

MENA Soil Partnership Conference

Amman, Jordan 17-19 June 2014

Status, Priorities and Needs For Sustainable Soil Management in Tunisia

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Ministry of Agriculture -Tunisia

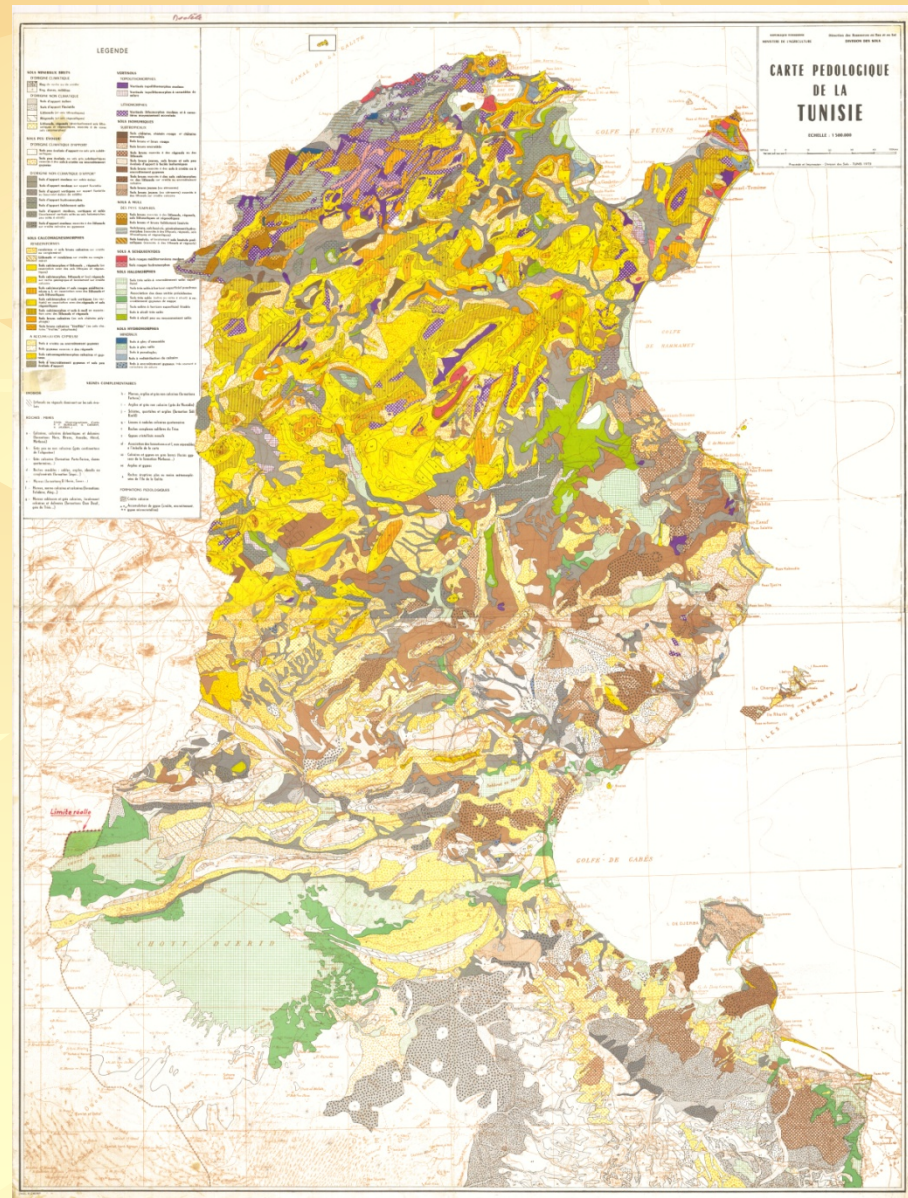
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STATUS OF SOIL RESOURCES

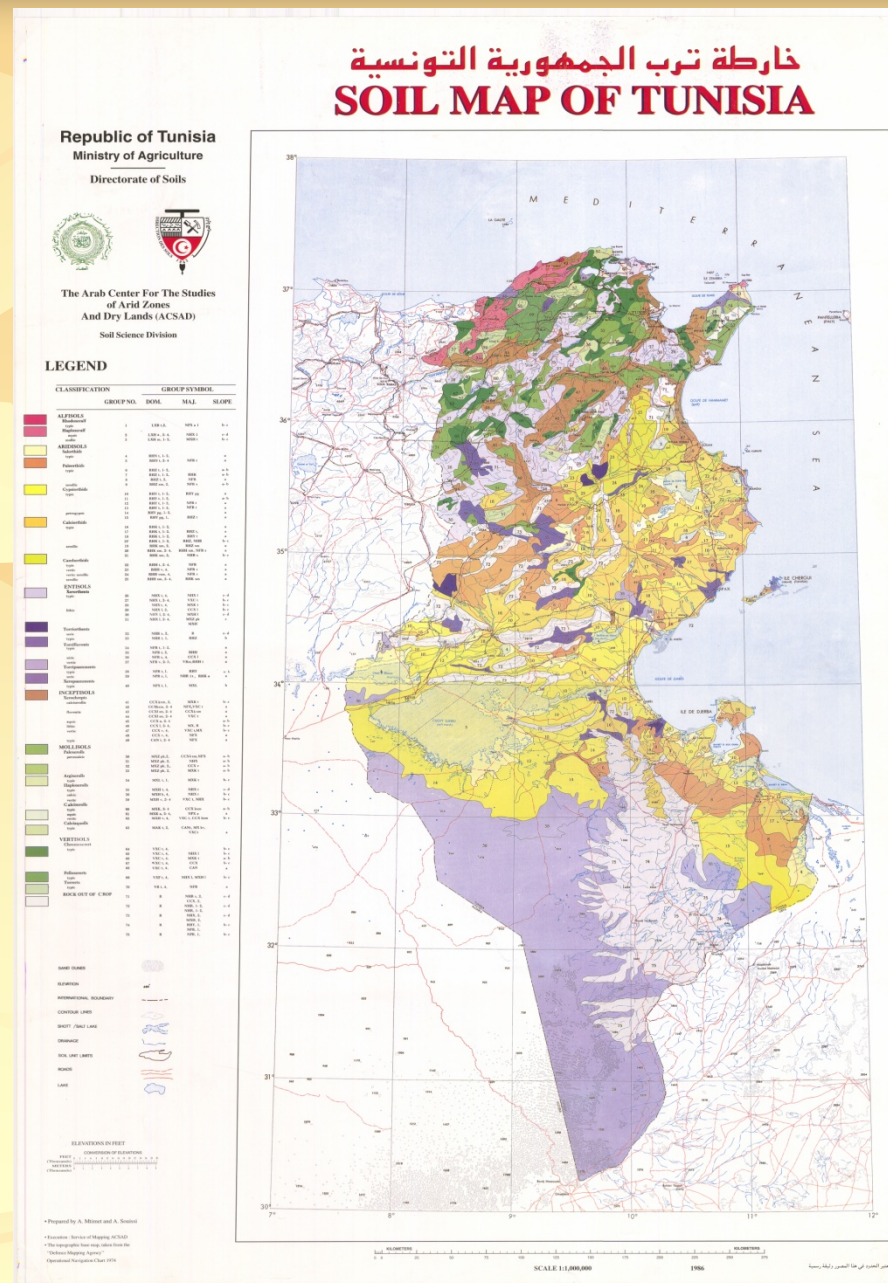
French Classification 1973

Scale: 1/500 000



USA Classification

Cooperation: ACSAD- Ministry of Agriculture

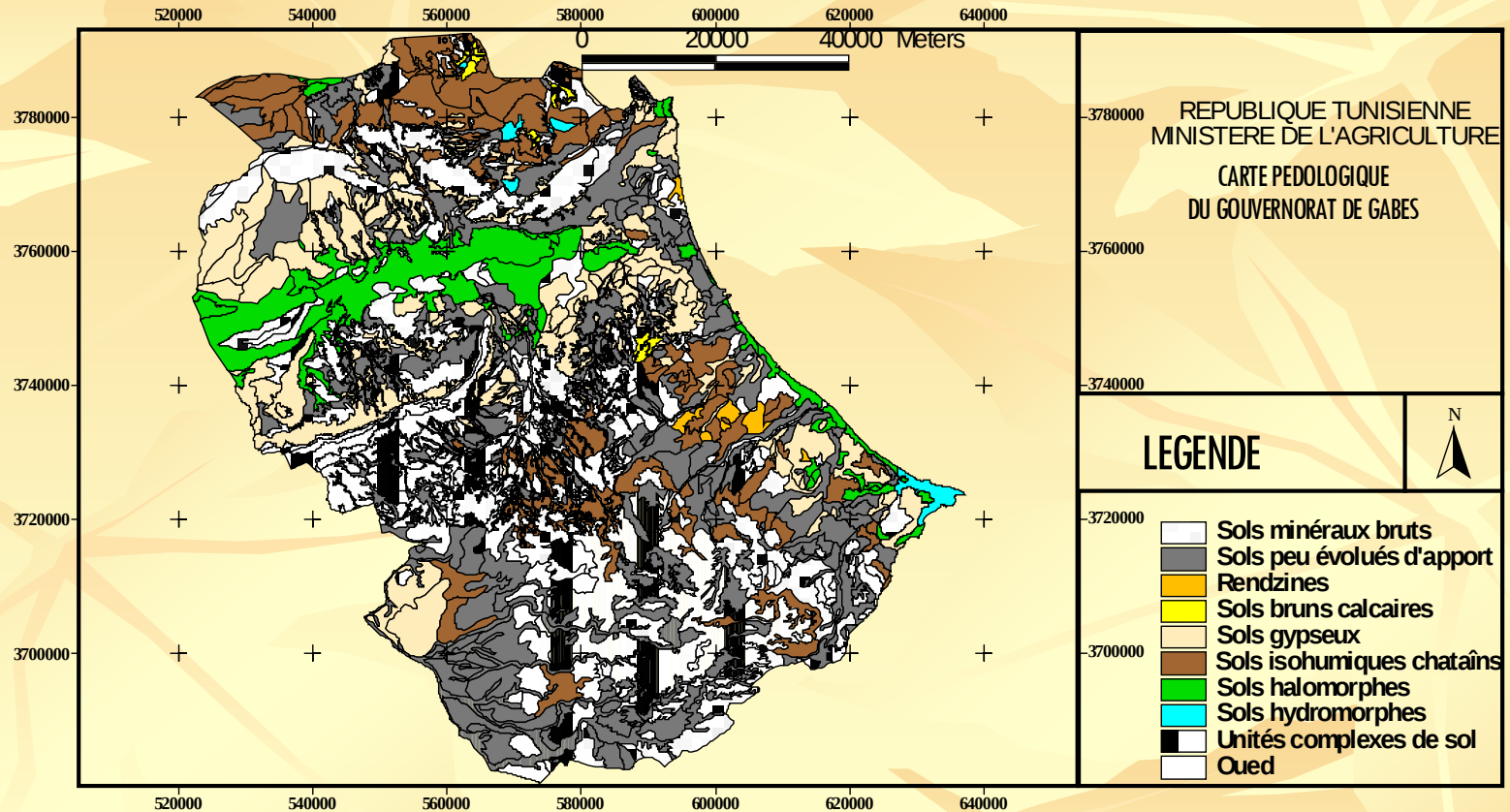


The background of the slide features a pattern of stylized, overlapping leaves in various shades of yellow and orange, creating a textured, organic feel.

- SOIL MAP

WRB National MAP
Will Be affined

Exemple of Local Soil Map



DETAILED SURVEY

- At different Scale $1/5000$ $1/10\ 000$ $1/50\ 000$
 $1/100\ 000$ $1/200\ 000$
- For different Agriculture Objectif (Aptitude
for Irrigated area - Aptitude for Wheat ...)

PROBLEMATIC OF NATIONAL RESOURCE

Soils

➤ Medeterraneen climat and saharien

6% Sub humid

16,4% Semi-arid

77,6% Arid and desertic

➤ Area.....➤ 16,4 million ha➤ 5,3 million ha agriculture land

➤ Bioclimatic variability (North to South)

3,8 million ha fertile land

➤ Pedologic area is influenced by

Climatic facteur

- Anthropic
- Aridity
- Scararty of rain

PROBLEMATIC OF SOIL RESOURCE

Fertility of soil

In the North

Acid soil

- Originally soil is poor-----humus is acid
- Problem of nitrogen (percolation)

Semi arid superior

- Problem link with pH of soil (calcareous)
- Retrogradation of phosphore
- Mineralisation of organic matter
- Insolubilisation of traces elements
- Nitrogen balance put constraint

PROBLEMATIC OF SOIL RESOURCE

Fertility of soil

In arid zones

- Low of mineral elements link with climatic aridity
- Mobility of elements is low
- In irrigation condition, humus is melt down (soil poor)

In Sandy soil (in disertic zones)



- Irrigation is associeted by conditionnement of soil and fertilisation

PROBLEMATIC OF SOIL RESOURCE

Salinity

☛ Salty soil is estimated 1,5 million ha

☛ 30% of water > 3g/l

☛ Actually irrigated area is about 410000 ha

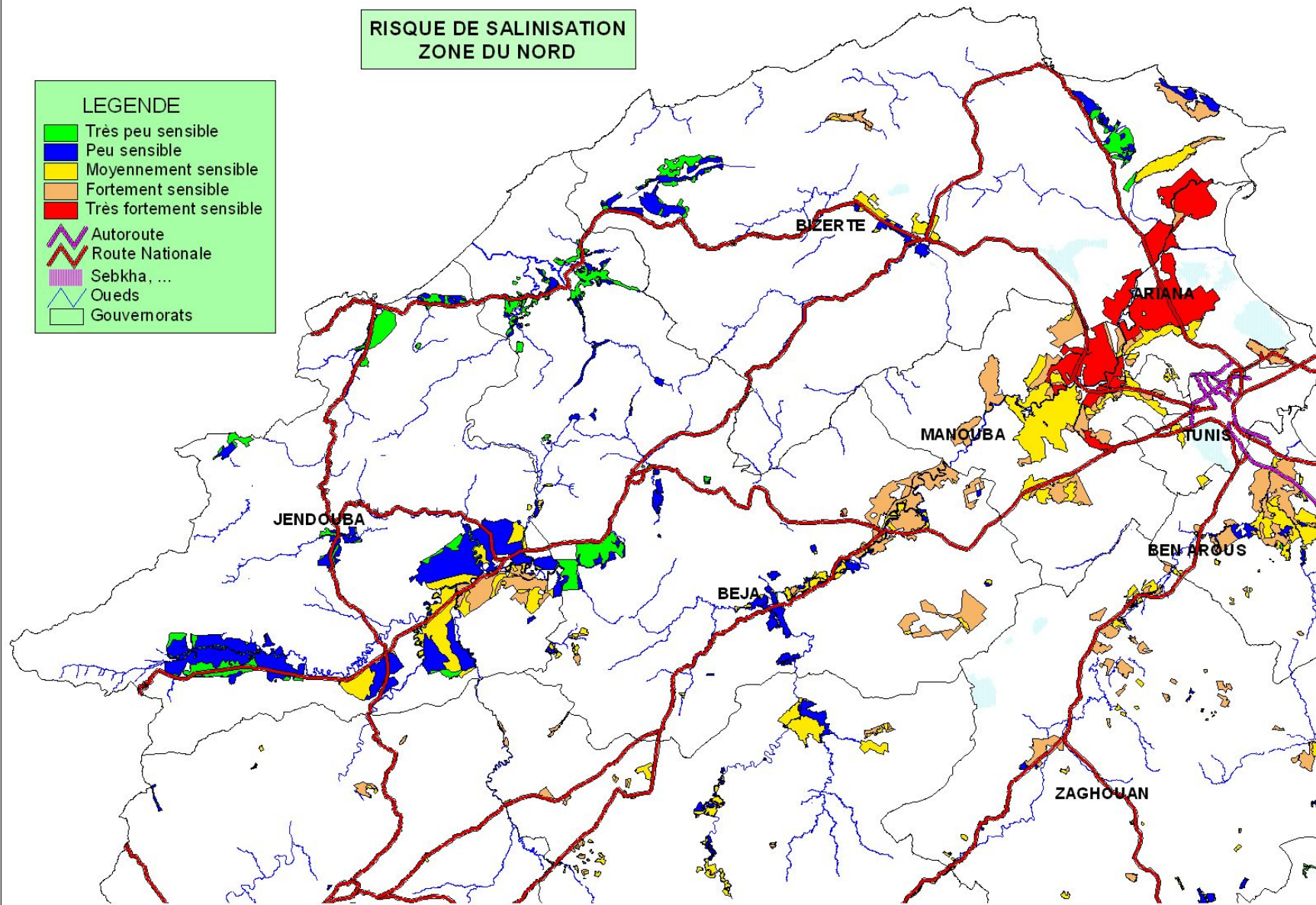
☛ About of 100000 ha Sensible of Salinity and Waterlogging

**RISQUE DE SALINISATION
ZONE DU NORD**

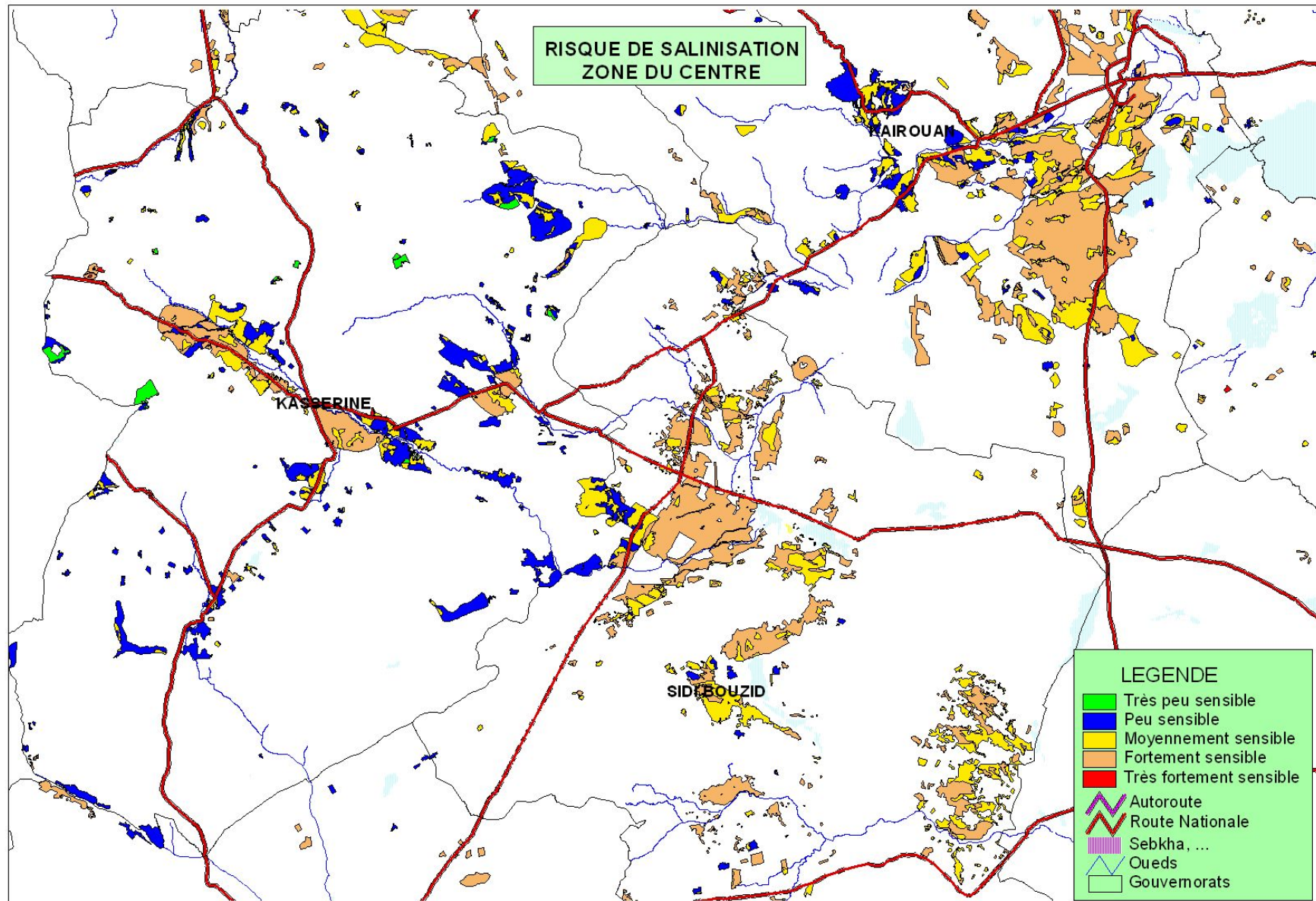
LEGENDE

- Très peu sensible
- Peu sensible
- Moyennement sensible
- Fortement sensible
- Très fortement sensible

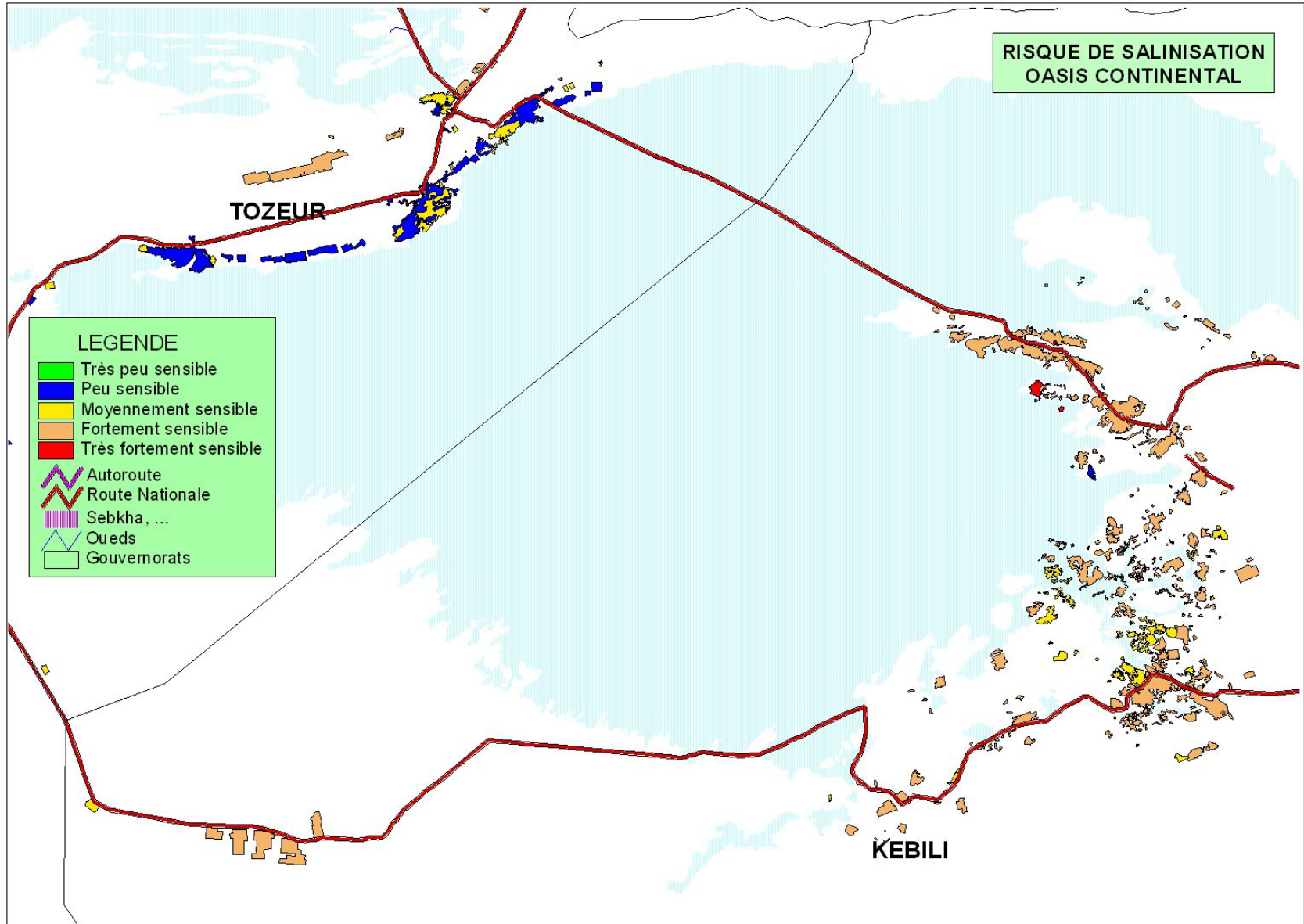
- Autoroute
- Route Nationale
- Sebkha, ...
- Oueds
- Gouvernorats



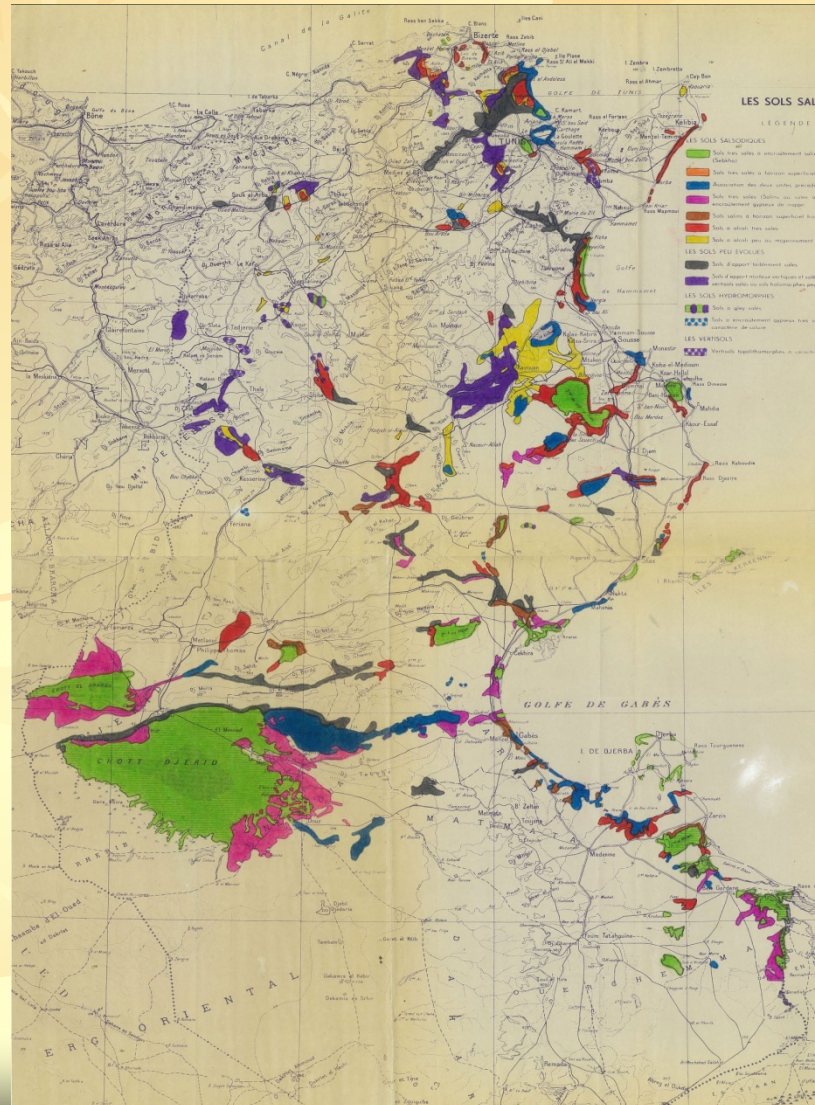
**RISQUE DE SALINISATION
ZONE DU CENTRE**



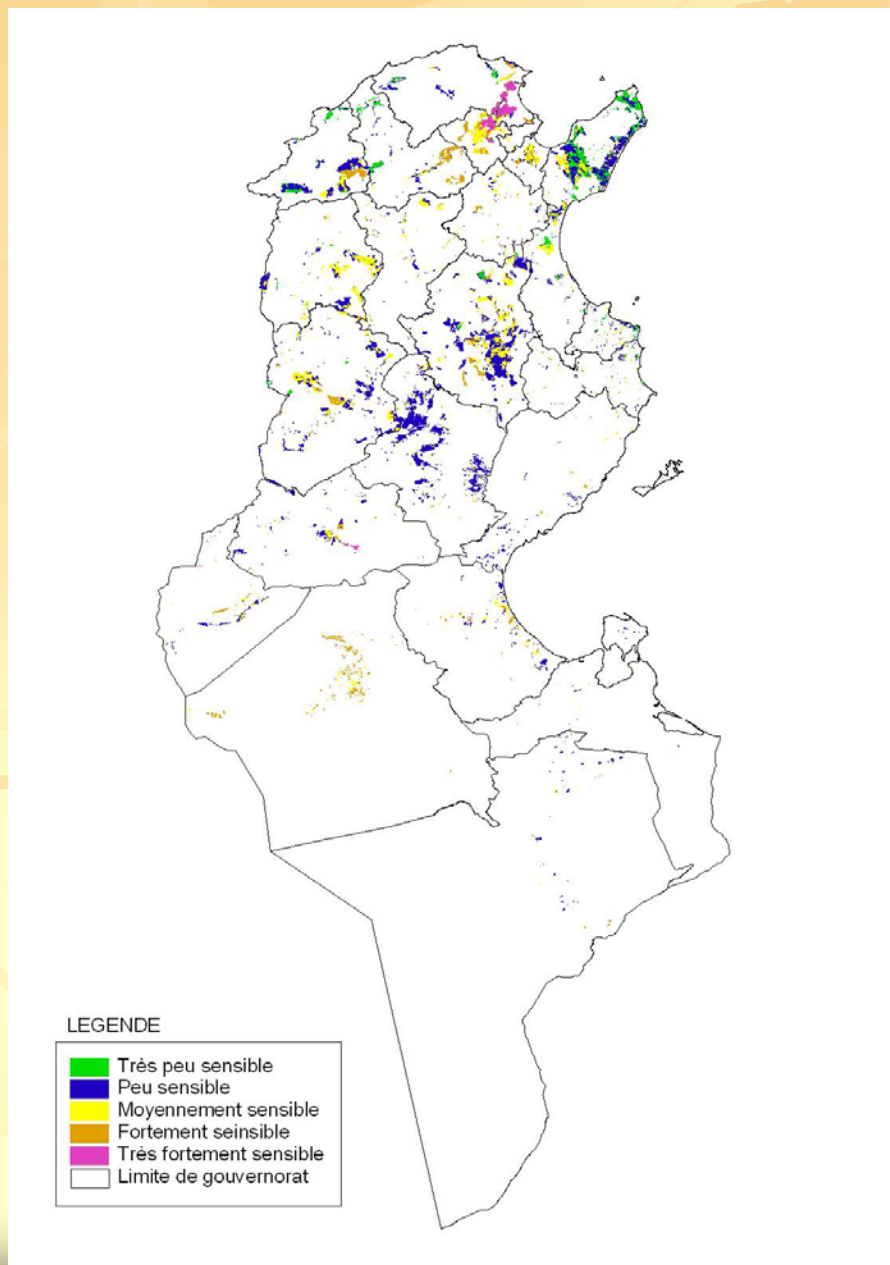
**RISQUE DE SALINISATION
OASIS CONTINENTAL**



SOIL SALINITY MAP



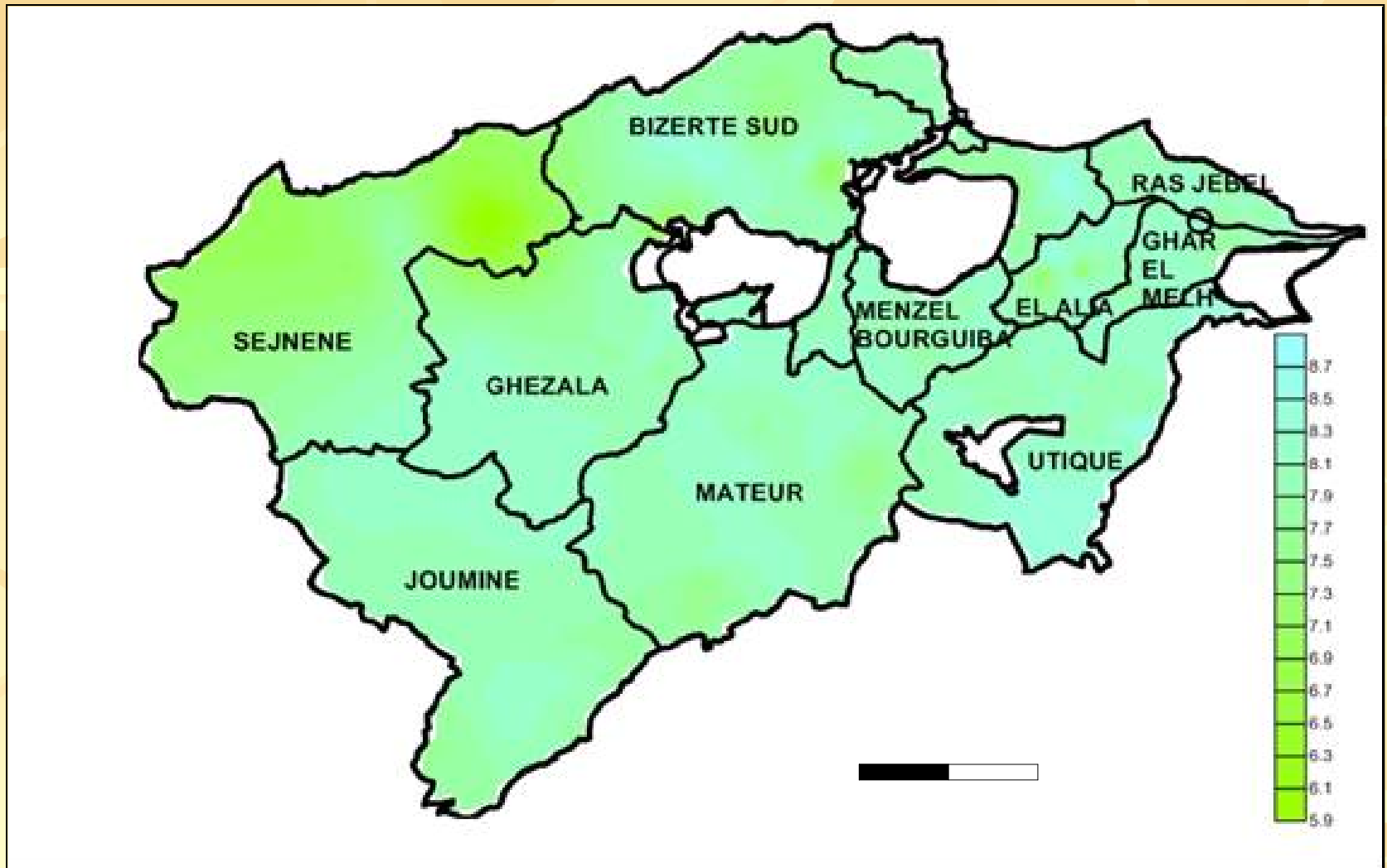
SOIL SALINITY RISQUE MAP





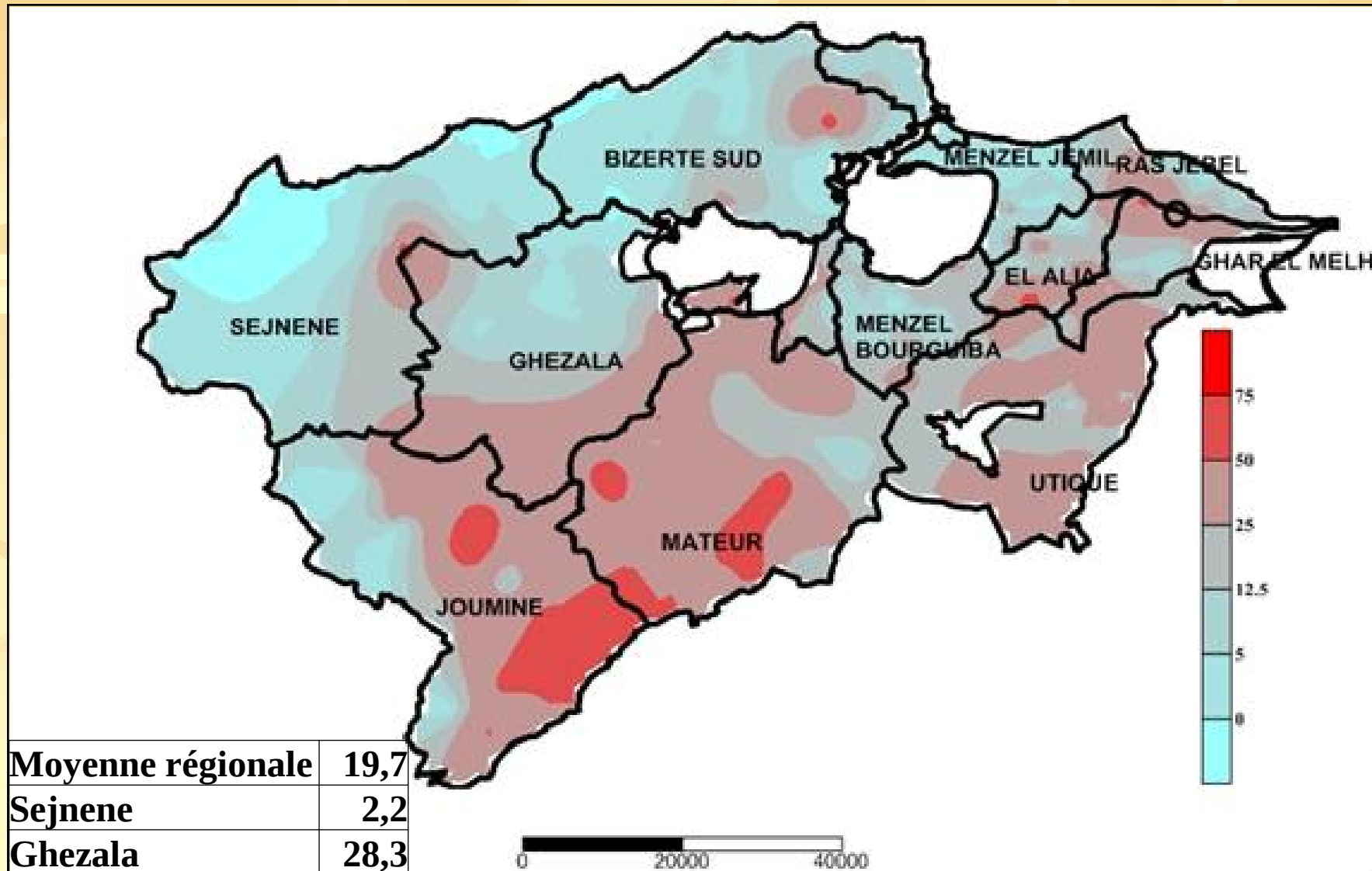
Thématique map

pH Map



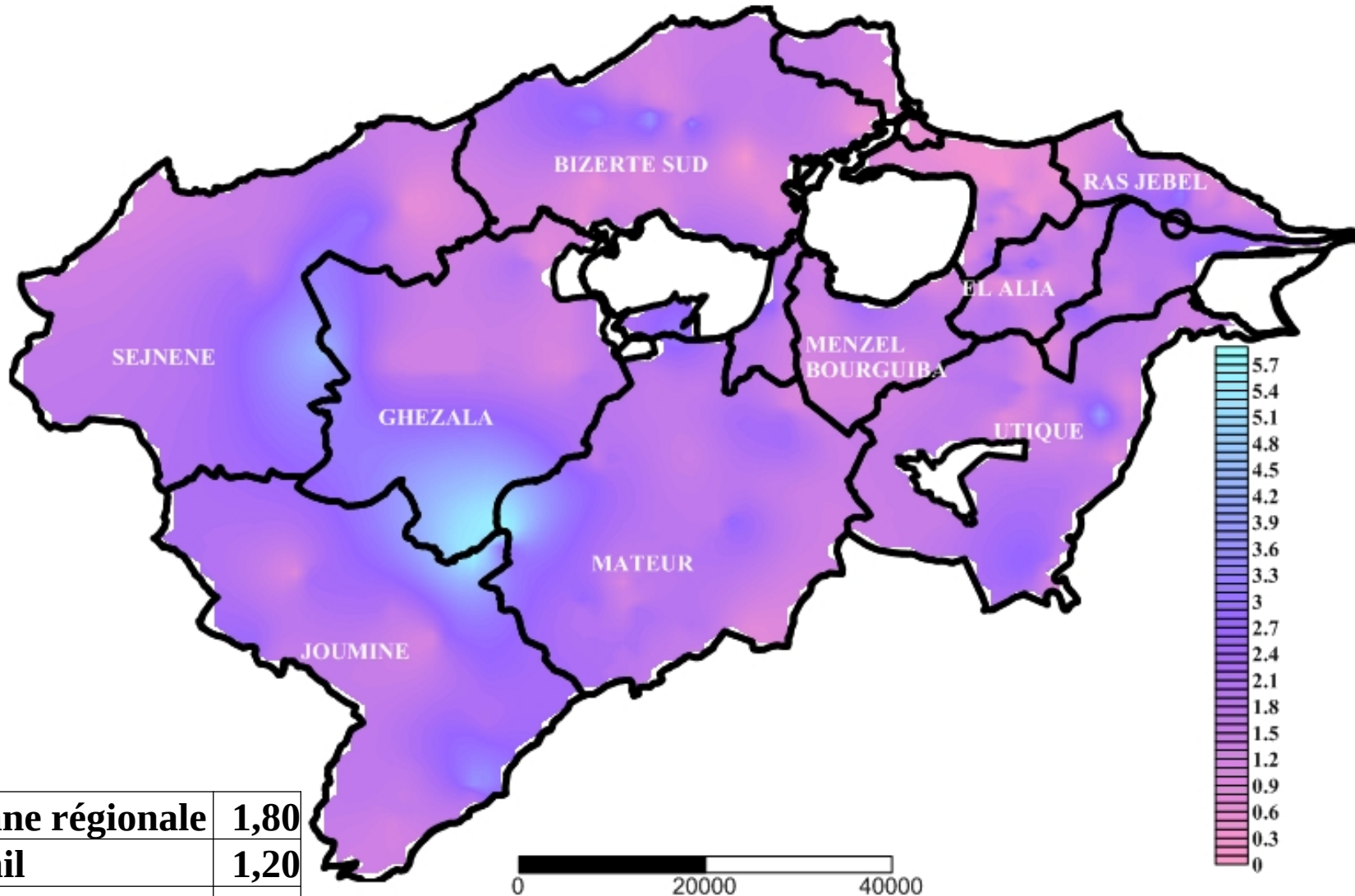
Le pH est généralement alcalin avec quelques zones à pH neutre et acide

Total Calcaire %



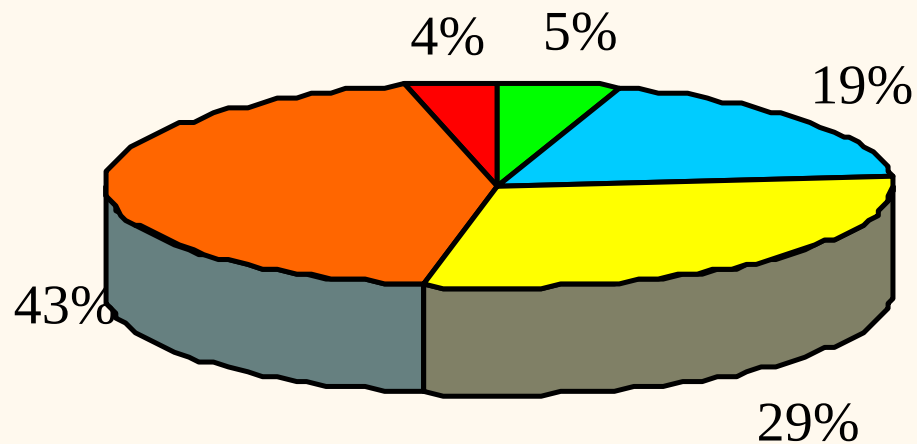
Les sols les plus calcaires se situent au sud-ouest (teneur dépasse les 50% des fois).

Organic Matter (%)



Moyenne régionale	1,80
M.Jémil	1,20
Mateur	2,20

Classes of sensibility of oil for salinity



- No Sensibility
- Low Sensibility
- Medium sensibility
- Hight Sensibility
- Very Hight Sensibility





PROBLEMATIC OF WATER RESOURCE

↳ Annual average rain fall : 245mm

➤ Equivalent of 36 billions m³ of rain water

- 41% in the North
- 20% in the center
- 30% in the saouth

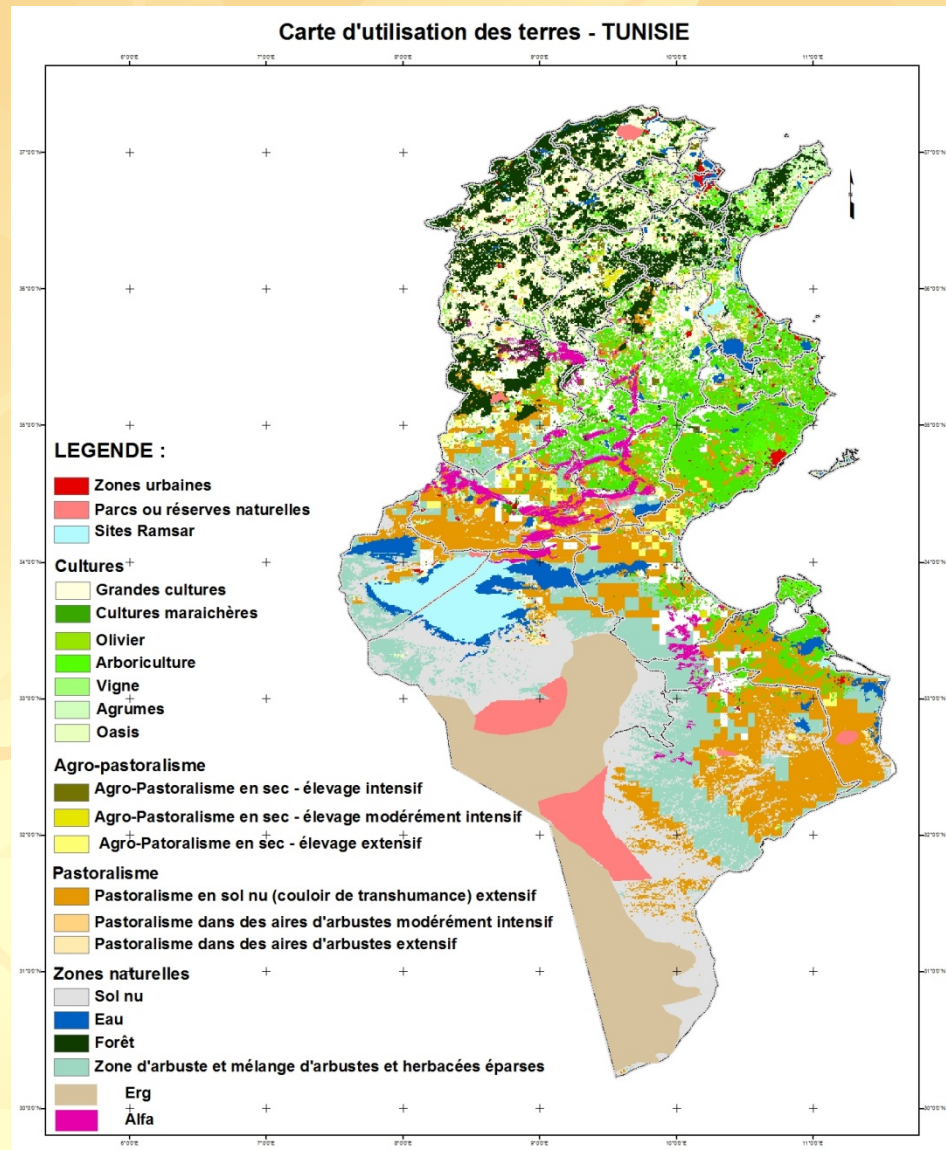
↳ Water resources is : 4,7 milliard m³

- 2,7 milliard m³ surface water
- 2 milliard m³ deep groand water and phreatic zone water

↳ Constraint of water resources

- Fragility of hydrogeologic system (irrigualarity of alimentation of phreatic zone and the caractere fossil of deep ground water)
- Variability of rainfull inter annual
- Scariaty of rain (in the center and in the saouth)

LUS V-3 Après Les évaluations Locales -21 LUS

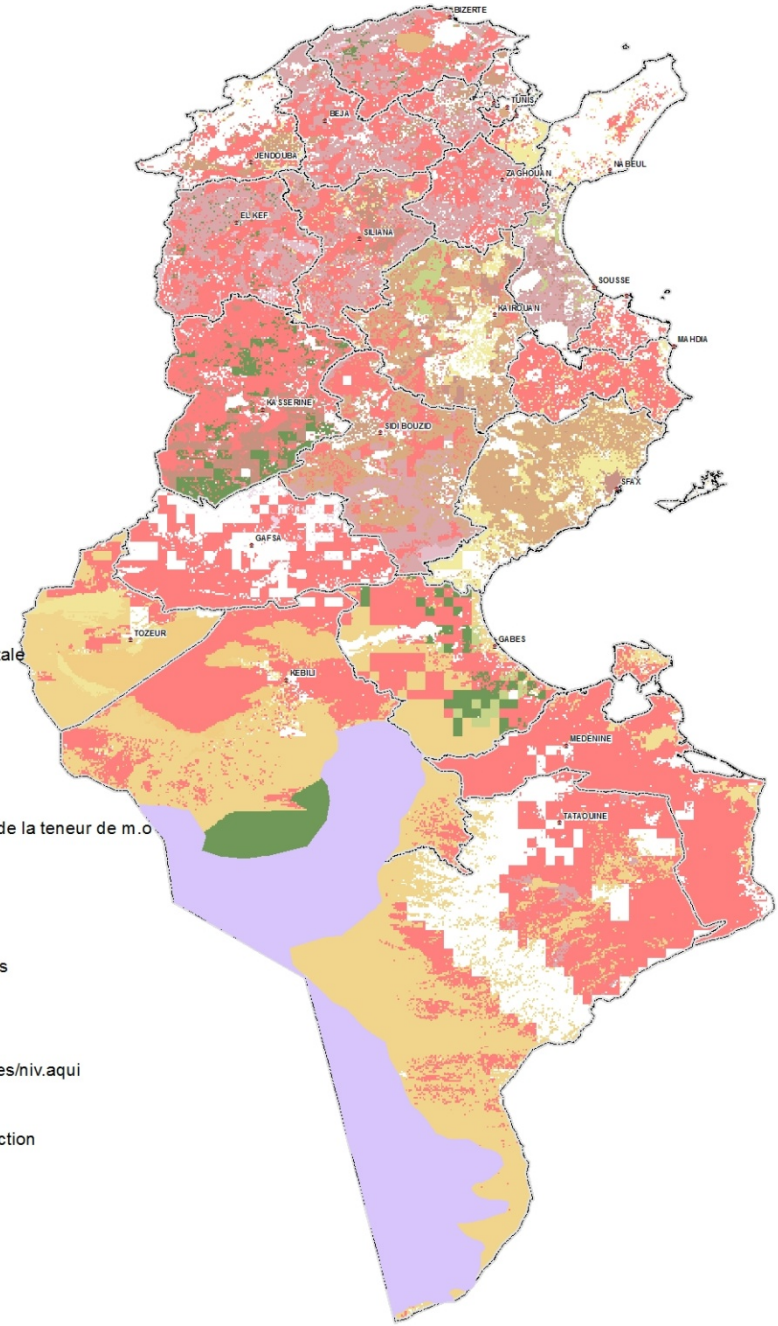


Carte de types de dégradation -Tunisie



Légende

- Erg
- Réduction de la couverture végétale
- Effets nefastes des incendies
- Perte de la vie du sol
- Baisse de la qilité / biomasse
- Acidification
- Baisse de la fertilité et reduction de la teneur de m.o
- Pollution des sols
- Salinisation / alcanisation
- Déflation et dépôt
- Effets hors-sites des dégradations
- perte de la couche arable du sol
- Aridification
- Modification des eaux souterraines/niv.aqui
- Compaction
- Perte de la fonction de bio-production
- Erosion en ravine / ravinement
- Effets de dégradation hors site
- Erosion des berges
- Erosion de surface

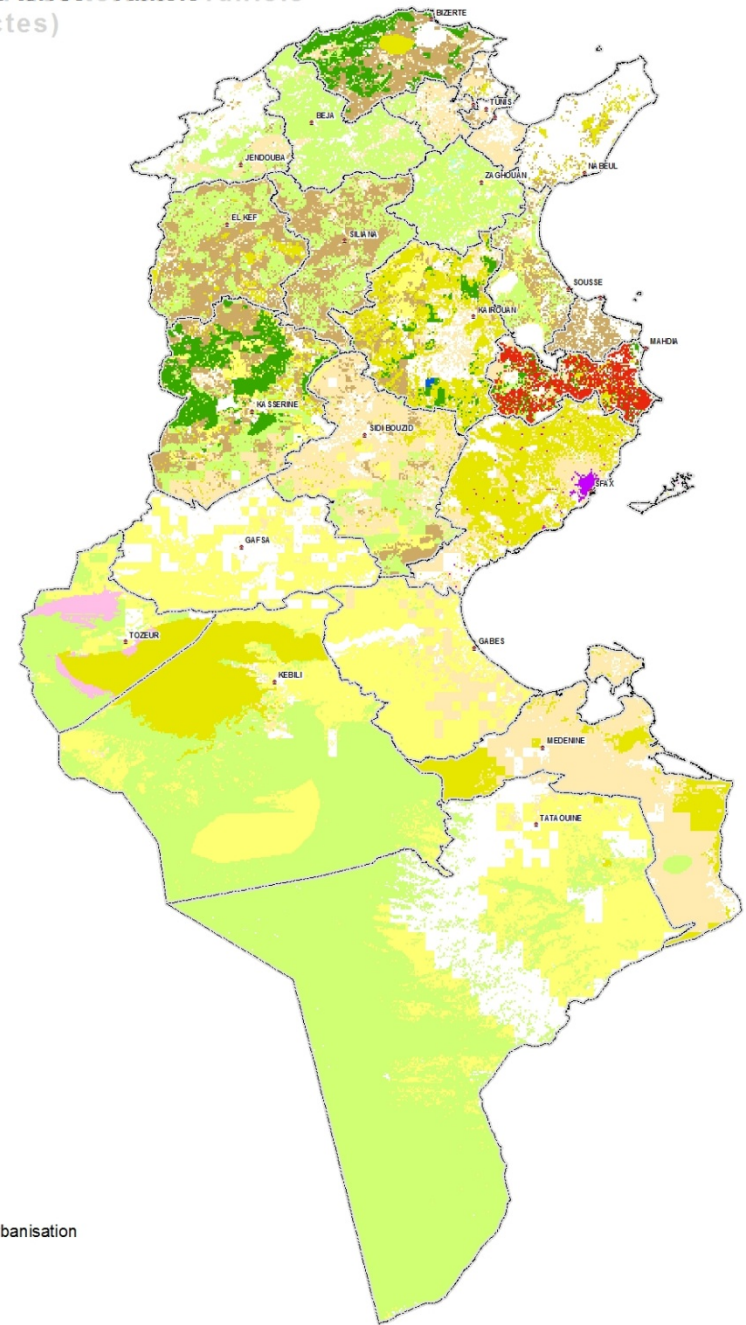


0 20 40 80 120 160 Kilometers

Types de Dégradations des Terres
Types of Land Degradation

Causes directs de la Dégradation Direct Cause of Degradation

Carte de la dégradation des terres - Tunisie
(Causes directes)

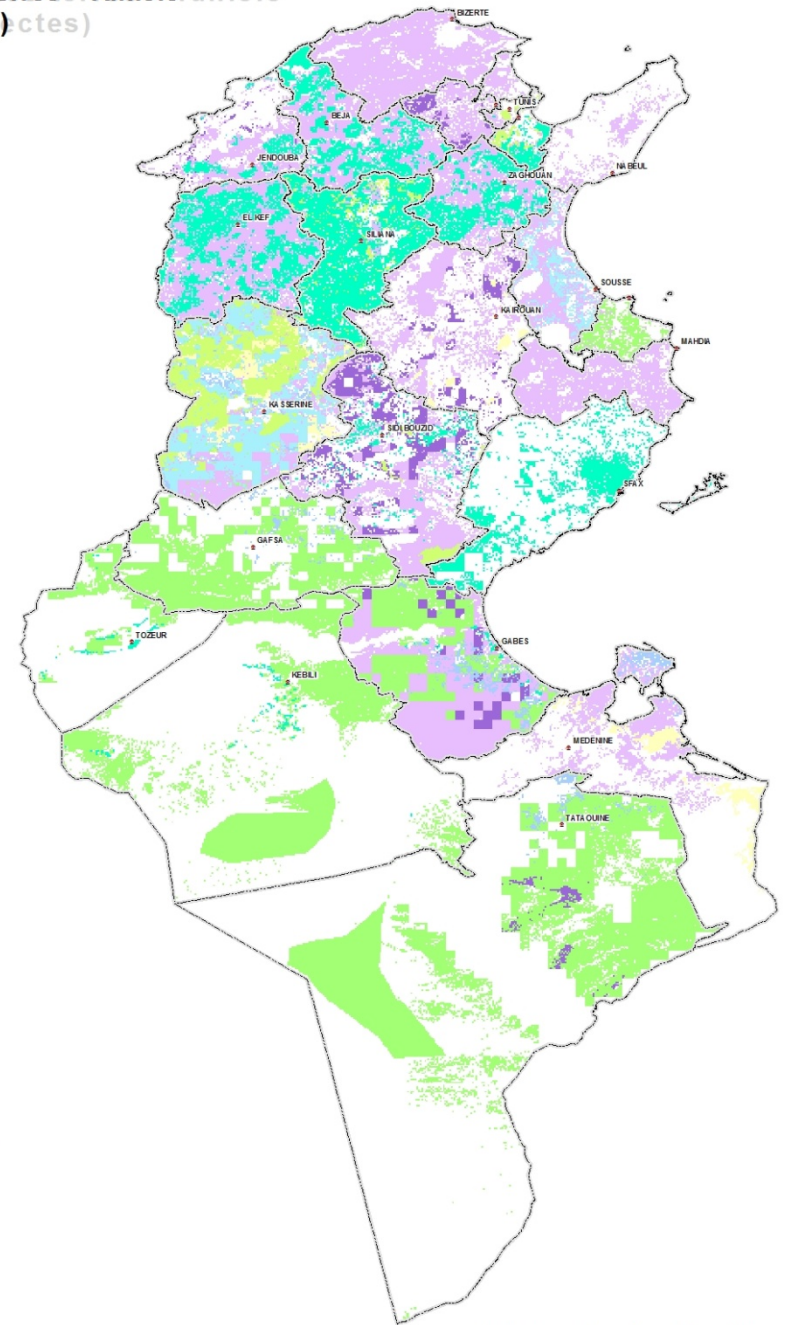


Légende

- Gestion des cultures
- Surexploitation de la végétation
- Déforestation
- Surpâturage
- Activités industrielles et minières
- Causes naturelles
- Exploitation excessive de l'eau
- Polluants des activités indus et de l'urbanisation
- Gestion des sols
- Urbanisme et infrastructures
- Perturbation du cycle de l'eau

30 15 0 30 60 90 120
Kilometers

Carte de dégradation des terres - Tunisie (Causes indirectes)



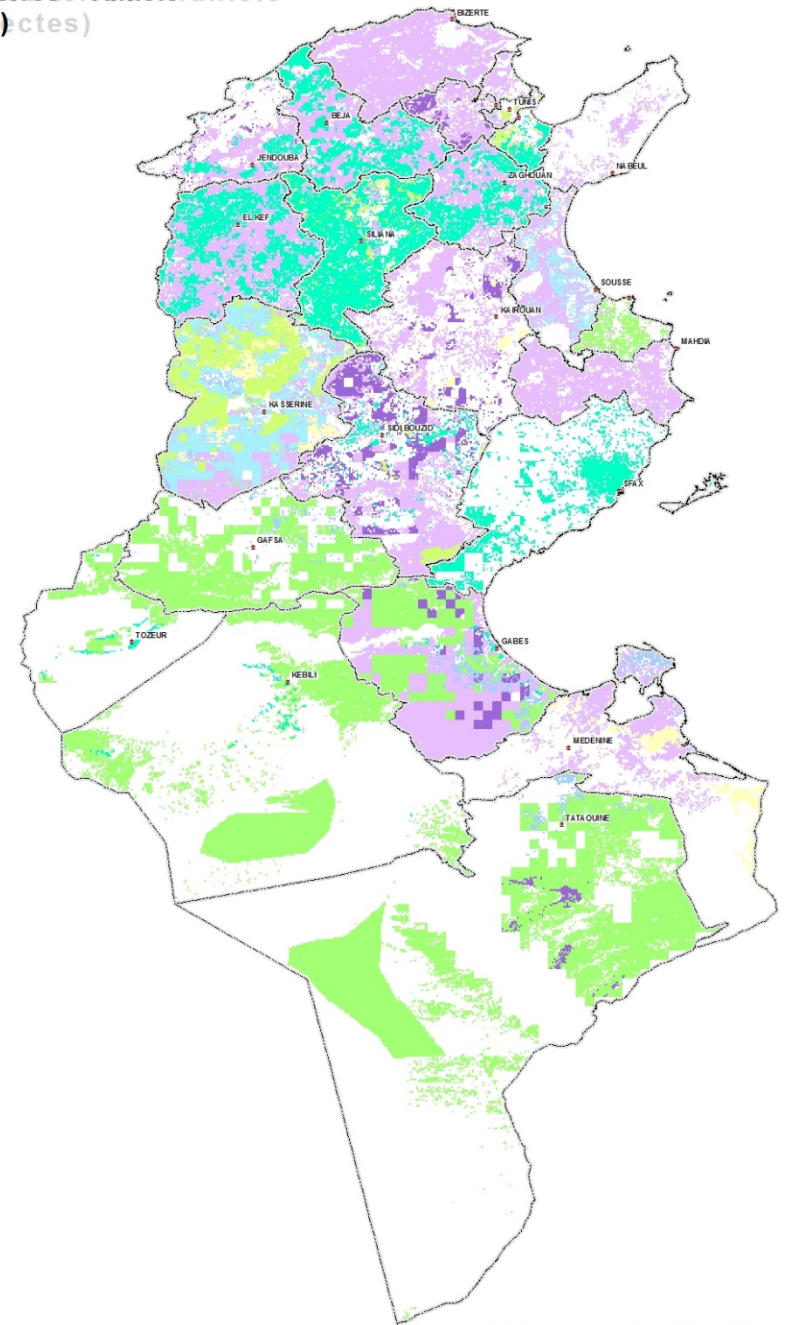
Légende

- Education et services d'appui
- Gouvernance institutionnel
- Pauvreté
- Disponibilité de la main d'oeuvre
- Autres
- Pression démographique
- Intrants et infrastructures
- Régime foncier

30 15 0 30 60 90 120 Kilometers

Causes Indirects de la Dégradation
Indirect Cause of Degradation

Carte de dégradation des terres - Tunisie (Causes indirectes)



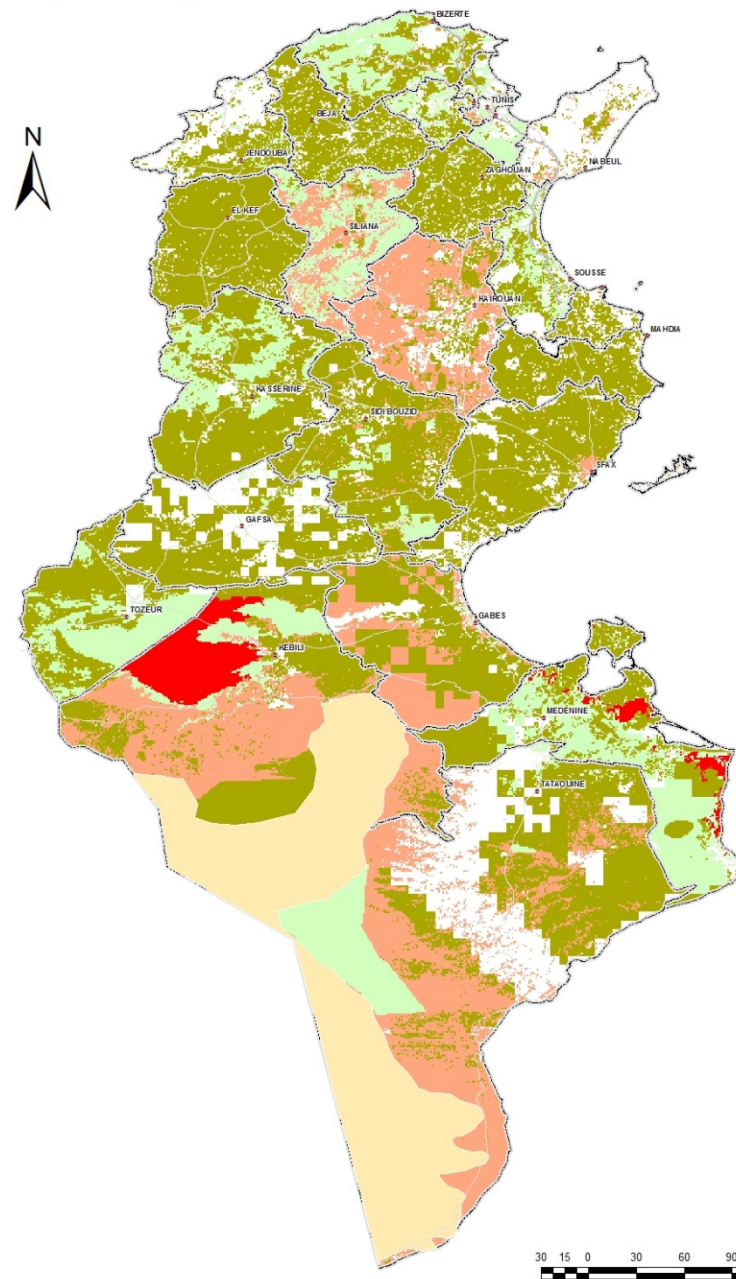
Légende

- Education et services d'appui
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- Disponibilité de la main d'oeuvre
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- Intrants et infrastructures
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30 15 0 30 60 90 120
Kilometers

Causes Indirects de la Dégradation
Indirect Cause of Degradation

Carte de de degré de dégradation des terres - TUNISIE

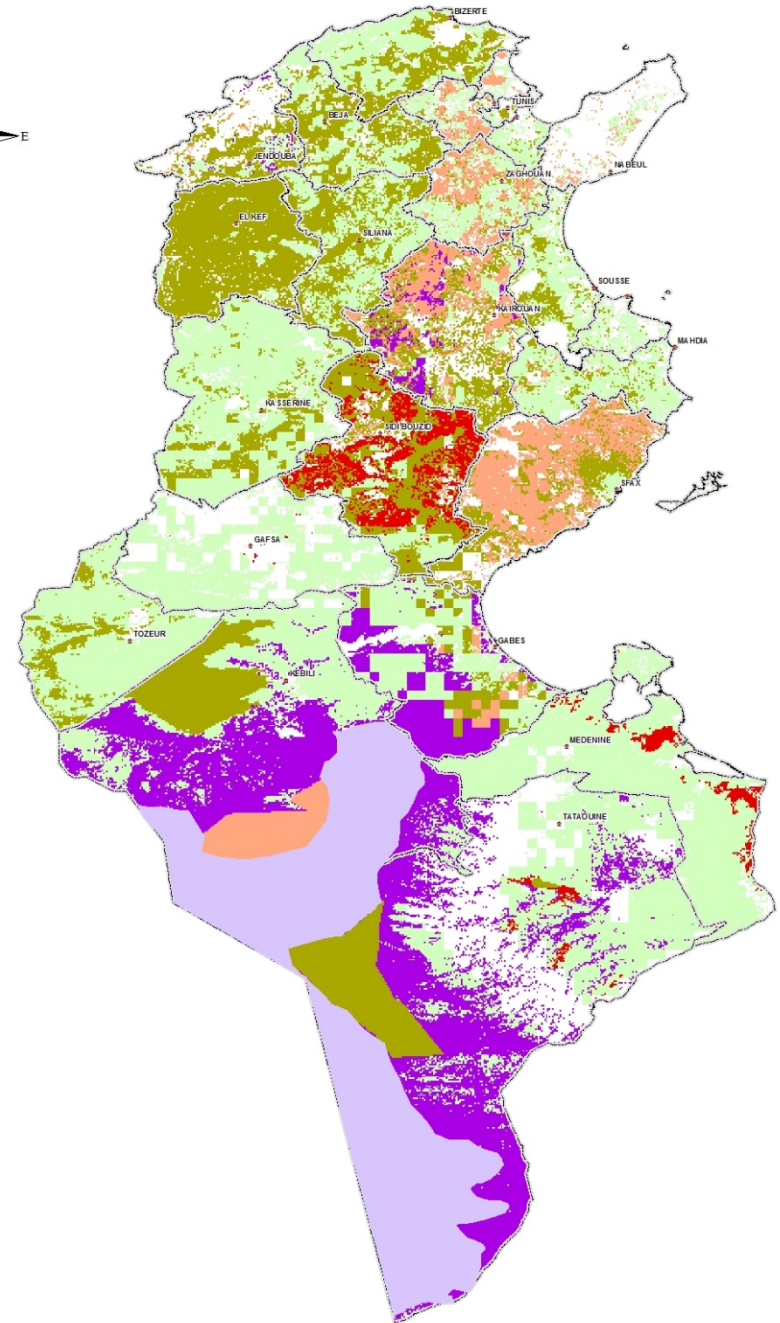


Légende

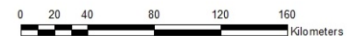
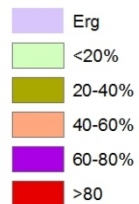
- Erg
- Leger
- Modéré
- Fort
- Extreme

Degré de Dégradation des Terres
Degree of Land Degradation

Carte des intensités de la dégradation -Tunisie



Légende



Intensité de la Dégradation
Intensity of Land Degradation

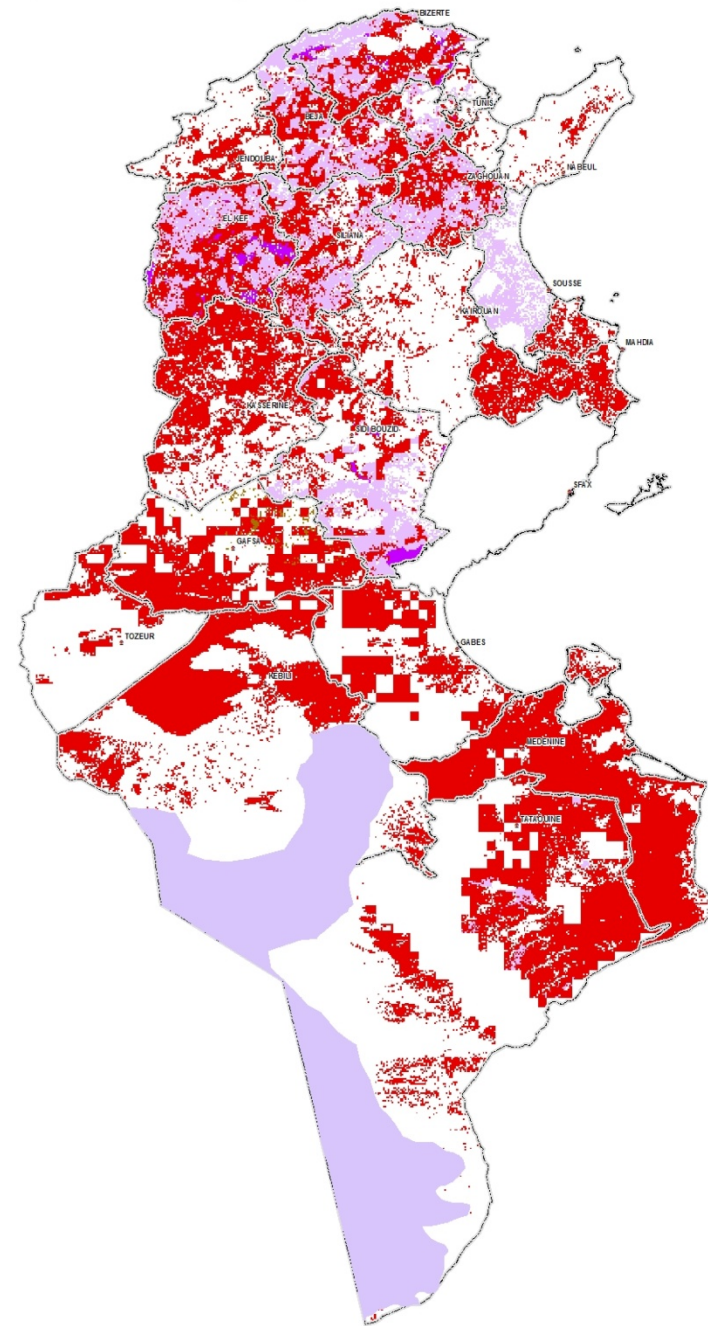
Erosion Hydrique

Water Erosion

Carte de dégradation par l'érosion hydrique -Tunisie

Légende

- Erg
- Erosion en ravine / ravinement
- Effets de dégradation hors site
- Erosion des berges
- Erosion de surface

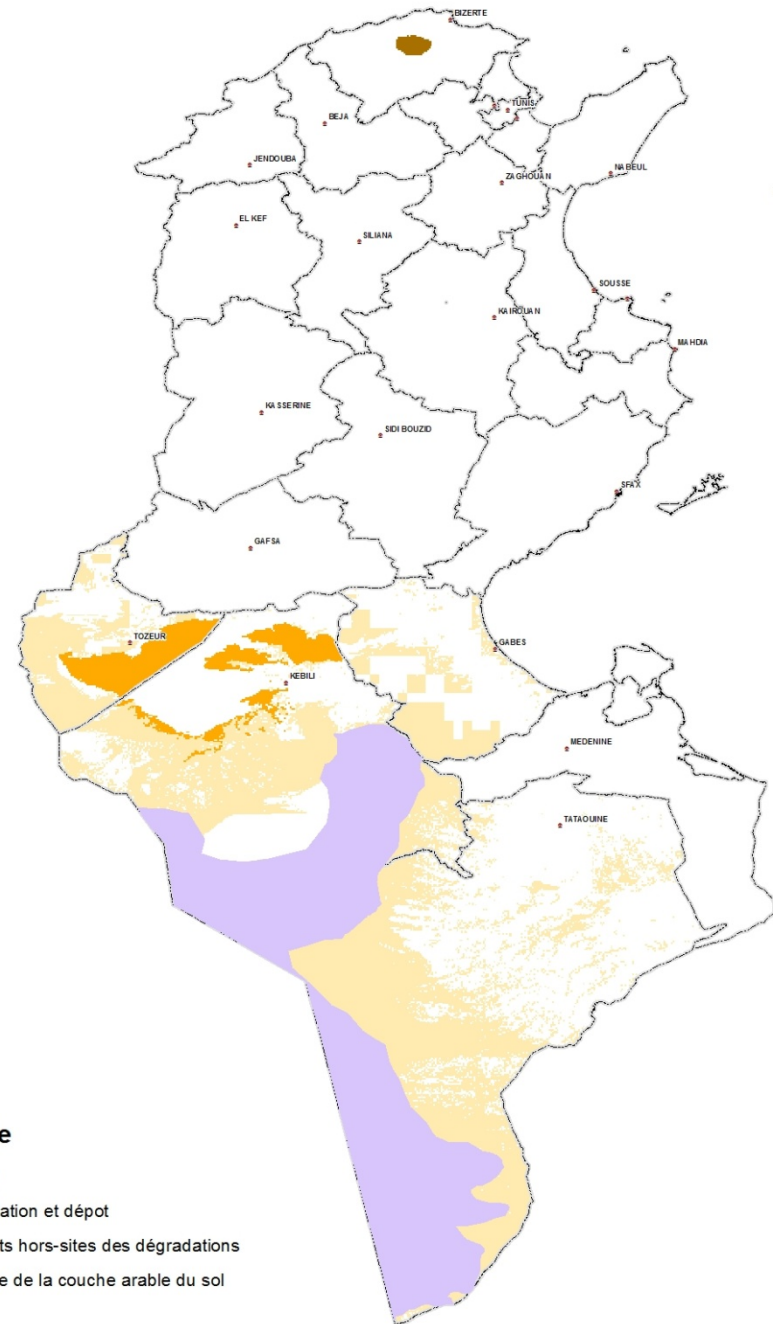


Carte de dégradation par l'érosion éolienne -Tunisie

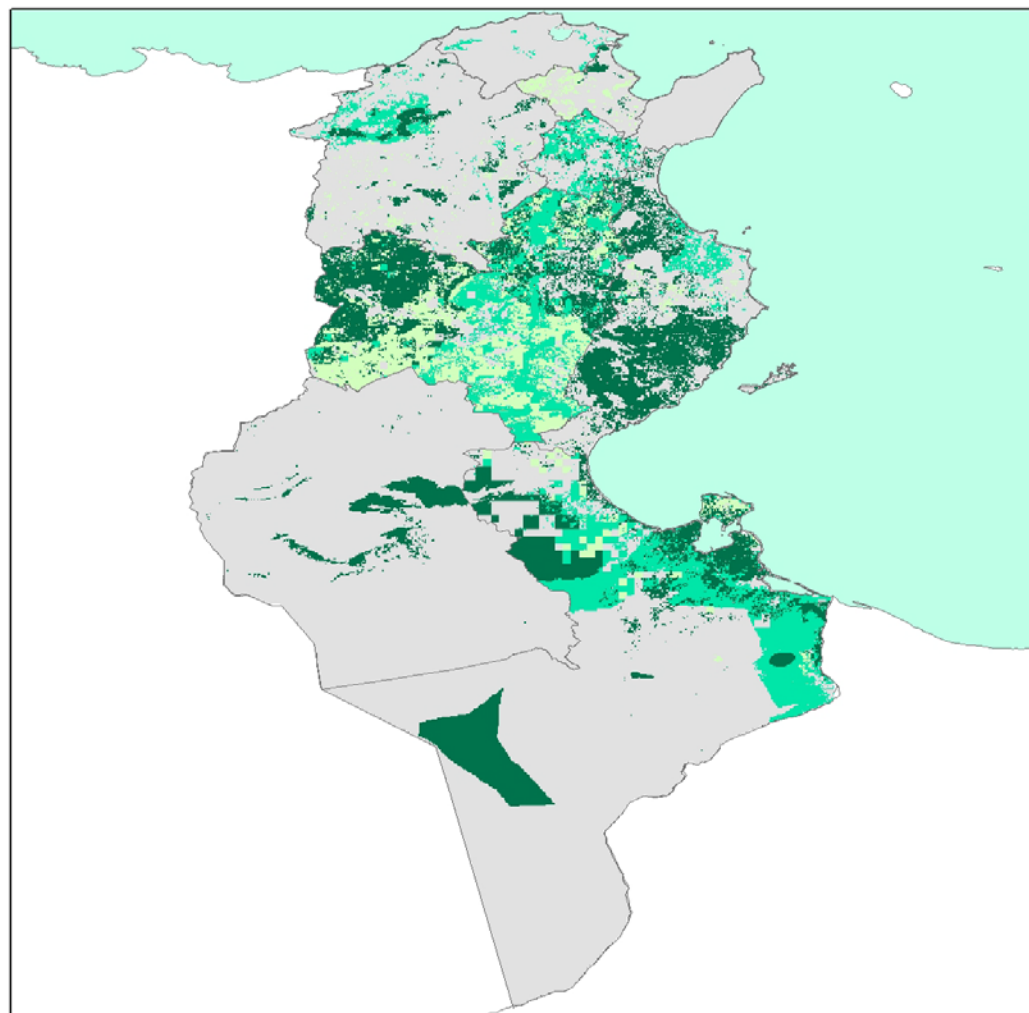
Erosion Eolienne
Wind of Erosion

Légende

- Erg
- Déflation et dépôt
- Effets hors-sites des dégradations
- perte de la couche arable du sol



Etendue de la Conservation
Extend of Land Management

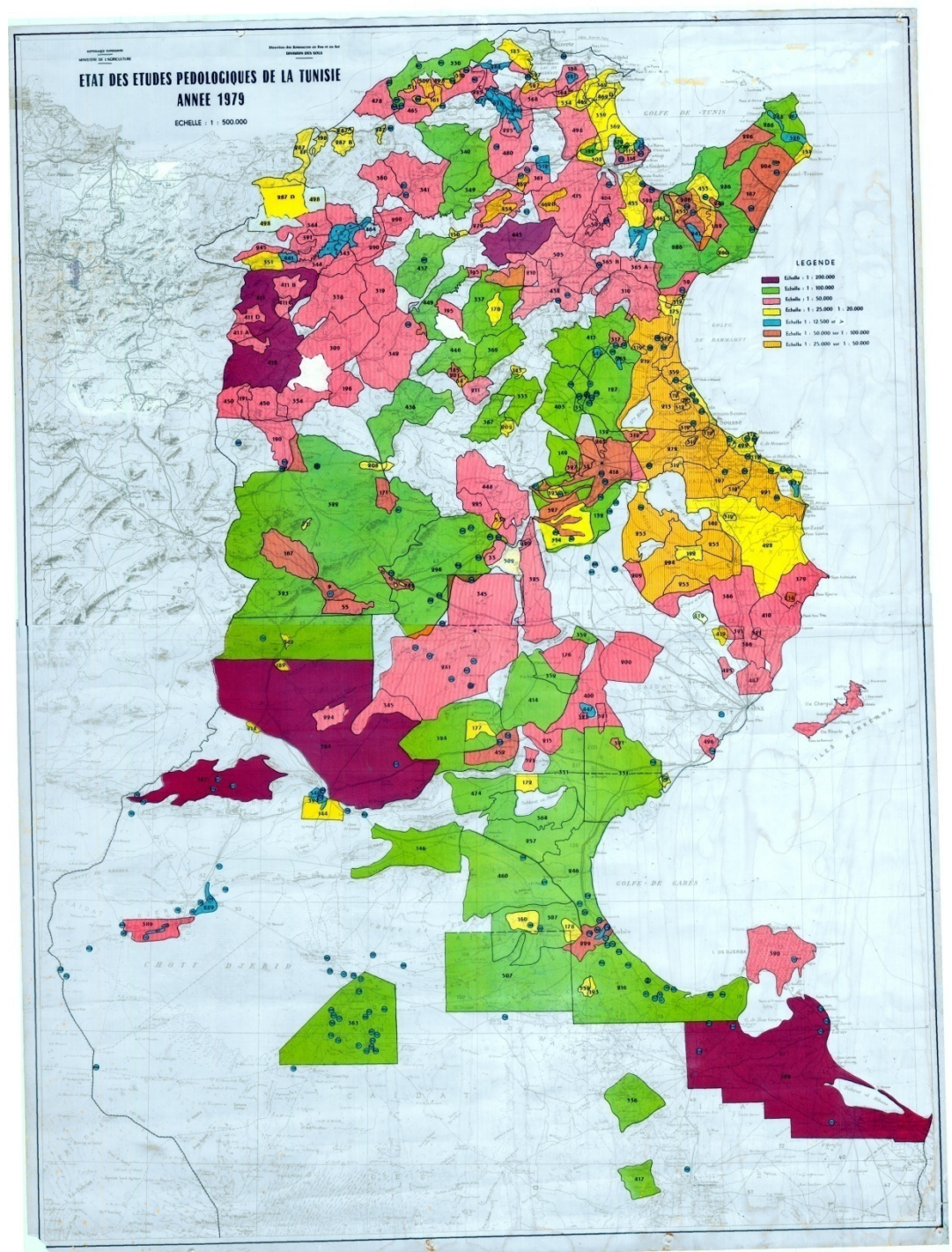


Extent of land conservation (% of area)



Source: National LADA FAO WOCAT QM

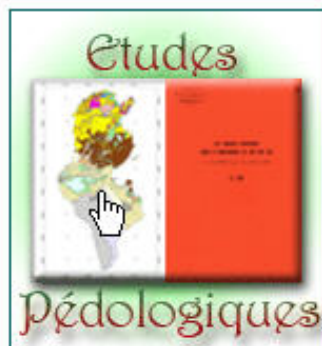
STUDY MAP



[AIDE](#)[PREFERENCES](#)

Bibliothèque Electronique des Sols de Tunisie

Sélectionner une collection



L'Interface Bibliothécaire de Greenstone

Vous aide à créer de nouvelles collections, à modifier ou supprimer des collections, ou bien encore à ajouter des documents à une collection

Page d'Administration

Vous permet d'ajouter de nouveaux utilisateurs, de connaître les collections qui se trouvent sur le système, et de connaître les informations techniques concernant l'installation de Greenstone

À Propos de Greenstone

Vous informe sur le logiciel Greenstone et le projet de Bibliothèque Numérique de Nouvelle-Zélande, d'où il provient

Documentation

Manuels de Greenstone



Bibliothèque Electronique des Sols de Tunisie

ACCUEIL

AIDE

PREFERENCES

Recherche

Recherche

Titres A-Z

Auteurs A-Z

Dates

Recherche contenant quelques uns des ▼

Mot ou groupe de mots...

dans le champ

	Texte intégral ▼
	Titre ▼
	Date ▼
	Auteur ▼

Effacer le formulaire

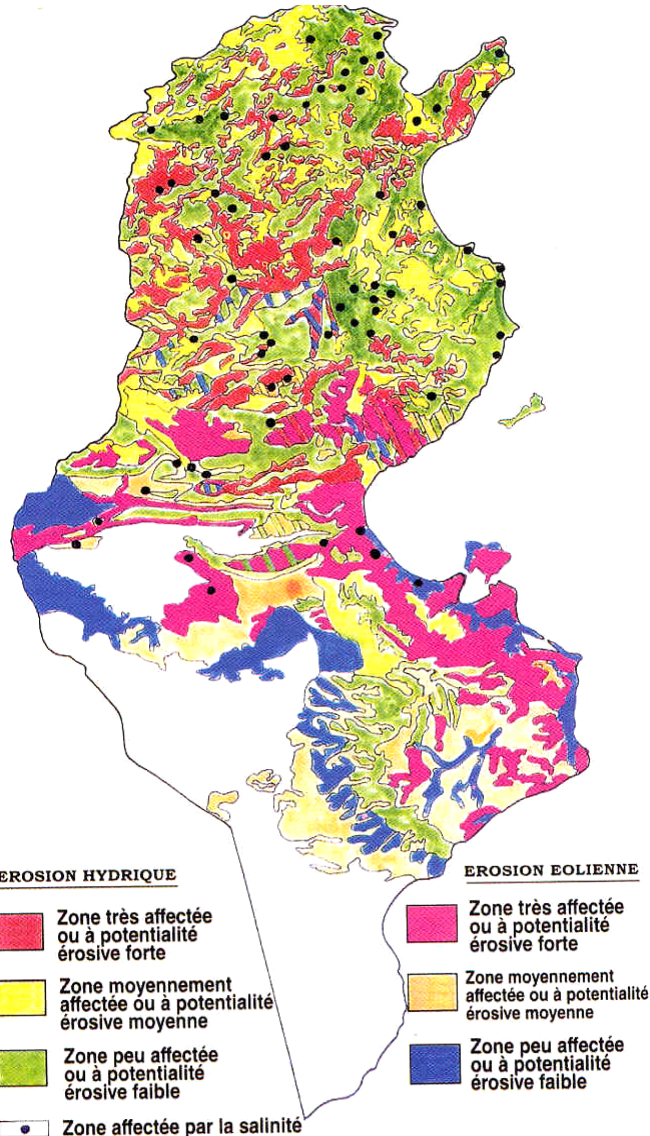
Démarrer la recherche



Adresse temporaire pour BEST

<http://213.150.161.221:8887/>

MAINS DEGRADATION PROCESSES



👉 **Water erosion** 10.000 hectares / year

👉 **Wind erosion** 8.000 hectares / year

👉 **Salinisation** 4.000 hectares / year

👉 **Urbanization** 1.000 hectares / year

TOTAL = 23.000 hectares

Soil Management

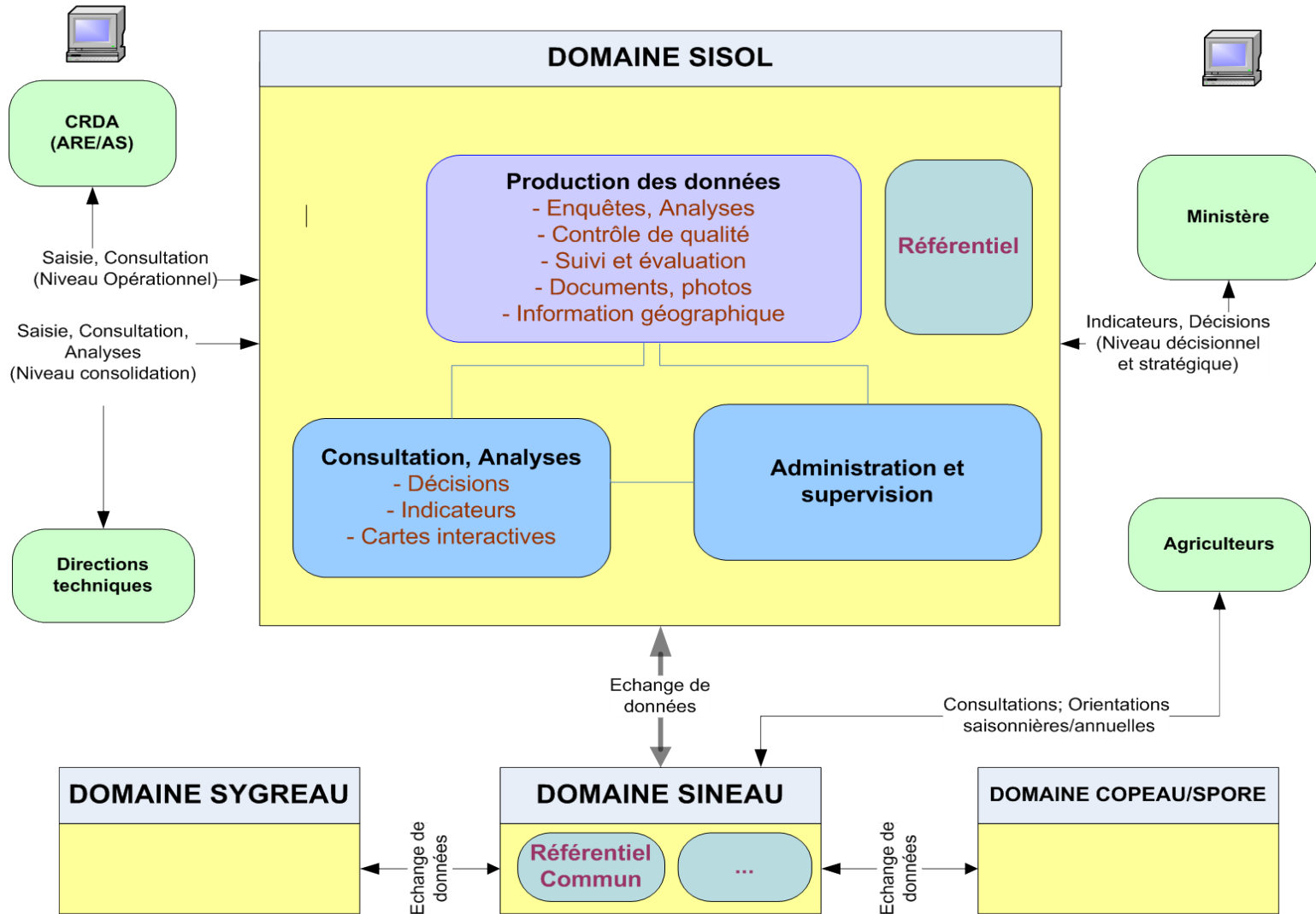
Soil Salinity Management

SISOL (SOIL SYSTEM INFORMATION)

Object

- * Knowledge of Actual Soil Salinity in Irrigated Area ;
- * Monitoring of Evolution of Salinity ;
- * Help of decision makers for préventives actions.

General Architecture of the System



Soil Fertility Management

Composition of compost



- Reliquats of cultures (feuilles, tiges, racines etc..).
- Animal Excrément (Fumier, fientes etc..).

Establissment of compost



Soil Erosion Management





AGRICULTURE CONSERVATION



Deficit Irrigation with Saline Water in Arid Area



The background of the slide features a stylized, low-poly illustration of several large, overlapping leaves in shades of yellow and orange, creating a textured, organic feel.

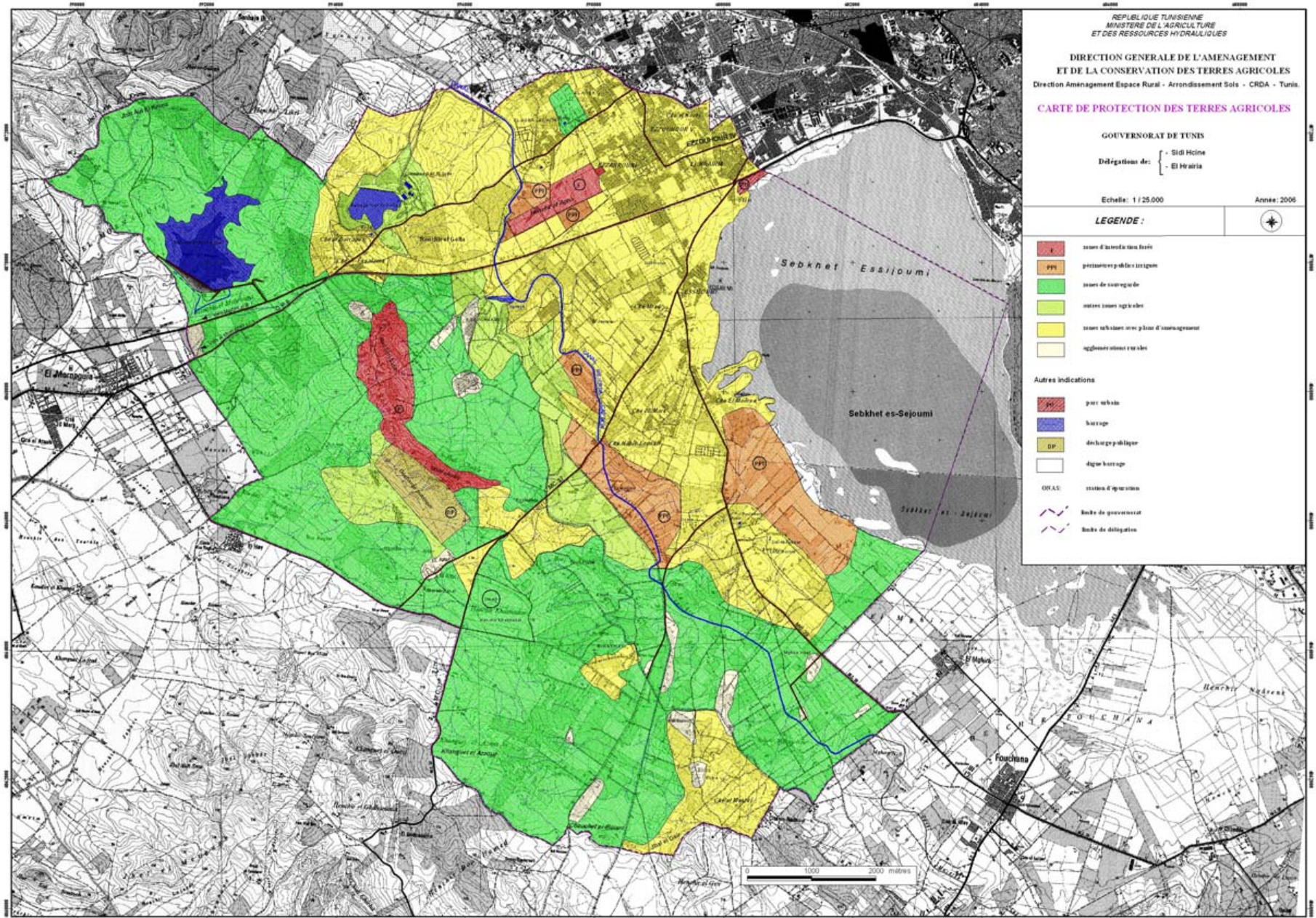
LAW and LEGISLATION FOR SOIL PROTECTION

مراجع قانونية

- القانون عدد 87 لسنة 1983 المؤرخ في 11/11/1983 المتعلق بحماية الأراضي الفلاحية
- القانون عدد 20 لسنة 1989 المؤرخ في 22/02/1989 المتعلق بتنظيم استغلال المقاطع

CARTE DE PROTECTION DES TERRES AGRICOLES

(Gouvernorat Tunis – Délégations : Sidi Hcine, El Hrairia)



THANK YOU