\climate\Rcorr\Annual_Rcorr_partners+mm		
File name	File format	Description
rcorrf_partmm	Raster grid	Intermediate data for the calculation of the
rcorrf_partmm.asc	ASCII	Annual rcorr map on the basis of ground station
rainfall_9+97_senegal.dbf	DBF	rainfall data provided by the partners and
Rcorr_partmm.xls	Excel	additional climate data
FTP site location: database\senegal\FINAL\climate\Rcorr\Annual_Rcorr_partners+mm		
File name	File format	Description
rcorrf_partmm.map	PCRaster map	Final rcorr annual map calculated on the basis of ground station rainfall provided by the partners and additional climate data

3.3.4. Tunisia: Oum Zessar catchment

3.3.4.1. Toffset data

Table 22 Raw, processing and final data for the calculation of the Toffset maps

FTP site location: database\Tunisia\Jeffara\raw\climate\Toffset				
File name	File format	Source	Year	Description
wct_Tunisia.zip:				Complementary monthly
wct_Tunisia.shp	Shape/point			temperature data of several
readme.txt	text			locations in the catchments or its whereabouts
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset				
File name	File format	Source	Year	Description
Temperature_calculations.xls	Excel			Monthly and annual temperature calculation on the basis of the available data from the several ground weather stations
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Temp-Alt				
File name	File format	Source	Year	Description
Temp-Alt_readme.txt	text			Files of the temperature data for the calculation of the toffset maps, per each month where there is a significant relationship between the temperature data and the altitude of the weather station
Temp-Altitude_AnnualmeanTemp.dbf	DBF			
Temp-Altitude_Apr.dbf	DBF			
Temp-Altitude_Aug.dbf	DBF			
Temp-Altitude_Dec.dbf	DBF			
Temp-Altitude_Feb.dbf	DBF			
Temp-Altitude_Jan.dbf	DBF			
Temp-Altitude_Mar.dbf	DBF			
Temp-Altitude_May.dbf	DBF			
Temp-Altitude_Oct.dbf	DBF			
Temp-Altitude_Sep.dbf	DBF			
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Temp-Alt\AnnualmeanTemp				
File name	File format	Source	Year	Description
ta_toffsett	Raster grid			Intermediate data for the calculation of the

ta_toffsettot.asc	ASCII	annual toffset map on the basis of significant
ta_toffsettot.map	PCRaster map	relationship between the mean annual temperature and the altitude of the several weather stations in the study catchment
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Temp-Alt\Apr		
File name	File format	Description
ta_toffsetapr	Raster grid	Intermediate data for the calculation of the
ta_toffsetapr.asc	ASCII	monthly toffset map on the basis of significant
ta_toffsetapr.map	PCRaster map	relationship between the mean monthly temperature and the altitude of the several weather stations in the study catchment
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Temp-Alt\Aug		
File name	File format	Description
ta_toffsetaug	Raster grid	Intermediate data for the calculation of the
ta_toffsetaug.asc	ASCII	monthly toffset map on the basis of significant
ta_toffsetaug.map	PCRaster map	relationship between the mean monthly temperature and the altitude of the several weather stations in the study catchment
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Temp-Alt\Dec		
File name	File format	Description
ta_toffsetdec	Raster grid	Intermediate data for the calculation of the
ta_toffsetdec.asc	ASCII	monthly toffset map on the basis of significant
ta_toffsetdec.map	PCRaster map	relationship between the mean monthly temperature and the altitude of the several weather stations in the study catchment
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Temp-Alt\Feb		
File name	File format	Description
ta_toffsetfeb	Raster grid	Intermediate data for the calculation of the
ta_toffsetfeb.asc	ASCII	monthly toffset map on the basis of significant
ta_toffsetfeb.map	PCRaster map	relationship between the mean monthly temperature and the altitude of the several weather stations in the study catchment
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Temp-Alt\Jan		
File name	File format	Description
ta_toffsetjan	Raster grid	Intermediate data for the calculation of the
ta_toffsetjan.asc	ASCII	monthly toffset map on the basis of significant
ta_toffsetjan.map	PCRaster map	relationship between the mean monthly temperature and the altitude of the several weather stations in the study catchment
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Temp-Alt\Mar		
File name	File format	Description
ta_toffsetmar	Raster grid	Intermediate data for the calculation of the
ta_toffsetmar.asc	ASCII	monthly toffset map on the basis of significant
ta_toffsetmar.map	PCRaster map	relationship between the mean monthly temperature and the altitude of the several weather stations in the study catchment
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Temp-Alt\May		
File name	File format	Description
ta_toffsetmay	Raster grid	Intermediate data for the calculation of the
ta_toffsetmay.asc	ASCII	monthly toffset map on the basis of significant
ta_toffsetmay.map	PCRaster map	relationship between the mean monthly temperature and the altitude of the several weather stations in the study catchment
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Temp-Alt\Oct		
File name	File format	Description
ta_toffsetoct	Raster grid	Intermediate data for the calculation of the
ta_toffsetoct.asc	ASCII	monthly toffset map on the basis of significant
ta_toffsetoct.map	PCRaster map	relationship between the mean monthly temperature and the altitude of the several weather stations in the study catchment

FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Temp-Alt\Sep		
<i>File name</i>	<i>File format</i>	<i>Description</i>
ta_toffsetsep	Raster grid	Intermediate data for the calculation of the monthly toffset map on the basis of significant relationship between the mean monthly temperature and the altitude of the several weather stations in the study catchment
ta_toffsetsep.asc	ASCII	
ta_toffsetsep.map	PCRaster map	
FTP site location: database\Tunisia\Jeffara\FINAL\climate\Toffset\Temp-Alt		
<i>File name</i>	<i>File format</i>	<i>Description</i>
Temp-Alt_readme.txt	text	Annual and monthly toffset maps calculated on the basis of the relationship between the mean temperature and the altitude of the ground weather stations in the catchments or its whereabouts
tatoffsettot.map	PCRaster map	
tatoffsetapr.map	PCRaster map	
tatoffsetaug.map	PCRaster map	
tatoffsetdec.map	PCRaster map	
tatoffsetfeb.map	PCRaster map	
tatoffsetjan.map	PCRaster map	
tatoffsetmar.map	PCRaster map	
tatoffsetmay.map	PCRaster map	
tatoffsetoct.map	PCRaster map	
tatoffsetsep.map	PCRaster map	
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Annual_Toffset_partners+mm		
<i>File name</i>	<i>File format</i>	<i>Description</i>
toffset_tot	Raster grid	Intermediate data for the calculation of the annual toffset map created using temperature data from ground weather stations and additional climate data
toffset_tot.asc	ASCII	
toffset_tot.map	PCRaster map	
Temperature_annualmeantempcalculations.dbf	DBF	
FTP site location: database\Tunisia\Jeffara\FINAL\climate\Toffset\Annual_Toffset_partners+mm		
<i>File name</i>	<i>File format</i>	<i>Description</i>
toffsettot.map	PCRaster map	Annual toffset map created using temperature data from ground weather stations and additional climate data
Readme_annualmean_toffset.map_partners+mm_Jeffara.txt	text	
FTP site location: database\Tunisia\Jeffara\processing\climate\Toffset\Monthly_Toffset_partners+mm		
<i>File name</i>	<i>File format</i>	<i>Description</i>
toffset_1, ..., toffset_12	Raster grid	Intermediate data for the calculation of the monthly toffset maps created using temperature data from ground weather stations and additional climate data 1 = January, ..., 12 = December
toffset_1.asc, ..., toffset_12.asc	ASCII	
toffset_1.map, ..., toffset_12.map	PCRaster map	
Temperature_monthlycalculations.dbf	DBF	
FTP site location: database\Tunisia\Jeffara\FINAL\climate\Toffset\Monthly_Toffset_partners+mm		
<i>File name</i>	<i>File format</i>	<i>Description</i>
toffset1.map, ..., toffset12.map	PCRaster map	Monthly toffset maps created using temperature data from ground weather stations and additional climate data 1 = January, ..., 12 = December
Readme_monthly_toffset.map_partners+mm_Jeffara.txt	text	

3.3.4.2. Rcorr data

Table 23 Raw, processing and final data for the calculation of the Rcorr maps

FTP site location: database\Tunisia\Jeffara\raw\climate\Rcorr				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
wcrf_Tunisia.zip:				Complementary monthly rainfall data of several locations in the catchments or its whereabouts
wcrf_Tunisia.shp	Shape/point			
readme.txt	text			
FTP site location: database\Tunisia\Jeffara\processing\climate\Rcorr				
FTP site location: database\Tunisia\Jeffara\FINAL\climate\Rcorr				
<i>File name</i>		<i>File format</i>		<i>Description</i>
Readme_Folders_meaning.txt		text		Information on the meaning of the different data in the several

directories in the Rcorr folders under raw, processing and final in the ftp site

FTP site location: database\Tunisia\Jeffara\processing\climate\Rcorr\RS

<i>File name</i>	<i>File format</i>	<i>Description</i>
trmm_jeffara.zip:		Intermediate data:
sumrainmmy	Raster grid	meanrmmo - monthly rainfall
meanrmmo_1, ..., meanrmmo_12	Raster grid	(mm) _1=january _12 =december
rnpernr_1, ..., rnpernr_12	Raster grid	rnpernr- rainfall per rain hour (a
readme.txt	text	measure of intensity) (mm)
		_1=january _12 =december
trmm_jeffara_ASCII+PCRmaps.zip:		sumrainmmy - annual total rainfall
sumrainmmy.map	PCRaster mpa	(mm)
meanrmmo_1.map, ..., meanrmmo_12.map	PCRaster map	
meanrmmo_1.asc, ..., meanrmmo_12.asc	ASCII	
rnpernr_1.asc, ..., rnpernr_12.asc	ASCII	
Monthly+annual_rcorr.map_from_Rsraindata.xls	Excel	
Rcorr_monthly_calculations_Jeffara.xls	Excel	
readme_monthly+annual_rcorr_from_Rsraindata.txt	text	
readme.txt	text	

FTP site location: database\Tunisia\Jeffara\FINAL\climate\Rcorr\RS

<i>File name</i>	<i>File format</i>	<i>Description</i>
sumrainmmyrcorr.map	PCRaster map	Final annual and monthly rcorr
meanrmmo1.map, ..., meanrmmo12.map	PCRaster map	maps calculated on the basis of
readme_monthly+annual_rcorr_from_Rsraindata.txt	text	remote sensing data

FTP site location: database\Tunisia\Jeffara\processing\climate\Rcorr\Rain-Alt

<i>File name</i>	<i>File format</i>	<i>Description</i>
ra_rcorr_tot	Raster grid	Intermediate data for the
ra_rcorr_tot.asc	ASCII	calculation of the annual rcorr
ra_rcorr_tot.map	PCRaster map	map and the monthly rcorr maps
Readme_Rain-Alt_totRain_rocorr.txt	text	on the basis of significant
Rainfall-altitude_AnnualTotalRain.dbf	DBF	relationship between the mean
		annual/monthly rainfall and the
ra_rcorr_apr	Raster grid	altitude of the several weather
ra_rcorr_apr.asc	ASCII	stations in the study catchment
ra_rcorr_apr.map	PCRaster map	
Readme_Rain-Alt_rcorr_apr.txt	text	
ra_rcorr_dec	Raster grid	
ra_rcorr_dec.asc	ASCII	
ra_rcorr_dec.map	PCRaster map	
Readme_Rain-Alt_rcorr_dec.txt	text	
ra_rcorr_feb	Raster grid	
ra_rcorr_feb.asc	ASCII	
ra_rcorr_feb.map	PCRaster map	
Readme_Rain-Alt_rcorr_feb.txt	text	
ra_rcorr_may	Raster grid	
ra_rcorr_may.asc	ASCII	
ra_rcorr_may.map	PCRaster map	
Readme_Rain-Alt_rcorr_may.txt	text	
Rainfall-altitude_April.dbf	DBF	Files of the rainfall data for the
Rainfall-altitude_Dec.dbf	DBF	calculation of the toffset maps, per
Rainfall-altitude_February.dbf	DBF	each month where there is a
Rainfall-altitude_May.dbf	DBF	significant relationship between
Rainfall-altitude_April.dbf	DBF	the rainfall data and the altitude of
Rainfall-altitude_Jeffara.dbf	DBF	the weather station

FTP site location: database\Tunisia\Jeffara\FINAL\climate\Rcorr\Rain-Alt

<i>File name</i>	<i>File format</i>	<i>Description</i>
rarcorrmapr.map	PCRaster mpa	Annual and monthly rcorr maps calculated on the basis of the relationship between the mean rainfall and the altitude of the ground weather stations in the catchments or its whereabouts
rarcorrmapdec.map	PCRaster map	
rarcorrmapfeb.map	PCRaster mpa	
rarcorrmapmay.map	PCRaster map	
rarcorrmaptot.map	PCRaster map	
FTP site location: database\Tunisia\Jeffara\processing\climate\Rcorr\Annual_Rcorr_partners		
<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr_annual	Raster grid	Intermediate data for the calculation of the Annual rcorr map on the basis of ground station rainfall data provided by the partners
rcorr_annual.asc	ASCII	
Rcorr_annual.dbf	DBF	
Rcorr_annual.xls	Excel	
FTP site location: database\Tunisia\Jeffara\FINAL\climate\Rcorr\Annual_Rcorr_partners		
<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr_annual.map	PCRaster map	Final rcorr annual map calculated on the basis of ground weather station rainfall data
FTP site location: database\Tunisia\Jeffara\processing\climate\Rcorr\Annual_Rcorr_partners+mm		
<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr_partmm	Raster grid	Intermediate data for the calculation of the Annual rcorr map on the basis of ground station rainfall data provided by the partners and additional rainfall data
rcorr_partmm.asc	ASCII	
rainfall_18+9_jeffara.dbf	DBF	
Rcorr_partmm.xls	Excel	
FTP site location: database\Tunisia\Jeffara\FINAL\climate\Rcorr\Annual_Rcorr_partners+mm		
<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr_partmm.map	PCRaster map	Final rcorr annual map calculated on the basis of ground weather station rainfall data and additional climate data
FTP site location: database\Tunisia\Jeffara\processing\climate\Rcorr\Monthly_Rcorr_partners		
<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr_1, ..., rcorr_12	Raster grid	Intermediate data for the calculation of the monthly toffset maps created using temperature data from ground weather stations
rcorr_1.asc, ..., rcorr_12.asc	ASCII	
Rcorr_monthly_calculations_partners.dbf	DBF	
Rcorr_monthly_calculations_Jeffara.xls	Excel	
Readme_rcorr_1-12.txt	text	
FTP site location: database\Tunisia\Jeffara\FINAL\climate\Rcorr\Monthly_Rcorr_partners		
<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr1.map, ..., rcorr12.map	PCRaster map	Final rcorr monthly maps calculated on the basis of ground weather station rainfall data
Readme_monthly_rcorr1-12.txt	text	
FTP site location: database\Tunisia\Jeffara\processing\climate\Rcorr\Monthly_Rcorr_partners+mm		
<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr_1, ..., rcorr_12	Raster grid	Intermediate data for the calculation of the monthly toffset maps created using temperature data from ground weather stations and additional climate data
rcorr_1.asc, ..., rcorr_12.asc	ASCII	
rcorr_1.map, ..., rcorr_12.map	PCRaster map	
Rcorr_monthly_calculations_partners+mm.dbf	DBF	
Rcorr_monthly_calculations_Jeffara.xls	Excel	
Readme_monthly_rcorr.map_partners+mm_Jeffara.txt	text	
FTP site location: database\Tunisia\Jeffara\FINAL\climate\Rcorr\Monthly_Rcorr_partners		
<i>File name</i>	<i>File format</i>	<i>Description</i>
rcorr1.map, ..., rcorr12.map	PCRaster map	Final rcorr monthly maps calculated on the basis of ground weather station rainfall data and additional climate data
Readme_monthly_rcorr.map_partners+mm_Jeffara.txt	text	

3.3.5. Tunisia: Menzel Habib catchment

3.3.5.1. Toffset data

Table 24 Raw data for the calculation of the Toffset maps

FTP site location: database\Tunisia\mh\raw\climate\Toffset				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
wct_Tunisia.zip:				Complementary monthly
wct_Tunisia.shp	Shape/point			temperature data of several
readme.txt	text			locations in the catchments or its whereabouts

3.3.5.2. Rcorr data

Table 25 Raw, processing and final data for the calculation of the Rcorr maps

FTP site location: database\Tunisia\mh\raw\climate\Rcorr				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
wcrf_Tunisia.zip:				Complementary monthly rainfall
wcrf_Tunisia.shp	Shape/point			data of several locations in the
readme.txt	text			catchments or its whereabouts
FTP site location: database\Tunisia\mh\processing\climate\Rcorr\RS				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
trmm_mh.zip:				Intermediate data:
sumrainmmy		Raster grid		meanrmmo - monthly rainfall (mm) _1=january
meanrmmo_1, ..., meanrmmo_12		Raster grid		_12 =december
rnpernhr_1, ..., rnpernhr_12		Raster grid		rnpernhr- rainfall per rain hour (a measure of
readme.txt		text		intensity) (mm) _1=january _12 =december
				sumrainmmy - annual total rainfall (mm)
trmm_mh_ASCII.zip:				
sumrainmmy.asc		ASCII		
meanrmmo_1.asc, ..., meanrmmo_12.asc		ASCII		
rnpernhr_1.asc, ..., rnpernhr_12.asc		ASCII		
readme.txt		text		
FTP site location: database\mh\processing\climate\Rcorr\Annual_Rcorr_partners				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
Rcorr_9stations_MH_oumzessar.dbf		DBF		Data preparation files for the calculation of the
Rcorr_MH_oumzessar.xls		Excel		rcorr annual map on the basis of ground
				weather station data provided by the partners
FTP site location: database\Tunisia\Jeffara\processing\climate\Rcorr\Annual_Rcorr_partners+mm				
<i>File name</i>	<i>File format</i>	<i>Source</i>	<i>Year</i>	<i>Description</i>
rcorr_partmm		Raster grid		Intermediate data for the calculation of the
rcorr_partmm.asc		ASCII		Annual rcorr map on the basis of ground station
rainfall_18+9_MH_jeffara.dbf		DBF		rainfall data provided by the partners and
				additional climate data

4. NEW DATA AVAILABLE FOR THE LEIS MODEL

This section presents in the form of a tables the biophysical as well as the socio-economic new data available for their application in the LEIS model, for the ROSELT observatory in Jeffara, Tunisia.

Table 26 LEIS available data for Jeffara (Tunisia)

Data/Filename	UTM projection	extent	date	metadata description ...
Biophysical				
Morphopedologic map/	WGS1984_32N	Left: 10°.0872', Right: 9°.4739' Top: 33°.5919', Bottom: 33°.2676'	2006	Intersection of soil map (soil_map.shp), morphologic map
Soil Aptitude map/ Aptitude_irriga_final.shp and in the LEIS database	WGS1984_32N	Left: 10°.0872', Right: 9°.4739' Top: 33°.5919', Bottom: 33°.2676'	2004	Soil aptitude map: Intersection of soils map (soils characteristics : depth, texture...)(soil_map.shp), and slopes map (relief : level curves and quoted points)
LUC (land use land cover map) Occup_azaiz.shp	WGS1984_32N	Left: 10°.0872', Right: 9°.4739' Top: 33°.5919', Bottom: 33°.2676'	2004	Contains vegetation characteristics, dominant plant species, plant cover, biomass production and dominant land uses -LUM
Landscape Unit map /UP.shp and in the LEIS database	WGS1984_32N	Left: 10°.0872', Right: 9°.4739' Top: 33°.5919', Bottom: 33°.2676'	2005	Intersection of Land Use map, and Soil Aptitude map
Socio-economic				
Jeffara contour/ jeffara_finalcatch_utm.shp	WGS1984_32N	Left: 10°.0872', Right: 9°.4739' Top: 33°.5919', Bottom: 33°.2676'	2006	Choice of hydrological limit of Oum Zessar watershed
Centre of Activity map/ ca.shp and LEISdatabase	WGS1984_32N	Left: 10°.0872', Right: 9°.4739' Top: 33°.5919', Bottom: 33°.2676'	2006	14 activity centers were identified see tables in LEIS database
Exploitation territories map (reference modelling)/Agri __1 vector layer in LEIS database	WGS1984_32N	Left: 10°.0872', Right: 9°.4739' Top: 33°.5919', Bottom: 33°.2676'	2006	Construction of exploitation territories associated to 14 activity centers using the thiessen algorithm.
LEIS database (reference modeling) SIEL-TUN_JEFF.mdb	WGS1984_32N	Left: 10°.0872', Right: 9°.4739' Top: 33°.5919', Bottom: 33°.2676'	2005	A geographic database including data used to calculate balances, pressure index, and to store other cartographic data
Spreadsheets for statistics used to elaborate a typology of strategic groups. For results see the associated tables in the LEIS database			2006	A multidimensional method was used on the basis of data collected from field surveys (370 households were interviewed in 2002) As result we had five human strategic groups.
Spreadsheets for statistics used to calculate the season parameters For results see the associated tables in the LEIS database			2006	The season parameters calculated by human strategic groups we have: population, need of agricultural trade, need of culture consumption, need for reserve in seed, need on the sown surface .
Combined Practice Units map (reference modelling)/ UPC__1 vector layer in LEIS database	WGS1984_32N	Left: 10°.0872', Right: 9°.4739' Top: 33°.5919', Bottom: 33°.2676'	2006	Spatialization of the 7 combined practices in the observatory of Jeffara using a formula combining the agricultural output and the artificialization degree.
Spreadsheet for statistics used to calculate the agricultural output and the new values of the phytomass productions. For results see the associated tables in the LEIS database			2006	New values of the agricultural output and phytomass production calculated to simulate the effect of secheress on the observatory of Jeffara.

5. IDENTIFICATION OF NEW USEFUL DATA AS INPUT IN THE PATTERN MODEL

5.1. Summary of the relation between the new available data and the input data required for the PATTERN model for all sites

Table 27 summarises the final maps produced or the maps that can be generated from the new data currently available and indicates the data gaps where they exist. Once these gaps are filled then the model can be run. The most time consuming gaps are the maps and time series data, whereas the model parameters in the lookup tables are much more easily produced. Some of these gaps will also become policy options rather than input data, that is their values will be determined by scenarios built by the modelling team and chosen by the model user, for example management scenarios will determine terracing, irrigation etc. The new data is highlighted in red in the Table.

Table 27 Summary of the relation between the available data and the input data required for the PATTERN model for all sites

MAPS	Mecheria (Algeria)	Oued Mird (Morocco)	Ferlo (Senegal)	Jeffara (Tunisia)	M.Habib (Tunisia)	Guadalentin (Spain)
Land use						
	landcovermech.shp urbanmech.shp lcmech78.map plusarea.map	vegetation_utm_wgs84.s hp veget_cover_utm_wgs84 .shp veget_nom.map	veget_ferlo1.shp admi_ferlo.shp settelment_ferlo.shp veget_nom.map	landuse_2004.shp landuse_1991.shp towns.shp plusarea.map	villes.shp vegetation.shp	
plusarea.map						plusarea.map
Climate						
	consult metinput.tss wcrf_algeria.shp trmm_Algeria.zip rcorr_f_annual.map rcorr_partmm.map	consult metinput.tss wcrf_morocco.shp trmm_morocco.shp meanrmmo1.map, ..., meanrmmo12.map sumrainmmyrcorrf.ma p rcorr_f_annual.map rcorr_partmm.map rcorr_f1.map, ..., rcorr_f12.map	stations_bvferlo.shp consult metinput.tss wcrf_Senegal.shp trmm_Senegal.zip rcorr_f_annual.map rcorr_partmm.map	consult metinput.tss wcrf_Tunisia.shp trmm_Tunisia.zip meanrmmo1.map, ..., meanrmmo12.map sumrainmmyrcorrf.m ap rarcorrftot.map rarcorr_f*.map (*=apr, dec, feb, may) rcorr_f_annual.map rcorr_partmm.map rcorr_f1.map, ..., rcorr_f12.map	consult metinput.tss wcrf_Tunisia.shp trmm_Tunisia.zip	rcorr_f.map(rcorr_f00.001,.. ..., rcorr_f00.012)
rcorr_f.map (rcorr_f00.001,.. rcorr_f00.012)						
	consult metinput.tss wct_algeria.shp	consult metinput.tss wct_morocco.shp	stations_bvferlo.shp consult metinput.tss wct_Senegal.shp	consult metinput.tss wct_Tunisia.shp toffsettot.map toffset1.map, ..., toffste12.map	consult metinput.tss wct_Tunisia.shp	toffset.map (toffset0.001,.. toffset0.012)
toffset.map (toffset0.001,.. toffset0.012)						
Soil						
		Soil_profile_utm_wgs84 .shp	sol_ferlo1.shp	soil_2004.shp soils_2004.avl soils_1991.shp	Pedo_MH.shp Morpho_MH.shp Morpho_pedo.shp	soil.map
soil.map						
		Soil_profile_utm_wgs84 .shp	sol_ferlo1.shp clay_map	clay.map	Pedo_MH.shp Morpho_MH.shp Morpho_pedo.shp	clay.map
clay.map		texture_utm_wgs84.shp				
sand.map		Soil_profile_utm_wgs84	sol_ferlo1.shp	sand.map	Pedo_MH.shp	sand.map

		.shp texture_utm_wgs84.shp	sand_map		Morpho_MH.shp Morpho_pedo.shp	
silt.map		Soil_profile_utm_wgs84 .shp texture_utm_wgs84.shp	sol_ferlo1.shp silt_map	silt.map	Pedo_MH.shp Morpho_MH.shp Morpho_pedo.shp	silt.map
Infrastructure						
dripirrig.map	Policy option?	Policy option?	Not applicable?	surf-irrig.shp	Policy option?	dripirrig.map
sprayirrig.map	Policy option?	Policy option?	Not applicable?	surf-irrig.shp	Policy option?	sprayirrig.map
Immersionirrig.map	Not applicable?	Not applicable?	Not applicable?	surf-irrig.shp	Policy option?	Immersionirrig.map
terraced.map	Not applicable?	Policy option?	Not applicable	Policy option?	Policy option?	terraced.map
dam.map	Policy option?	Policy option?	Policy option?	Policy option?	Policy option?	dam.map
checkdam.map	Policy option?	Policy option?	Not applicable?	Not applicable?	Policy option?	checkdam.map
wells.map	wellsmech.shp	wells_utm_wgs84.shp	foragferlo_1.shp	piezo_wells.shp	puits.shp	wells.map
wellsdepth.map				recharge_wells.shp recharge.map		wellsdepth.map
tabias.map (if applicable)	Not applicable?	Not applicable?	Not applicable?	jess-tab.shp		Not applicable
jessour.map (if applicable)	Not applicable?	Not applicable?	Not applicable?	jess-tab.shp		Not applicable
pond.map		Not applicable?	mares_ferlo.shp	Not applicable?	Not applicable?	Not applicable
road.map	roadmech_polyline.shp	tracks1_utm_wgs84.shp tracks_utm_wgs84.shp		roads.shp	routes.shp	road.map
Groundwater						
geology.map	geolmech.shp	geology_utm_wgs84.shp	geol_ferlo.shp	geology.shp geology.map		geology.map
gwsal.map			forage_meq.shp forage_mgl.shp puits_meq.shp puits_mgl.shp	salinity_map.shp salinity_pts.shp	salinite.shp	gwsal.map
aquifbdy.map			hydrogeo_ferlo.shp c_isopieze_nph.shp	deep_aquifer.shp shallow_aquifere.shp		aquifbdy.map
aquifbdyshall.map				aquifbdynom.map shallow_aquifere.shp		aquifbdyshall.map
aquifbdydeep.map				deep_aquifer.shp		aquifbdydeep.map
Topographic						
aspect.map	aspect.map	aspect.map	aspect.map	aspect.map	aspect.map	aspect.map

slopedeg.map	slopedeg.map	slopedeg.map	slopedeg.map	slopedeg.map	slopedeg.map	slopedeg.map
topmod.map	topmod.map	topmod.map	topmod.map	topmod.map	topmod.map	topmod.map
hillsl.map	hillsl.map reportpoints.map	hillsl.map	hillsl.map reportpoints.map	hillsl.map outlets_pattern.shp reportpoints.map order.map	hillsl.map	hillsl.map
Additional PCRaster maps						
TIMESERIES						
<i>Time.tss</i>	Time.tss	Time.tss	Time.tss	Time.tss	Time.tss	Time.tss
<i>metinput.tss</i>						metinput.tss
			<i>Monthly rainfall:</i> Ferlo_climate.xls	<i>Daily rainfall:</i> dailyrainfall_70-05_Ksar-Hallouf.xls dailyrainfall_70-05_Beni-khedeché.xls dailyrainfall_70-05_Ksar-jedid.xls dailyrainfall_70-05_Toujéne-edkhila.xls daily_rainfall/dailyrainfall_70-05_Toujéne-ecole.xls dailyrainfall_70-05_Allamat.xls daily_rainfall/dailyrainfall_70-05_Koutine.xls daily_rainfall/dailyrainfall_70-05_Medenine.xls dailyrainfall_70-05_Mareth.xls dailyrainfall_70-05_Sidi-Makhlouf.xls dailyrainfall_70-05_IRA-Fjè.xls <i>Monthly rainfall:</i> Monthlyrainfall_70-05_Ksar-Hallouf.xls		
rainfall	<i>Daily rainfall:</i> Bayadh_rain.xls Mecheria_rain.xls A_Sefra_rain.xls	<i>Daily rainfall:</i> Zagora.xls Tinfou.xls OuedMird.xls				rainfall

				Monthlyrainfall_70-05_Beni-khedeche.xls	
				Monthlyrainfall_70-05_Ksar-jedid.xls	
				Monthlyrainfall_70-05_Toujene-edkhila.xls	
				Monthlyrainfall_70-05_Toujene-ecole.xls	
				Monthlyrainfall_70-05_Allamat.xls	
				Monthlyrainfall_70-05_Koutine.xls	
				Monthlyrainfall_70-05_Medenine.xls	
				Monthlyrainfall_70-05_Mareth.xls	
				Monthlyrainfall_70-05_Sidi-Makhlouf.xls	
				Monthlyrainfall_70-05_IRA-Fjè.xls	
			<i>Monthly Temperature:</i>	<i>Daily Temperature</i>	
			Ferlo_climate.xls	dailyTemperature_70-05_IRA_Fjè.xls	
				<i>Monthly Temperature:</i>	
				MonthlyTemperature_70-05_Medenine.xls	
Temperature	<i>Daily Temperature:</i>	<i>Daily Temperature:</i>		MonthlyTemperature_70-05_IRA_Fjè.xls:	Temperature
	temperaturemech.xls	OuedMird.xls			
			<i>Monthly Incoming solar radiation:</i>	<i>Daily incoming solar radiation:</i>	
			Ferlo_climate.xls	daily_GI_Rad_70-05_Medenine.xls	
				<i>Monthly incoming solar radiation:</i>	
Short wave incoming solar radiation		<i>Daily incoming solar radiation:</i>		<i>Monthly_GI_Rad_70-05_Medenine.xls</i>	Short wave incoming solar radiation
		OuedMird.xls			
		<i>Daily Wind speed:</i>	<i>Monthly wind speed:</i>	<i>Daily wind speed:</i>	
Wind speed	OuedMird.xls	Ferlo_climate.xls	dailyWindspeed_70-		Wind speed

		05_IRA_Fjè.xls Monthly wind speed: MonthlyWindspeed_70 -05_IRA_Fjè.xls	
	Monthly wind direction: Ferlo_climate.xls	Daily wind direction: dailyWinddirection_70 -05_IRA_Fjè.xls Monthly wind direction: MonthlyWinddirection	
Wind direction	Daily wind direction: OuedMird.xls	_70-05_IRA_Fjè.xls	Wind direction
TABLES			
<i>geolparams.tbl</i>			geolparams.tbl
soil thickness			soil thickness
Rock Permeability			Rock Permeability
BDslope			Bdslope
RockDensity			RockDensity
max groundwater reserves			max groundwater reserv r
rock fragment content			rock fragment content
seal hydraulic conductivity			seal hydraulic conductivity
indicates sediment (1) or hard geology (0)			indicates sediment (1) or hard geology (0)
<i>hydroparams.tbl</i>			hydroparams.tbl
leaf specific water retention			leaf specific water retention
BDinterc			Bdinterc
<i>vegparams.tbl</i>			vegparams.tbl
soil thickness			soil thickness
whether vegetation is present			whether vegetation is present
leaf specific density			leaf specific density
root fraction			root fraction
woody fraction			woody fraction

yield fraction	yield fraction
annual	annual
sow day	sow day
plough day	plough day
irrigation threshold moisture on	irrigation threshold moisture on
irrigation threshold moisture off	irrigation threshold moisture off
harvest day	harvest day
height per unit stem biomass	height per unit stem biomass
maximum vegetation height	maximum vegetation height
Mannings	Mannings
Initial Leaf Biomass	Initial Leaf Biomass
Initial Root Biomass	Initial Root Biomass
Initial Woody Biomass	Initial Woody Biomass
Max Plant salinity	Max Plant salinity
Agric =1, natural=0	Agric =1, natural=0