National Institute of Meteorology Presentation

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National Institute of Meteorology (INM
Marine weather forecaster

Medi-1, Tunisia, 02-04 May 2023

Contents

01

About INM

1- About INM

- Founded on **1974,**
- A Public, Non-Administrative Establishment (EPNA) since **February 16, 2009**
- Placed under the wardship of the **Ministry of Transport**,
- **Certified ISO 9001 in meteorological assistance to air navigation : since 2010.**

02 Mission

2- Mission

- Respond to meteorological, geophysical and climatological needs,
- Contribute to the protection of persons and property in coordination with the various involved stakeholders,
- Provide meteorological services to air navigation, maritime navigation, agriculture and tourism,
- Design programs and policies taking advantage of technological and scientific advances,
- Contribute to the implementation of factors of sustainable development,
- Make technical coordination of all the activities related to the meteorological and geophysical aspects,
- Management and maintenance of the meteorological and geophysical database.

03 History

3- History

- **1873 :** First meteorological observation,
- **1885 :** Creation of the first meteorological unit in Tunis - Manoubia, ensuring rain measurement and climate observation,
- **1923 :** Establishment of a synoptic observations network by French Meteorological Office (FMO) with the major station located in El Aouina aerodrome,
- **1926 :** First seismic observation made by the meteorological unit,
- **1945 :** FMO creates a climatologic station,

3- History

- **1955 :** Tunis-Manoubia unit becomes an office for the inventory of water resources and rainfall data. The meteorological and climatologic activities are assigned to El Aouina unit,
- **1958 :** El Aouina unit becomes the National Service of Meteorology and is attached to the Directorate of Aviation and Maritime Services, under the authority of the Ministry of Public Works and Housing,
- **1973 :** The Meteorological Service becomes a Department of Meteorology,
- **1974 :** The Department of Meteorology becomes the National Institute of Meteorology (INM).

04 Activities

Meteorology

- Observation, storage, exchange and processing of meteorological and climatological data,
- Weather and climate forecast,
- Climatology and applied meteorology.

Geophysics and astronomy

- Measurement and monitoring of seismic activity,
- Studies applied to geophysics,
- Observation of the crescent moon and establishment of lunar calendars for religious purposes,
- Establishment of lunar and solar eclipse dates and the elaboration of ephemerides.

05 Organization and structure

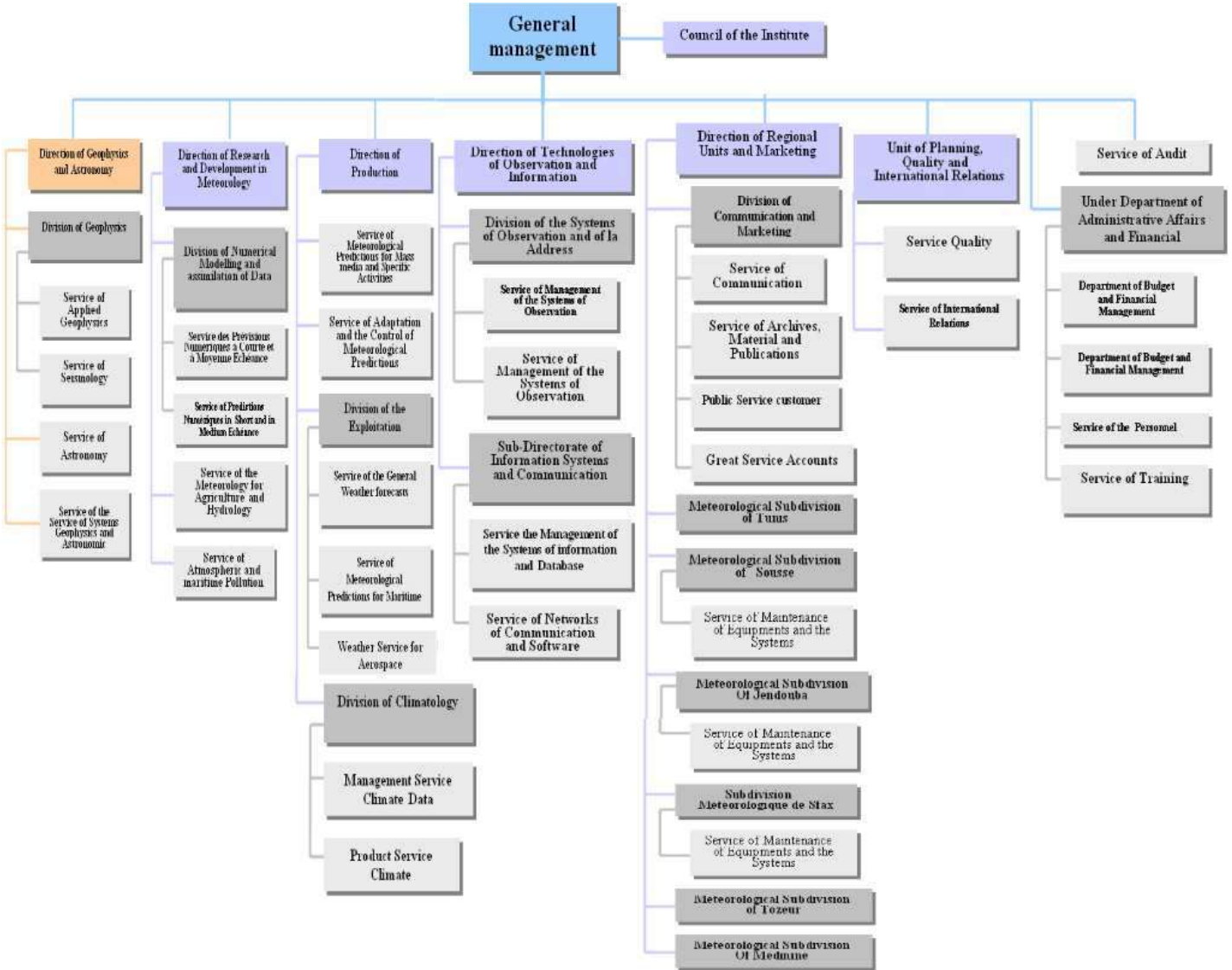
5- Organization and structure

INM employs a manpower of 309 agents :

- 6 Functional and Operational directions at the central level,
- 6 Subdivisions at the regional level, in charge of the observation network (Tunis, Jendouba, Sousse, Sfax, Medenine and Tozeur).

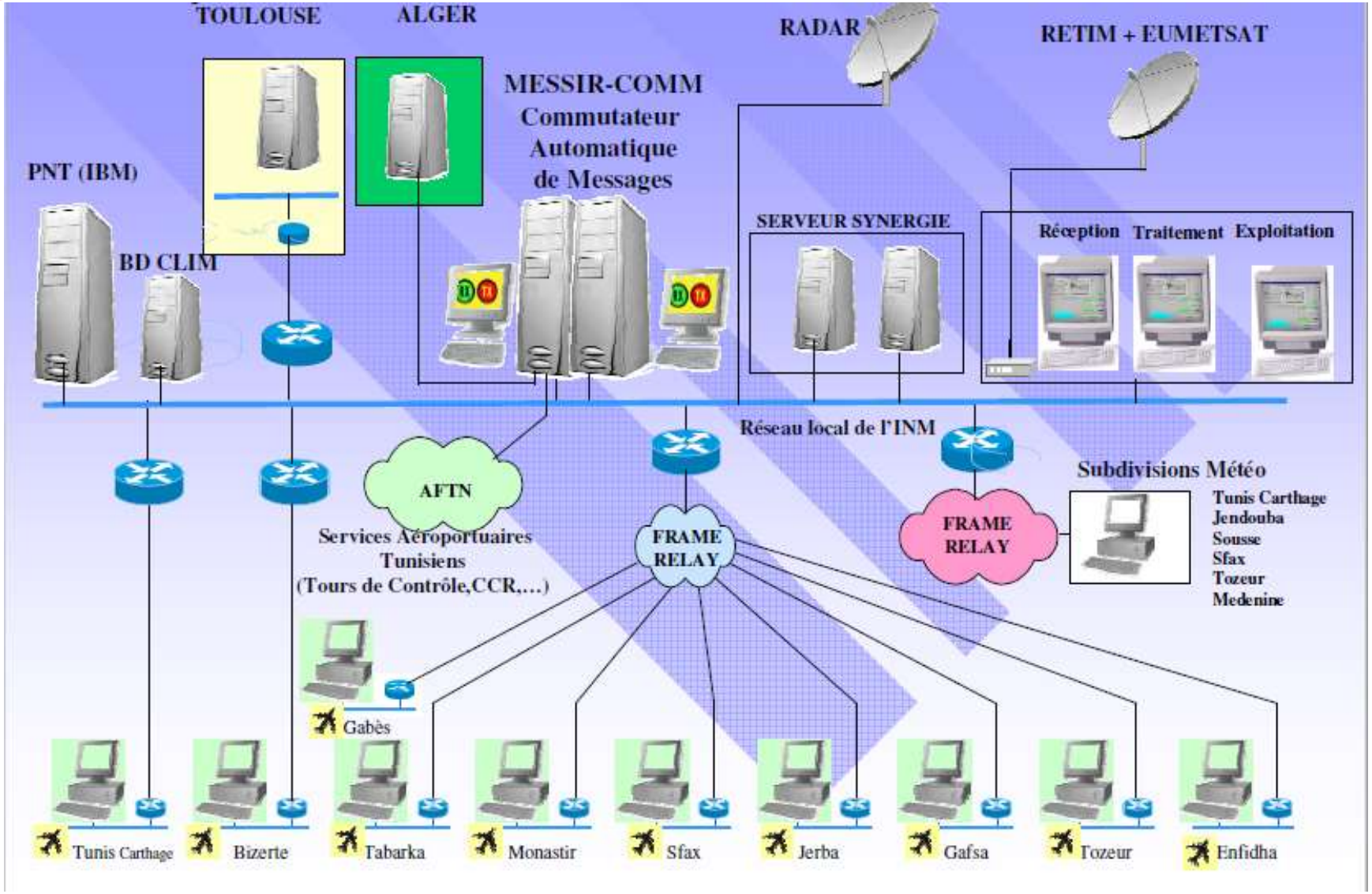
TYPE	MANAGERS	CONTROL STAFF	EXECUTING AGENTS	TOTAL
Engineers	63	0	0	63
Technicians	59	43	4	106
Administrative managers	16	20	30	66
Computer specialists	2	2	0	4
Military	4	66	0	70
Total	144	131	34	309

Central organization



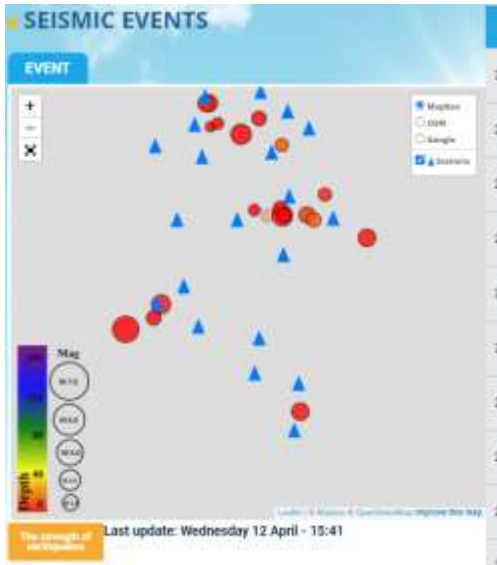
06 Information and communication system

6- Information and communication system



07 Services

Geophysics and astronomy



DATE	ORIGINAL TIME (GMT)	MAG. RICHTER. DEG	REGION
2023-04-12	13:49	2.4	South -west Kerouan
2023-04-11	05:21	2.7	East Redaief
2023-04-06	08:45	3.6	East Moulares
2023-04-04	16:27	4.9	North Chatt Gharsia
2023-04-02	22:40	3.4	East El Bir LAhmar
2023-03-30	11:44	3.3	East Nefza
2023-03-28	08:18	2.9	South west Menzel El kamel
2023-03-25	00:14	3.8	South West Sidi al Hani
2023-03-10	04:50	2.6	south zarmdine
2023-03-09	08:20	2.5	N E Monastir

1. Seismology

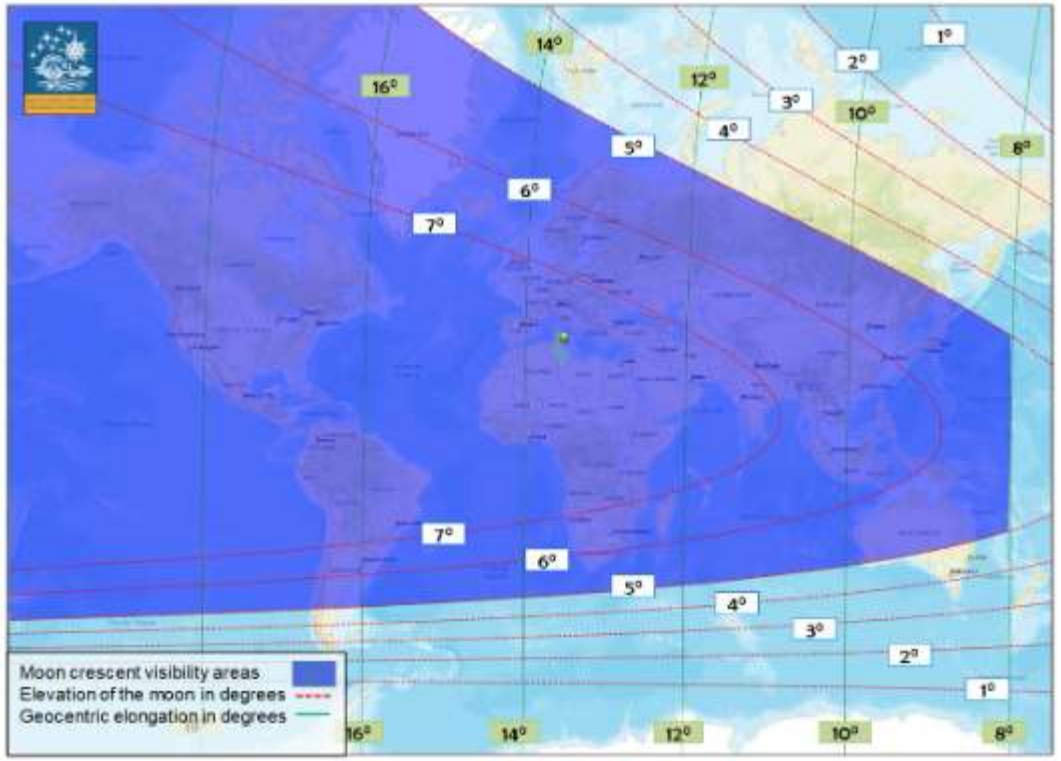
Measuring and monitoring the seismic activity in Tunisia :

- Prevent seismic risks and alert authorities if necessary,
- Develop maps which trace seismic fault lines and their importance,
- Develop and update the earthquake catalog in Tunisia,
- Elaborate geophysical studies,
- Contribute to the development of research in earthquake engineering,
- Prepare the seismotectonic map,
- Study the microzonation of the different regions.

Geophysics and astronomy

2. Astronomy

- Elaborate computational data for the observation of the lunar crescent,
- Observe the lunar crescent nationwide,
- Establish lunar and solar eclipse dates,
- Elaborate ephemerides.



Lunar crescent visibility areas of Ramadan 1444 Hijri (according to Istanbul criteria) after sunset on Wednesday, March 22, 2023.

Climatology

- **Ministry of Agriculture and Water Resources :**
  Exchange of rainfall observations relating to floods

- **The National Office of Olive Oil :**
  a newsletter of pentad climatic conditions to olive oil producers

- **Ministry of Public Health :**
  A regular newsletter and alert in case of extreme weather conditions

Climatology

- **The National Agency for Energy Management :**

Providing Information for better use and management of energy resources

- **Marine activities :**

Transport, oil exploration, fishing, aquaculture, etc.

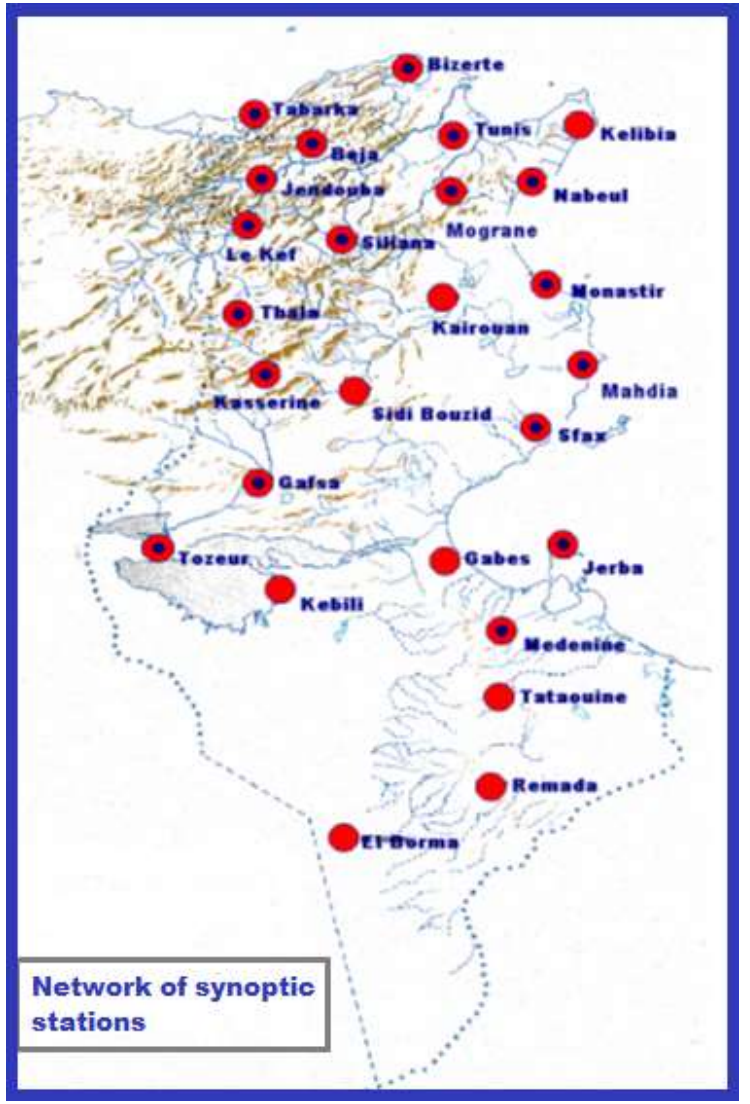
- **Scientific research :**

Institutions, universities and environment research laboratories, water resources management, agriculture, etc.

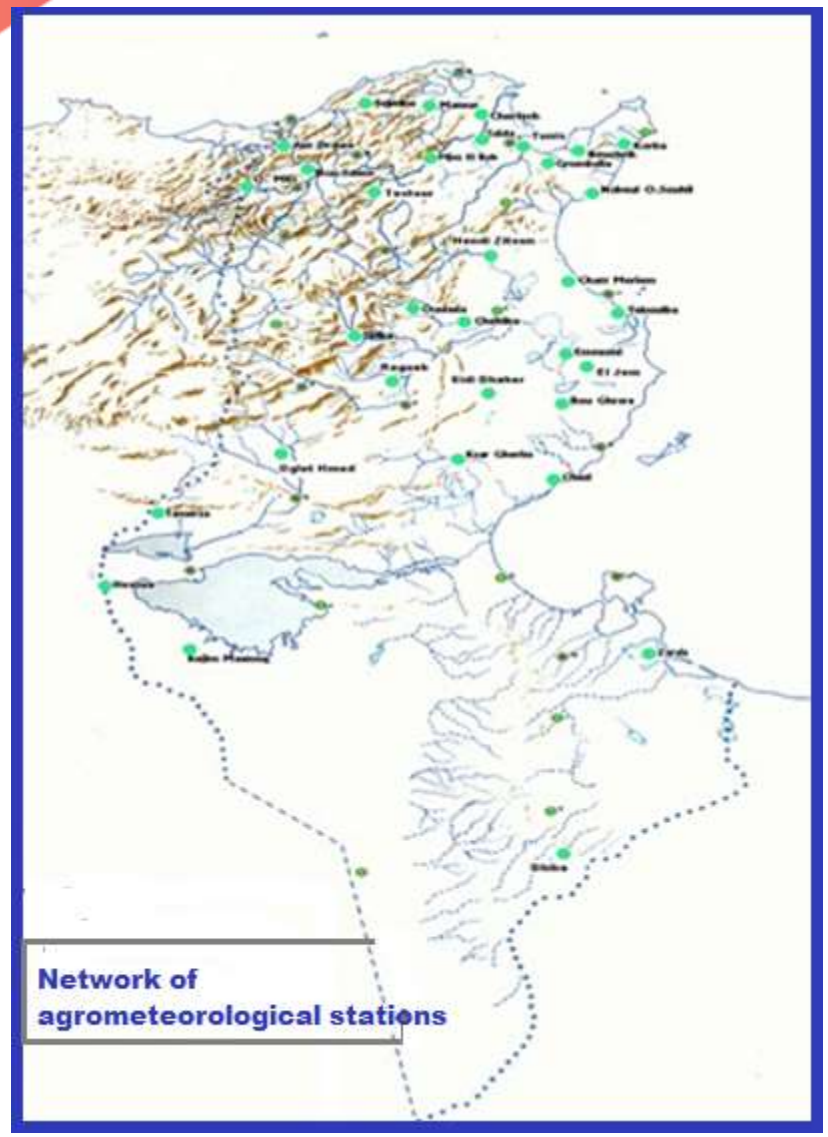
Observation

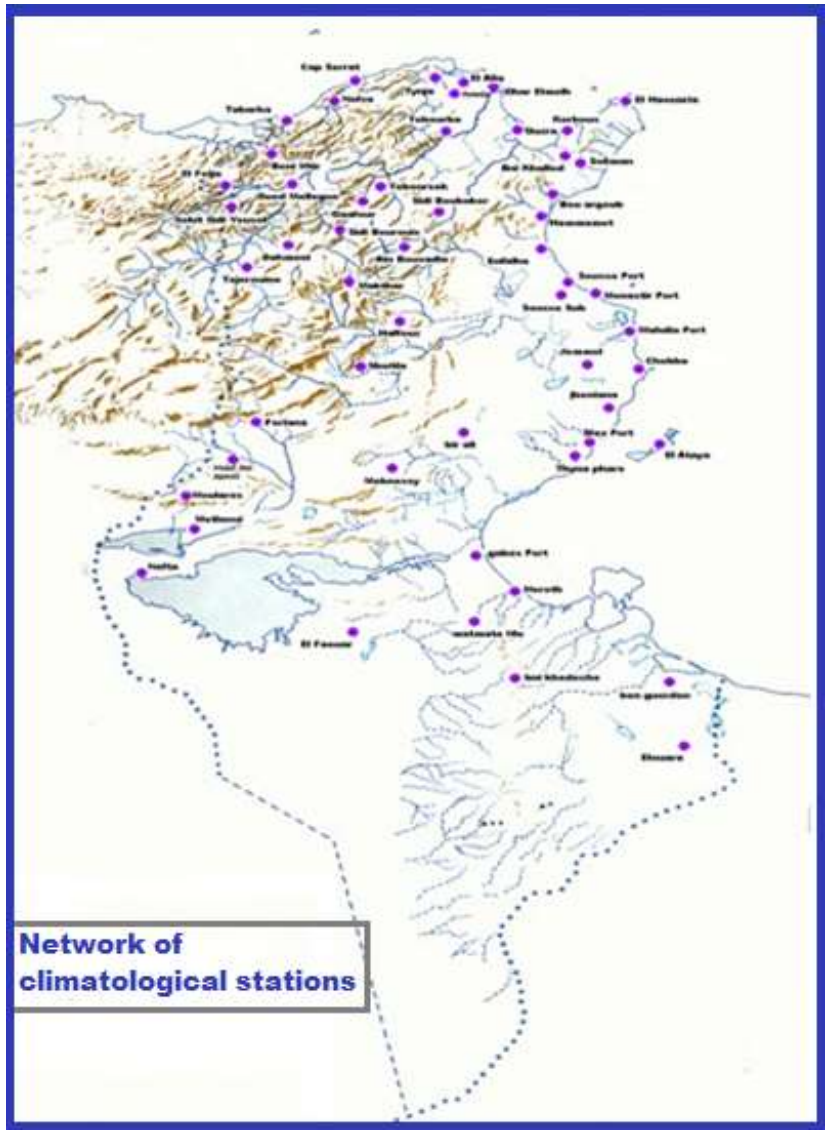
The Tunisian territrory represent 163 610 Km² covered by a network of observation stations :

- ❑ Synoptic stations : 27
- ❑ Agrometeorological stations : 49
- ❑ Climatological stations : 81
- ❑ Pluviometric stations : 208
- ❑ Maritime stations : 2
- ❑ Seismologic network : 15
- ❑ Radar network : project in progress



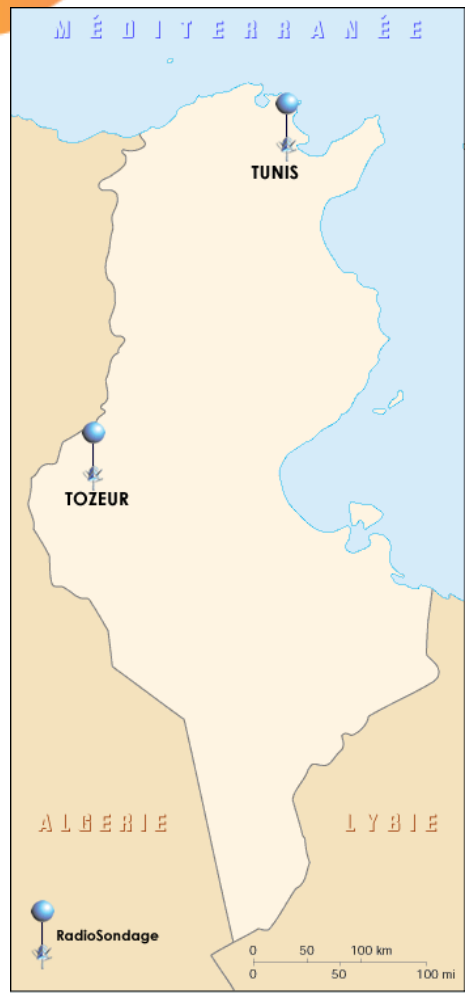
Observation



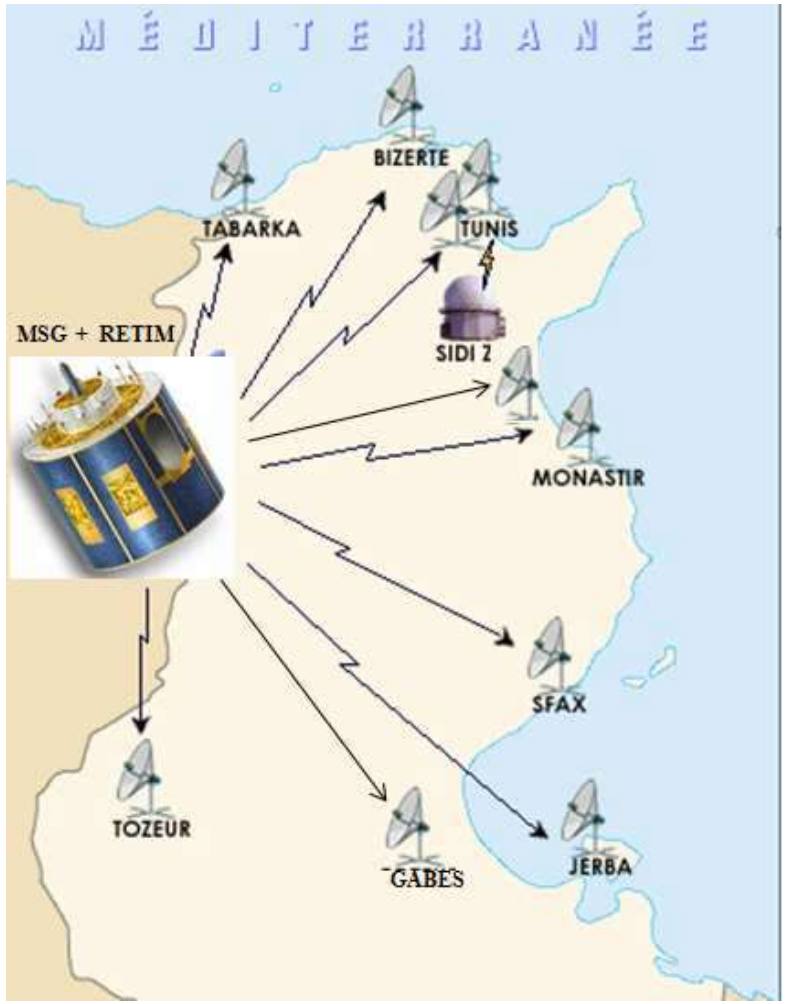


Observation

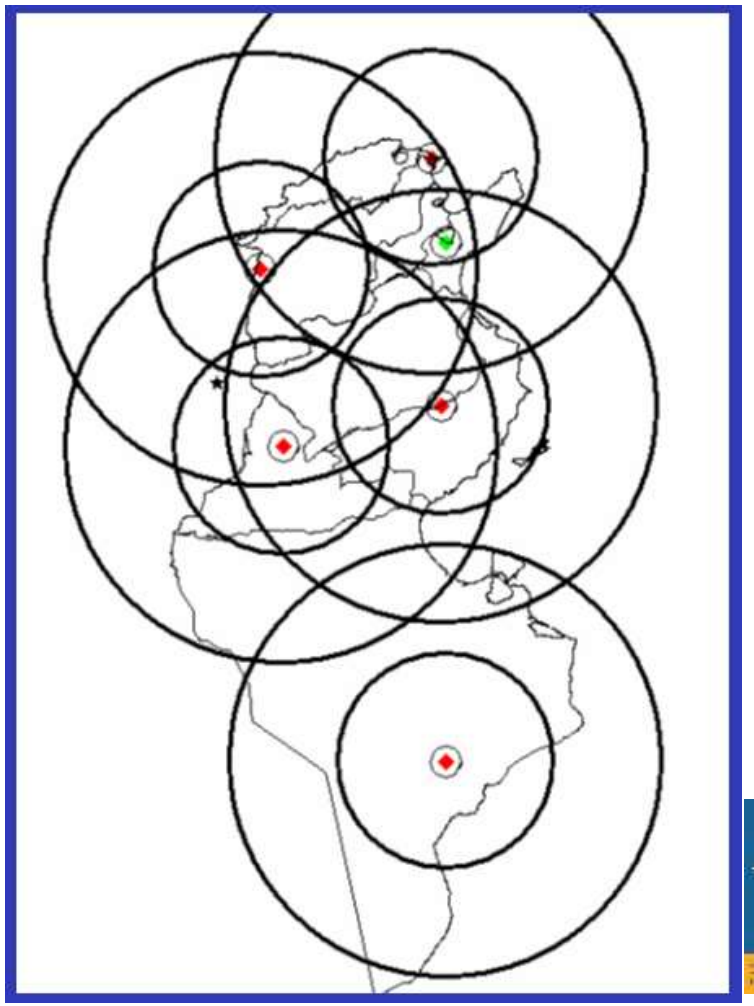
Altitude Observations



Satellite observations



Expected Radar Observation Network

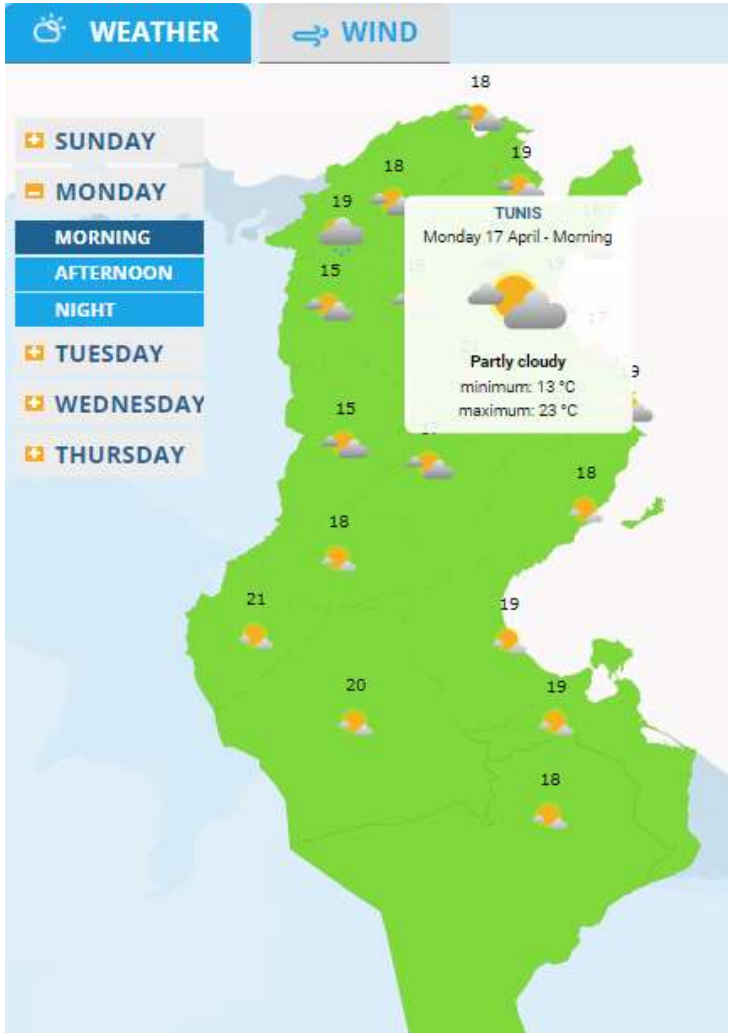


Research and Development

- Numerical Weather Prediction Project : AROME-Tunisia model,
- Monthly and seasonal forecasts,
- Studies on climate change,
- Support agriculture and hydrology,
- Irrigation planning and management,
- Fight against diseases and natural disasters (drought, frost, hail, forest fires, etc ... ...),
- Basic data for hydraulic works (sanitation, dams, drainage, etc. ...),
- Develop precipitation statistics,
- Study air and sea pollution.

Weather forecasting

- **General forecasts**
  - Short-term and medium-term forecasts
  - Specific weather forecasts
  - Warning bulletins
  - Vigilance maps
- **Marine forecasts**
  - Coastal forecasts
  - Offshore forecasts
  - Special bulletins
  - Specific weather forecasts
- **Aeronautic forecasts**
  - Aviation reports
  - Aviation warnings
  - Flight forecast folder
- **Media forecasts**
- **Statistical adaptation and verification**



Warning		Near Gale N° 73 in effect modifying and extending 72
Reference time		00:00H UTC of 16/04/2023
Validity	Hour	24
	Beginning of validity	16/04/2023 to 09:00H UTC
	End of validity	17/04/2023 to 09:00H UTC
Threatened Areas		North of Tunisia
Weather elements		North West wind, force 7 Beaufort (from 28 to 33 knots)
Generative phenomenon and evolution		Low 1002 hPa over the Tyrrhenian Sea then moving towards the Ionian Sea

Weather forecast models

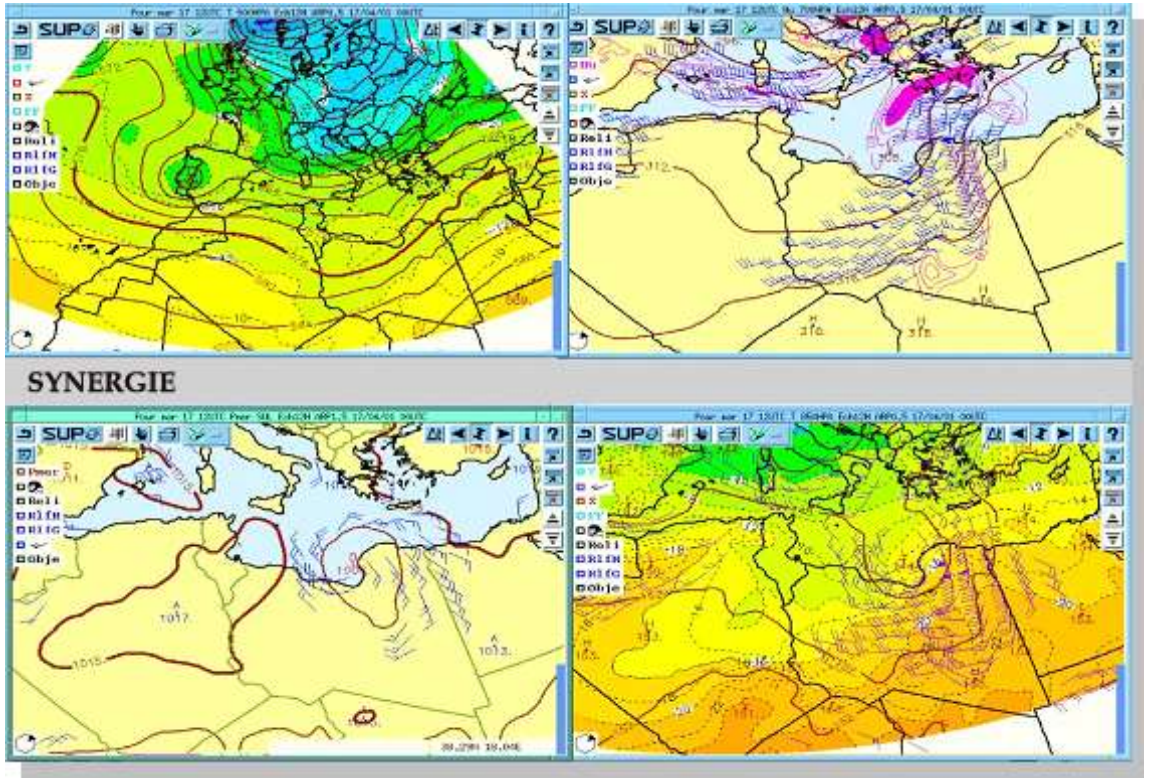
Atmospheric models	Waves models
ALADIN 7.5 km	MFWAM ARPEGE TUNISIE - MEDITERRANEE 10 km
AROME-TUNISIE 2.5 km	
AROME-TUNISIE 1.3 km	
ARPEGE GLOBAL 50 km	
ARPEGE TUNISIE-MEDITERRANEE 10 km	

Visualization

Synergie - MFI

- Continual improvement **since 2003**

- Forecast fields, atmograms, observations, satellite images...



08 Projects

Completed projects

Twinning project with Météo-France : 2016 – 2020

www.meteo.tn

- Review of INM website and creation of mobile application,
- Establishment of the vigilance map,
- Acquisition of a supercomputer (implementation of the new weather model AROME),
- Renew of the surface observation network and data concentration.

Completed projects

Twinning project with Météo-France : 2016 – 2020

Mobile application

Vigilance map

Projects in progress

Nettunit : Tunisia-Italy Cross-border Environment Net

- Develop a fully operational platform with the use of meteorological warnings, warnings on atmospheric pollution and marine pollution,
- Intended for Civil Protection services, local health services and other Italians and Tunisians intervention services.
- Partners :
  - INM, Tunisia
  - Digital Research Centre of Sfax, Tunisia
  - Abderrahman Mami Hospital, Tunisia
  - National Research Council, Italy
  - Intelligence for Environment and Security IES Solutions, Italy
  - Provincial Health Company Of Caltanissetta, Italy

Projects in progress

PIRC : Integrated Disaster Resilience Program

- Strengthening disaster risk management and financing efforts
- Improving the protection of populations and property against disasters and climatic phenomena,
- Funded by the World Bank and the French Development Agency.
- Partners :
  - INM
  - Ministry of Agriculture, Water Resources and Fisheries
  - Ministry of Equipment and Housing
  - Civil Protection Office

THANK YOU
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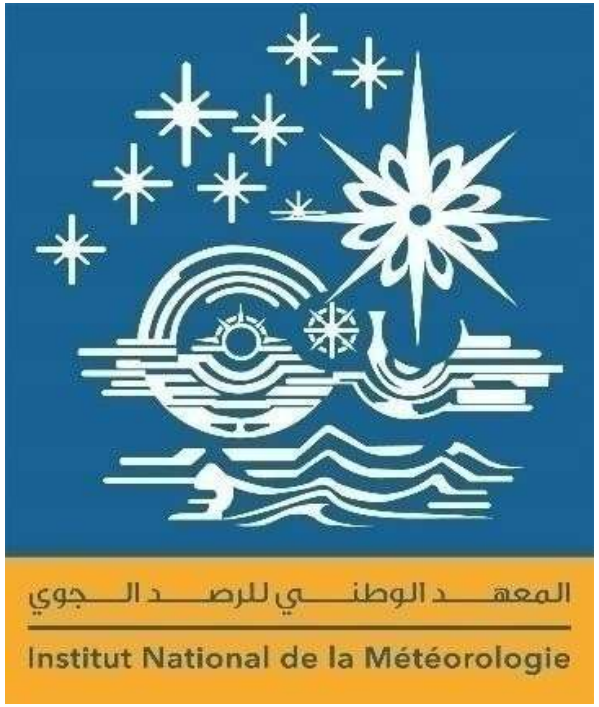
National Institute of Meteorology



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