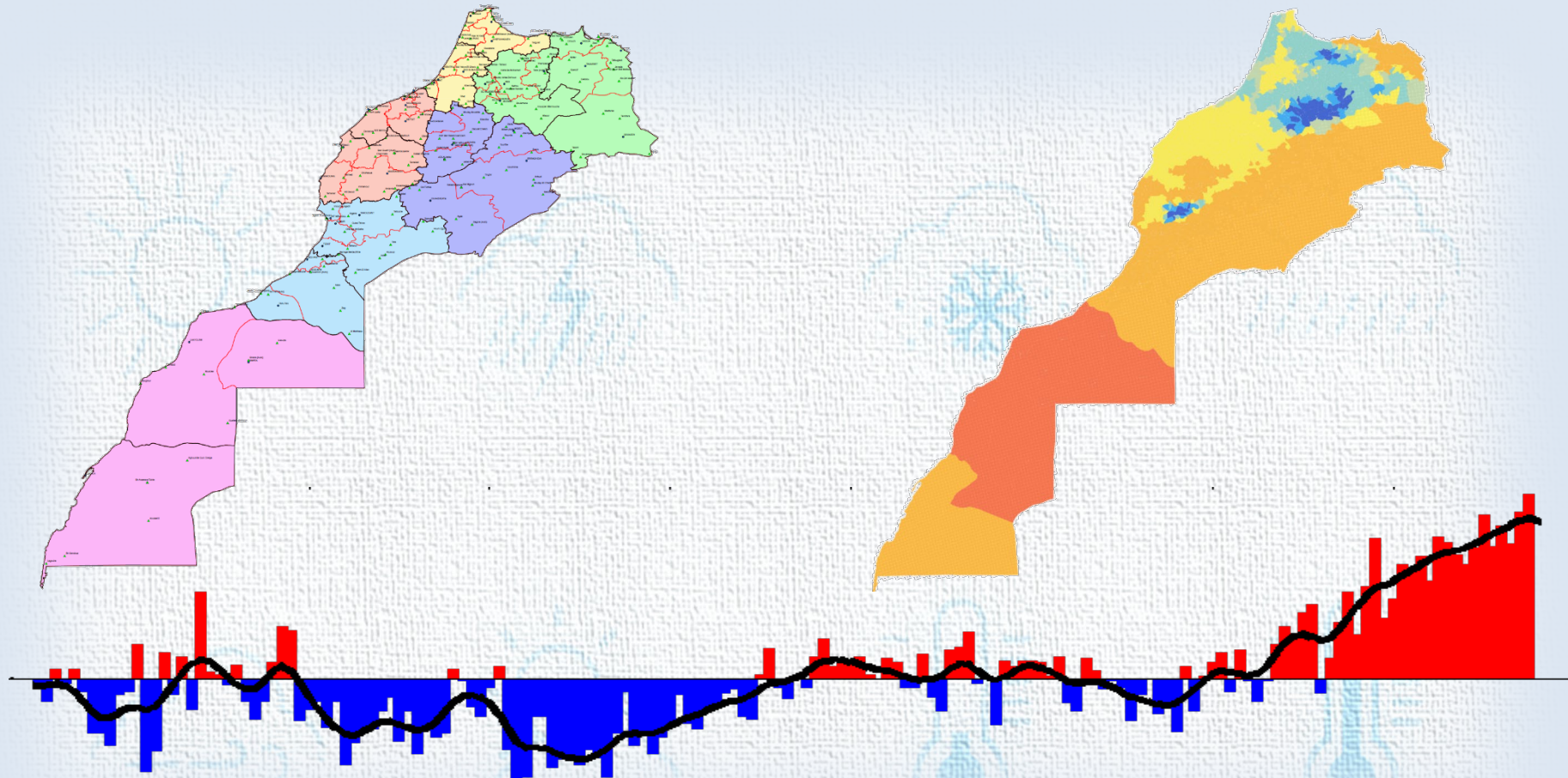


NATIONAL METEOROLOGICAL SERVICE Of MOROCCO CLIMATE MONITORING and ADAPTATION

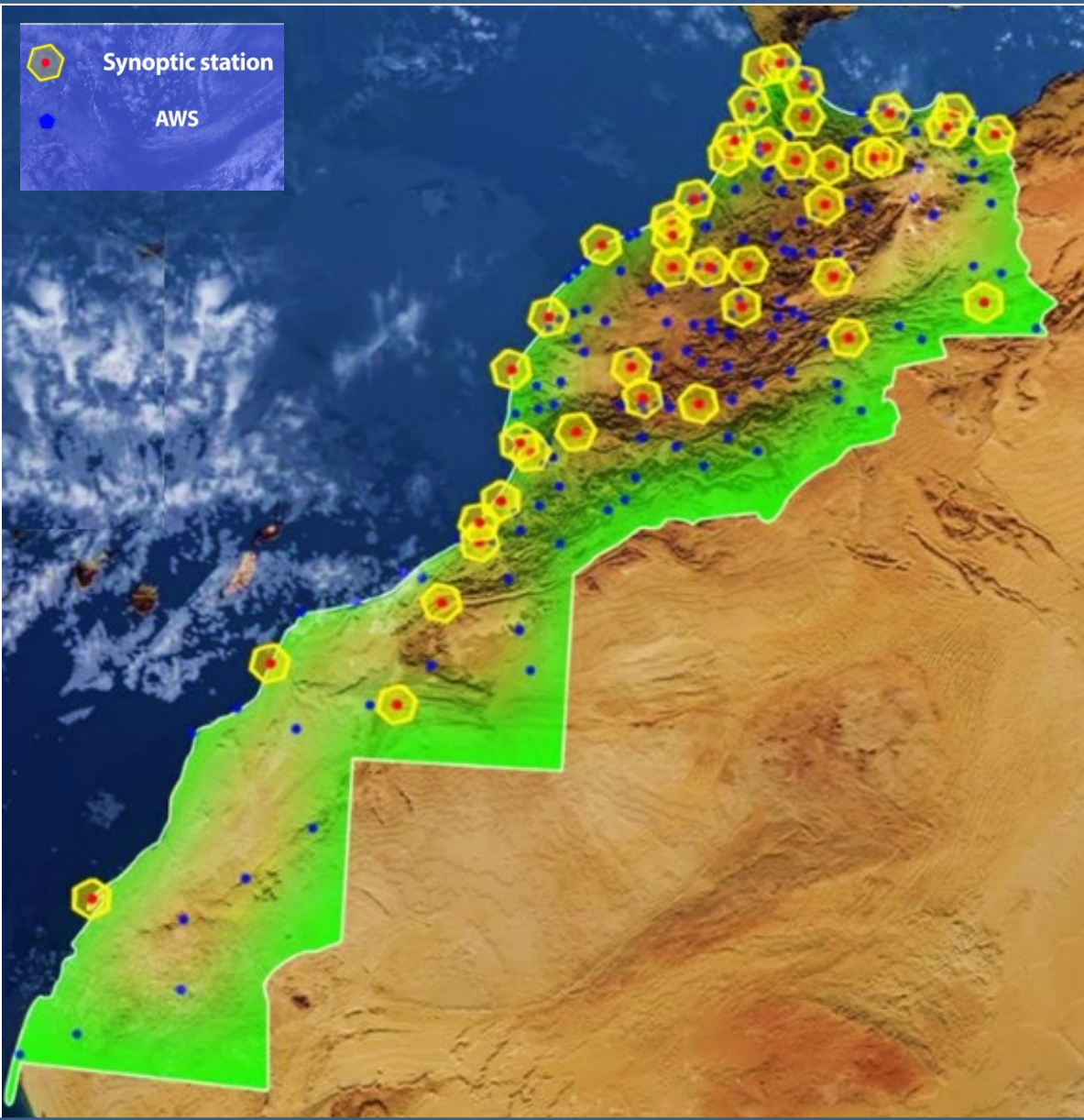


**GCOS Joint Panels Meeting Marrakech
Morocco 18-22 March 2019**

Outline:

- **Observation Network,**
- **Weather Monitoring,**
- **Climate Monitoring,**
- **Climate Change Indices,**

Observation Network: DMN



44 surface weather stations



156 automatic weather stations



3 agro-meteorological stations



5 maritime stations

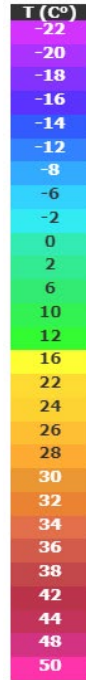


7 radars

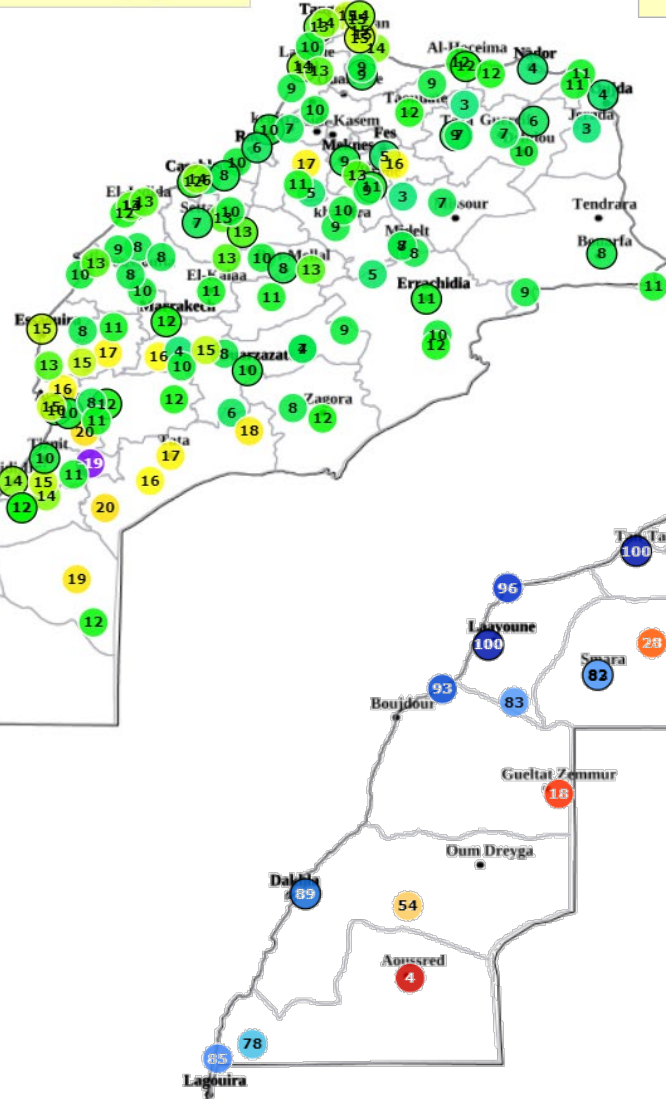


3 satellite reception stations

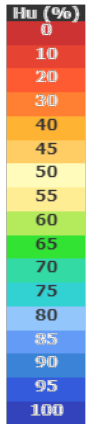
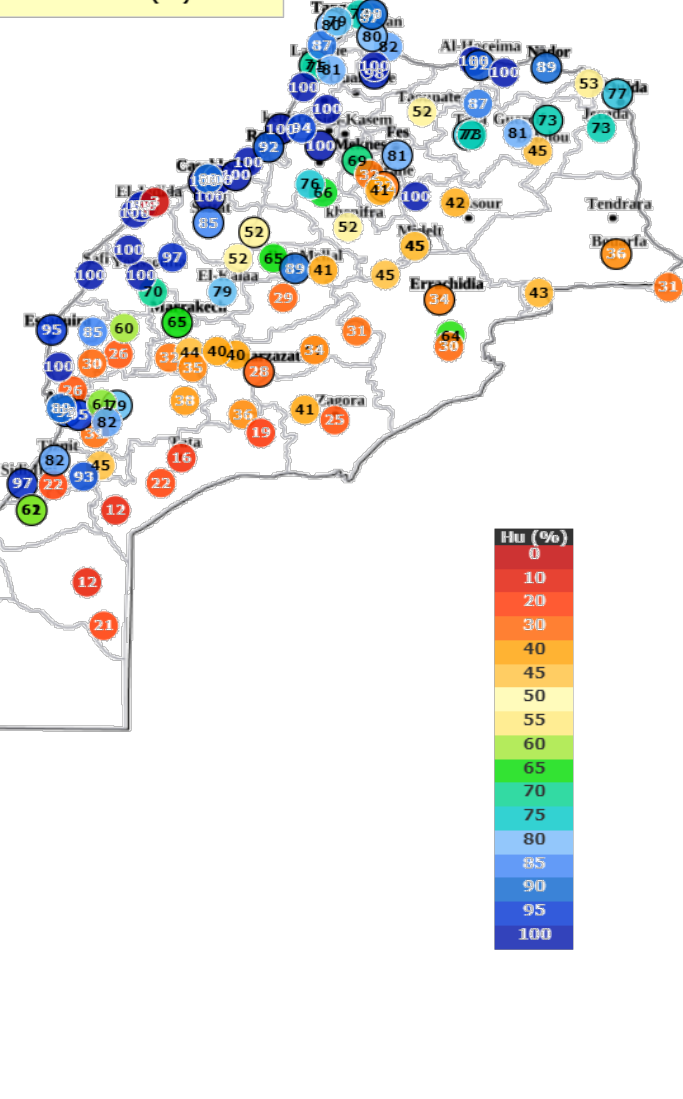
Weather Monitoring Products (real time)



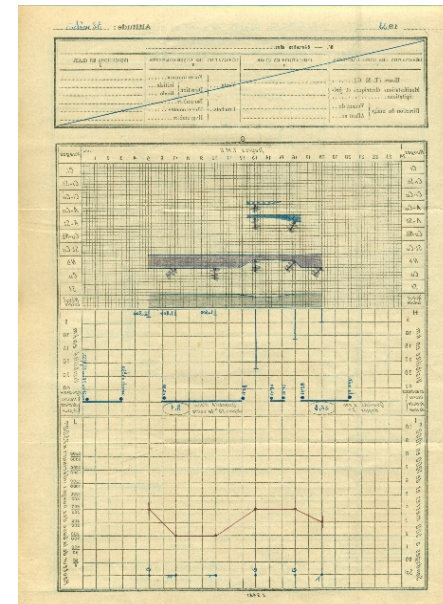
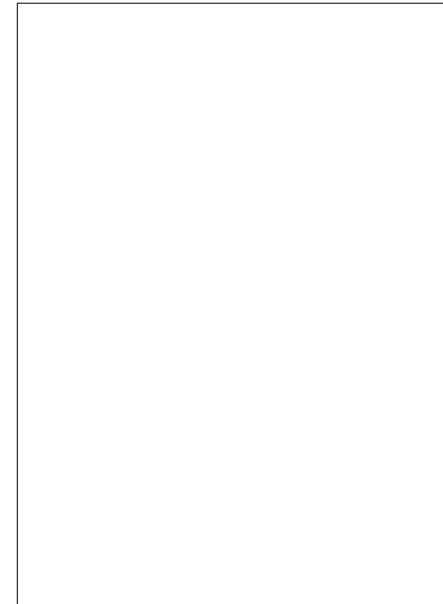
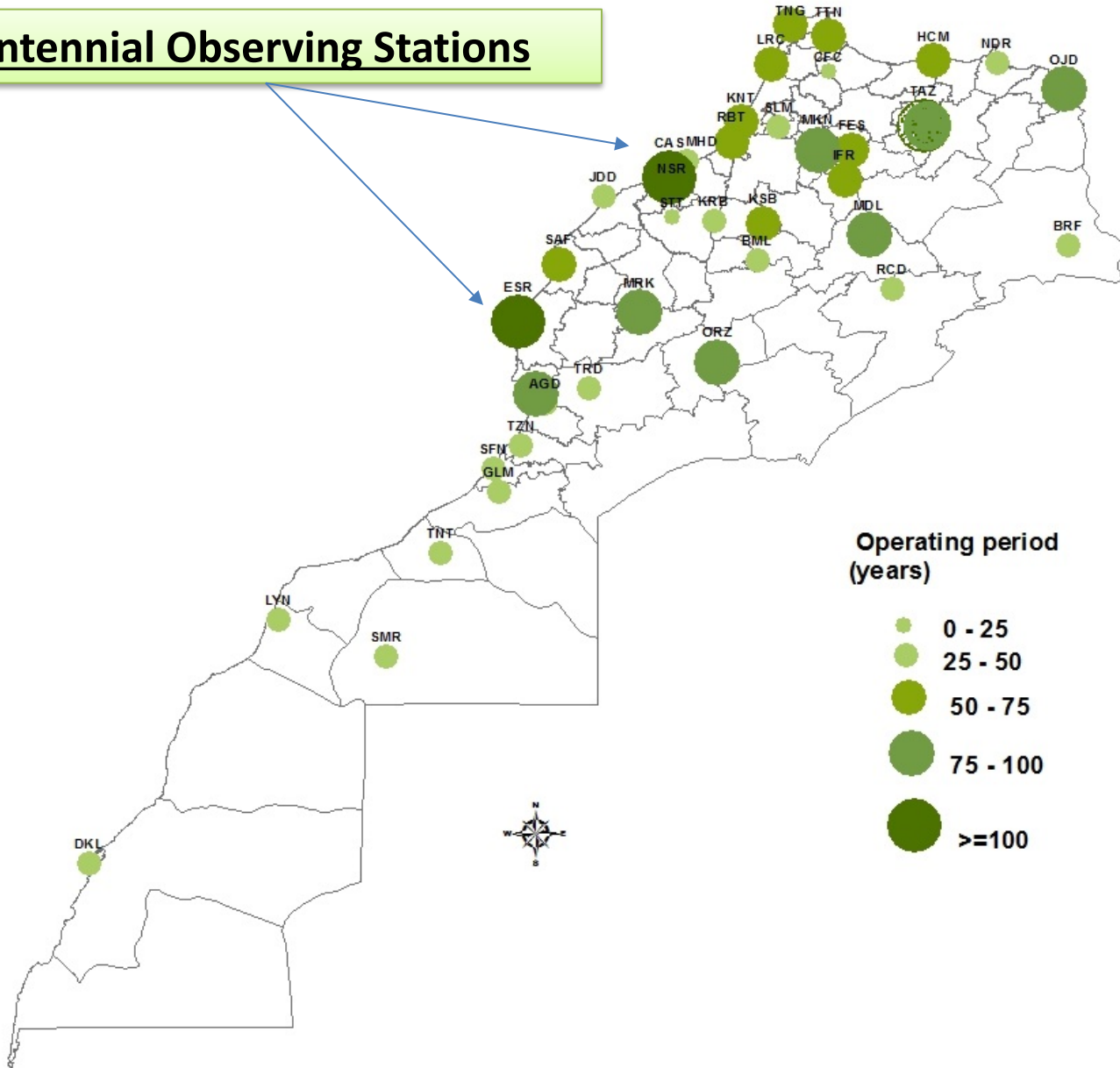
CARTE - OBSERVATION
Du 15 Mars 2019 à 06H00
T-horaire (C°)



CARTE - OBSERVATION
Du 15 Mars 2019 à 06H00
Humidité (%)

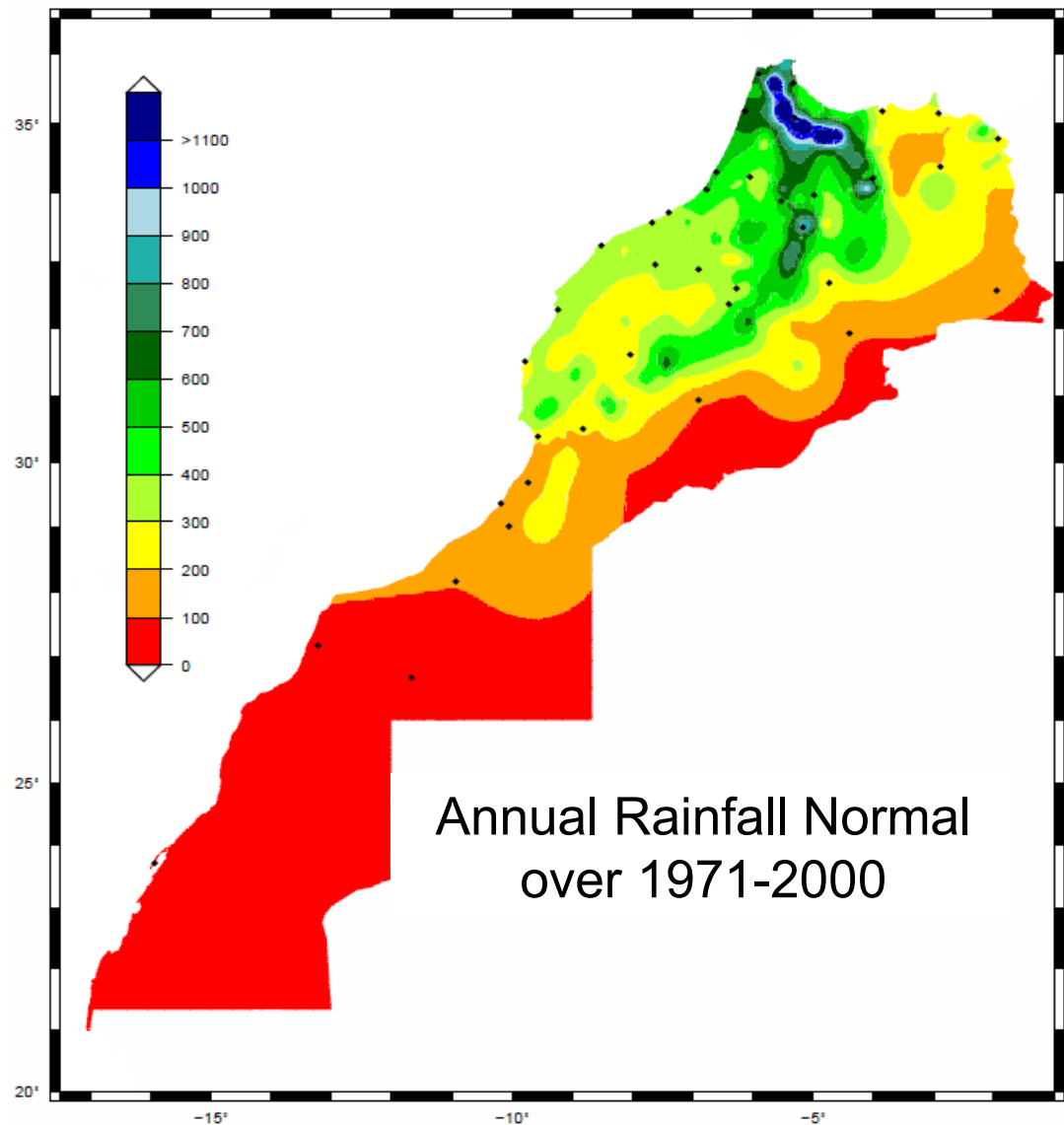


Centennial Observing Stations

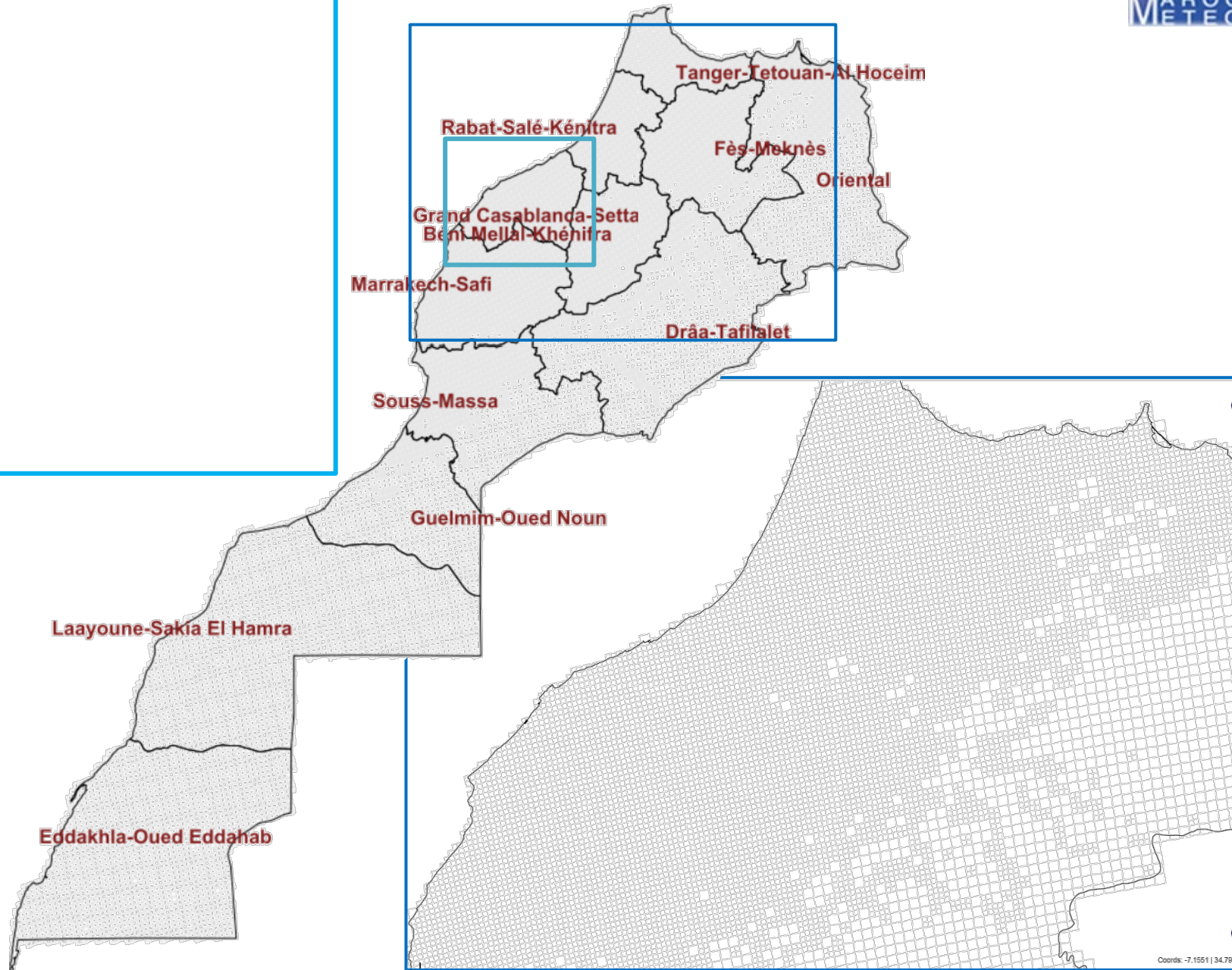


Main Climate Characteristics:

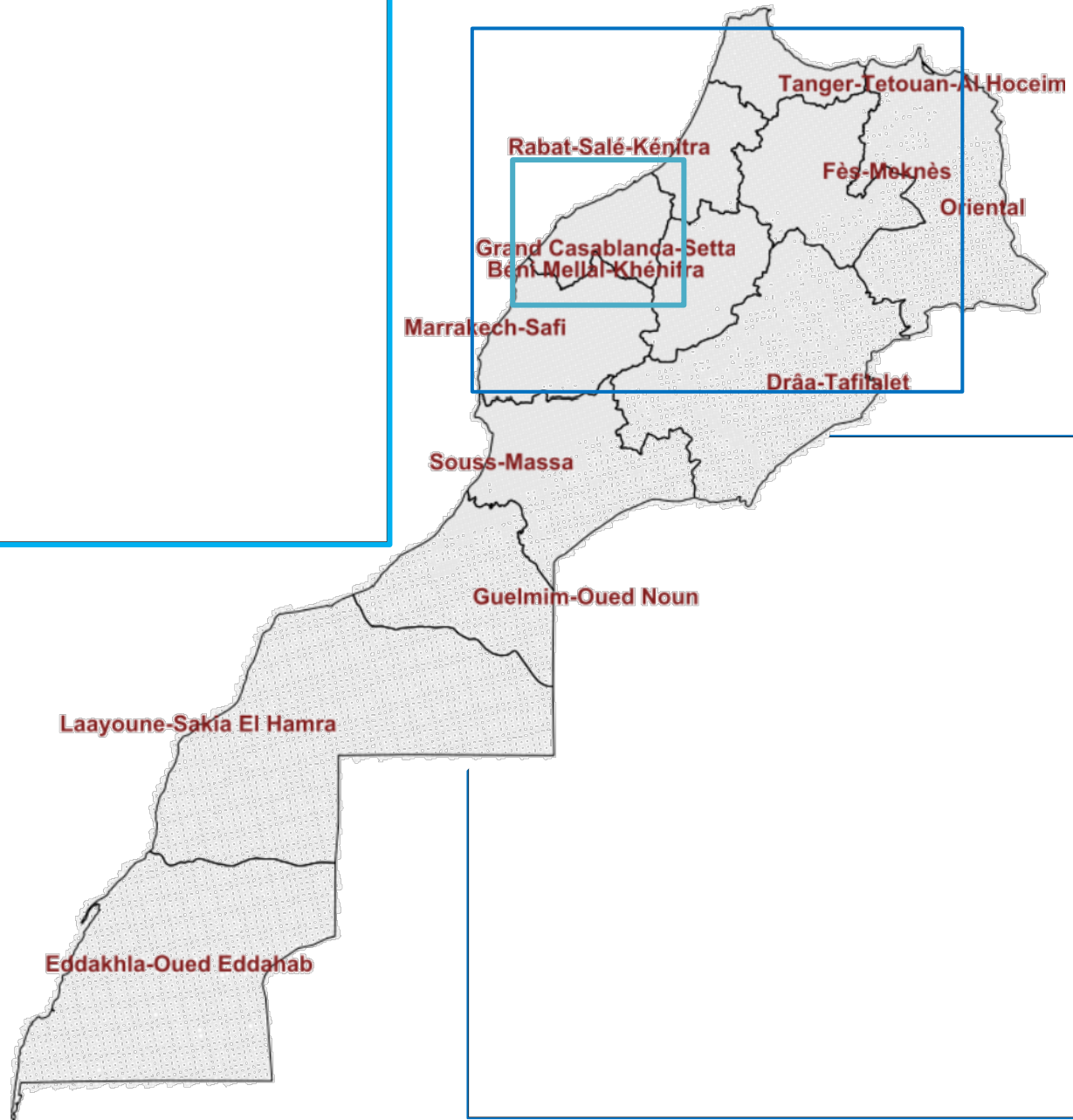
- High spatial variability
- High intra-annual variability



Climate Monitoring



Climate Monitoring





Main parameters:

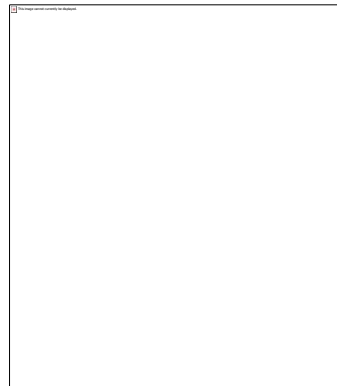
- Mean temperature

Spatial scale:

- Grid
- municipality
- province
- Administrative region
- National

Time scale:

- Daily
- Ten-Day
- Monthly
- Seasonal
- Annual





Main parameters:

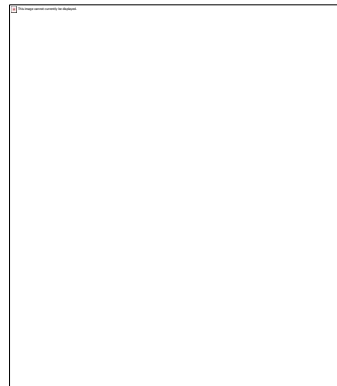
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Main parameters:

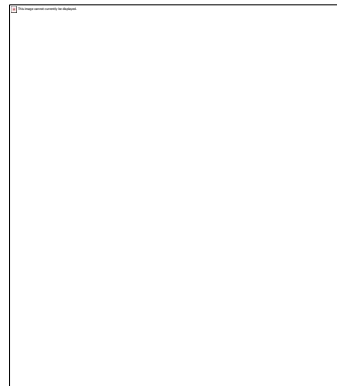
- Mean temperature

Spatial scale:

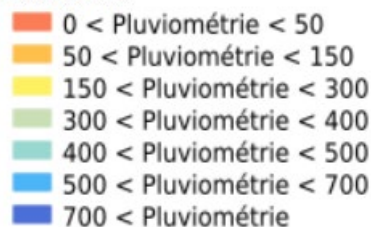
- Grid
- municipality
- province
- Administrative region
- National

Time scale:

- Daily
- Ten-Day
- Monthly
- Seasonal
- Annual



Pluviométrie



Main parameters:

- Mean temperature
- **Rainfall**

Spatial scale:

- Grid
- municipality
- province
- Administrative region
- National

Time scale:

- Daily
- Ten-Day
- Monthly
- Seasonal
- Annual

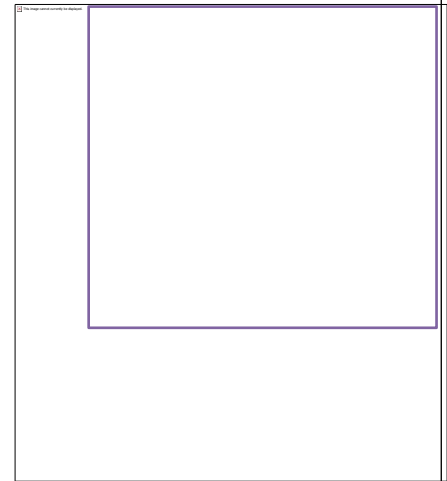
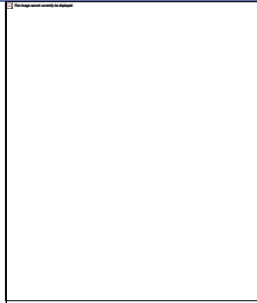


Climate Monitoring



Main parameters:

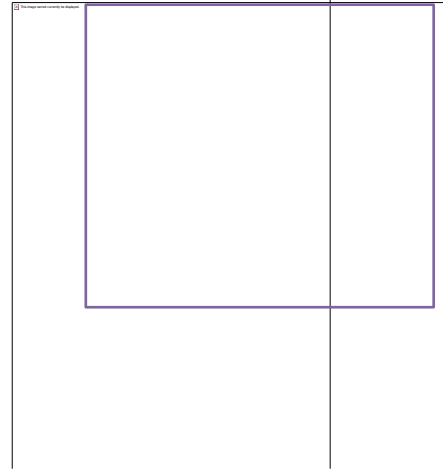
- Mean temperature
- **Rainfall**





Main parameters:

- Mean temperature
- Rainfall
- **Satellite products:**
NDVI



Main parameters:

- Mean temperature
- Rainfall
- Satellite products:
NDVI, Snow cover

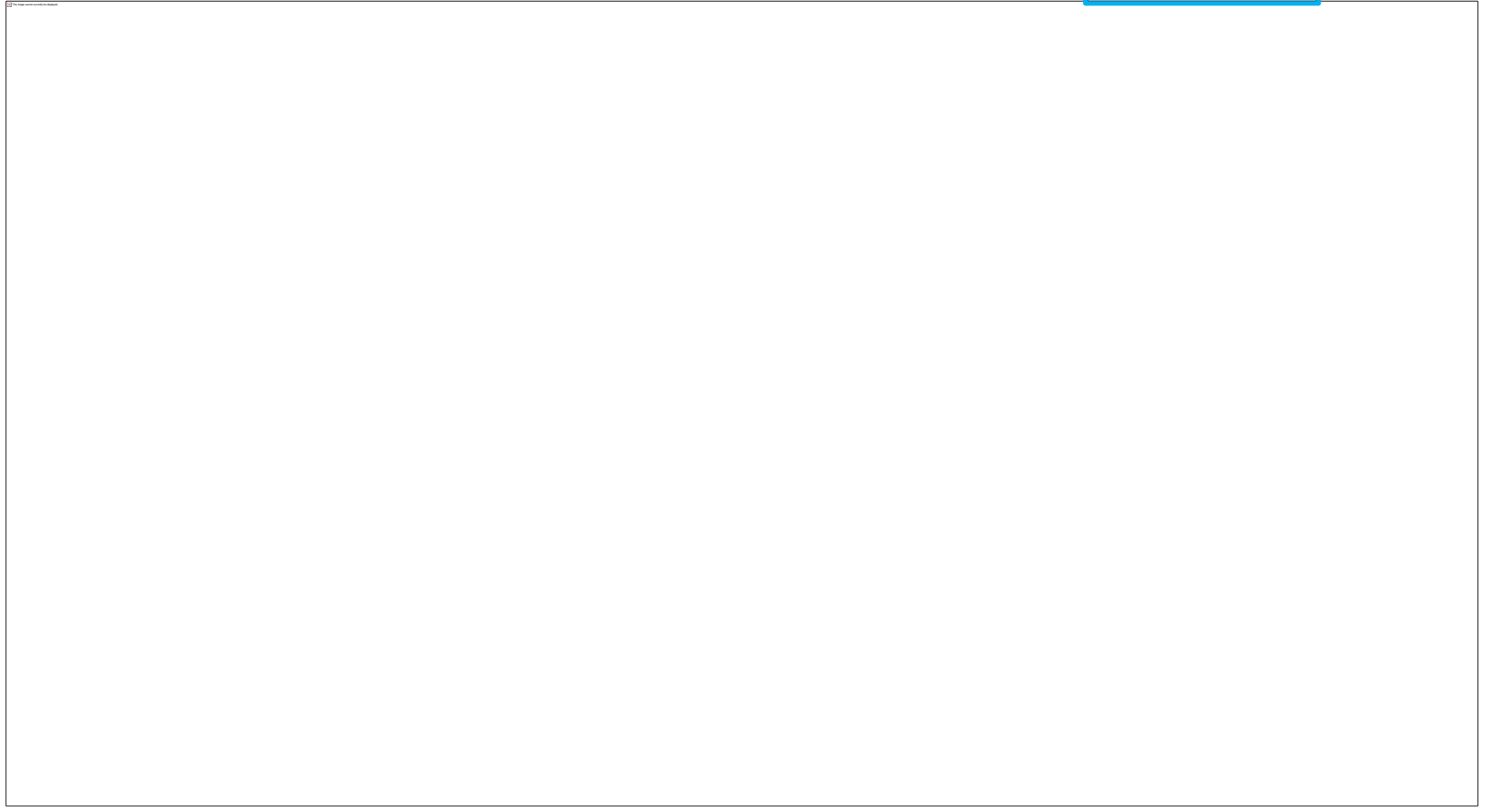
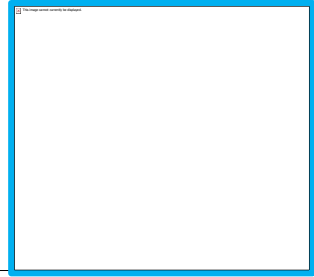


Main parameters:

- Mean temperature
- Rainfall
- Satellite products:
NDVI, Snow cover
- **Drought Index**



Accumulated rainfall since September for Casablanca-Settat region: similarity analysis.

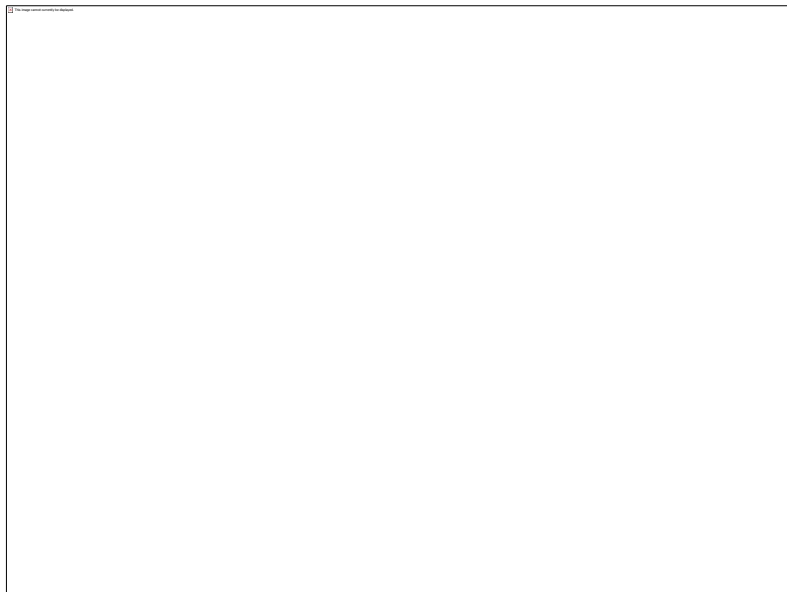


Climate Monitoring (Climate indices)

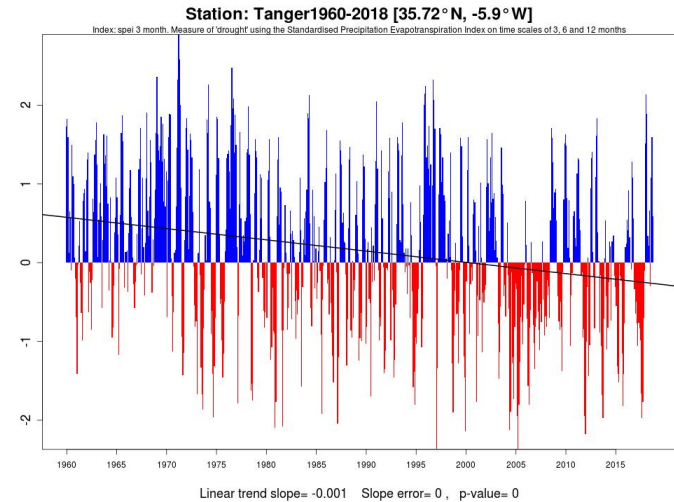


Maroc Météo uses a set of 27 climate indices plus SPI and SPEI indexes representing average and extreme aspects of climate to monitor and quantify climate change in Morocco.

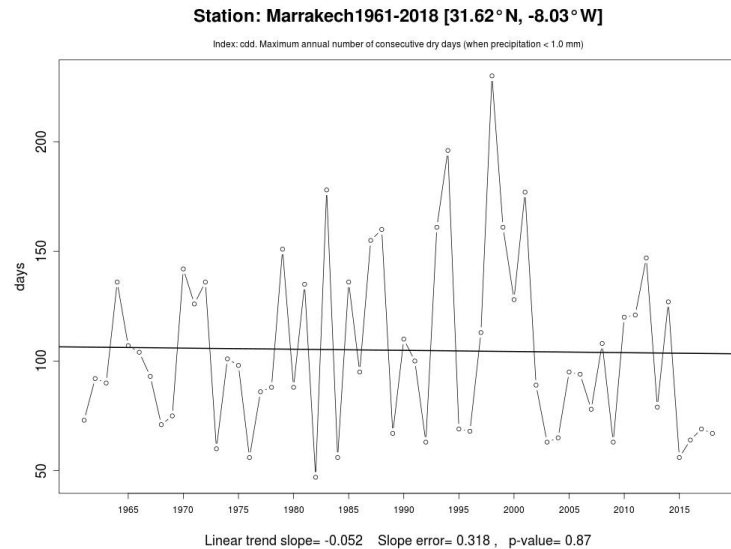
Such indices reflect average extreme precipitation, droughts, average and extreme temperatures, heat and cold waves, ... etc.



Simple precipitation intensity index for Casablanca over 1960-2018 period



SPEI 3 months index for Tanger over 1960-2018 period



Maximum annual of consecutive dry days for Marrakech over 1961-2018 period

THANK YOU FOR YOUR ATTENTION