WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

Current status of operations of North Africa RCOF (PRESANORD)

Khadija KABIDI
Head of Climate Service,
Rabat, Morocco

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World Meteorological Organization
Organisation météorologique mondiale

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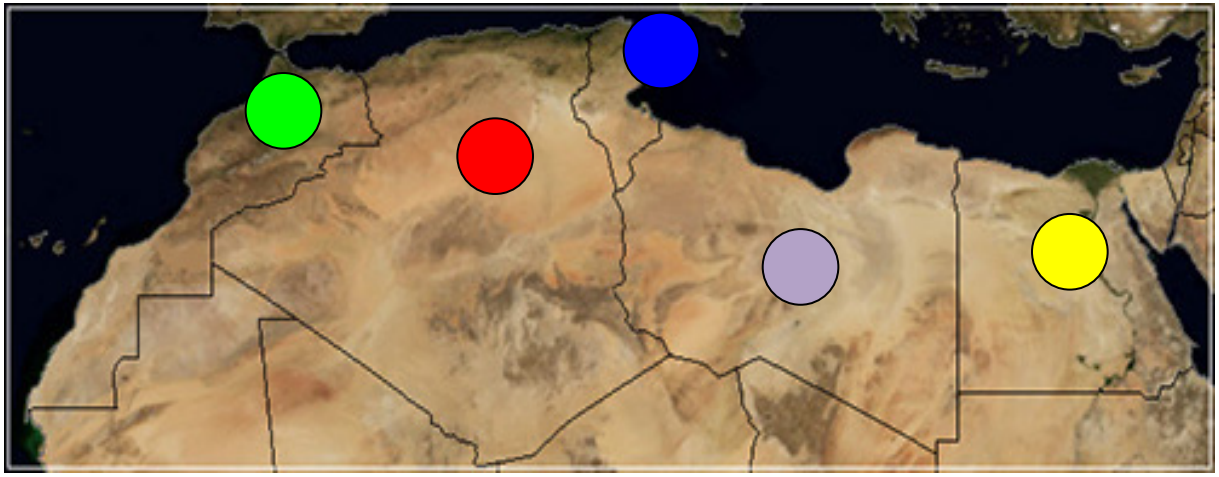
Introduction

North Africa typically covers the Mediterranean area in Africa between the Mediterranean Sea and Sub-Saharan Africa.



Structure:

- National Meteorological Office, ONM; Algeria (red)
- Institut National de la Météorologie, INM; Tunisia (Blue)
- Direction de la Météorologie Nationale, DMN; Morocco green)
- Egyptian Meteorological Authority, EMA; (yellow)
- National Meteorological Centre, NMC ;Libya; (purple)

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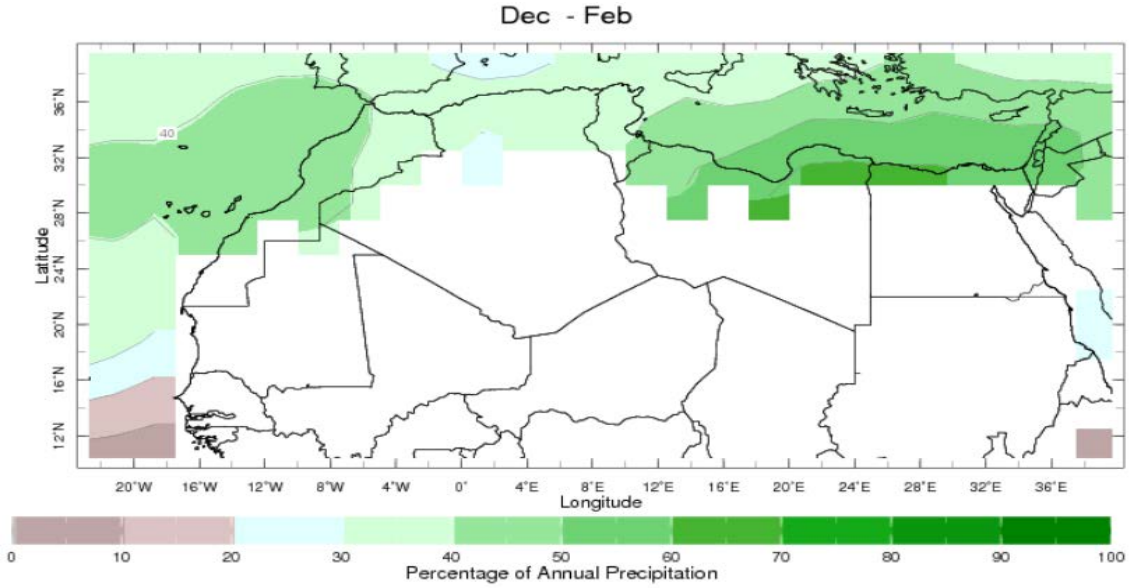
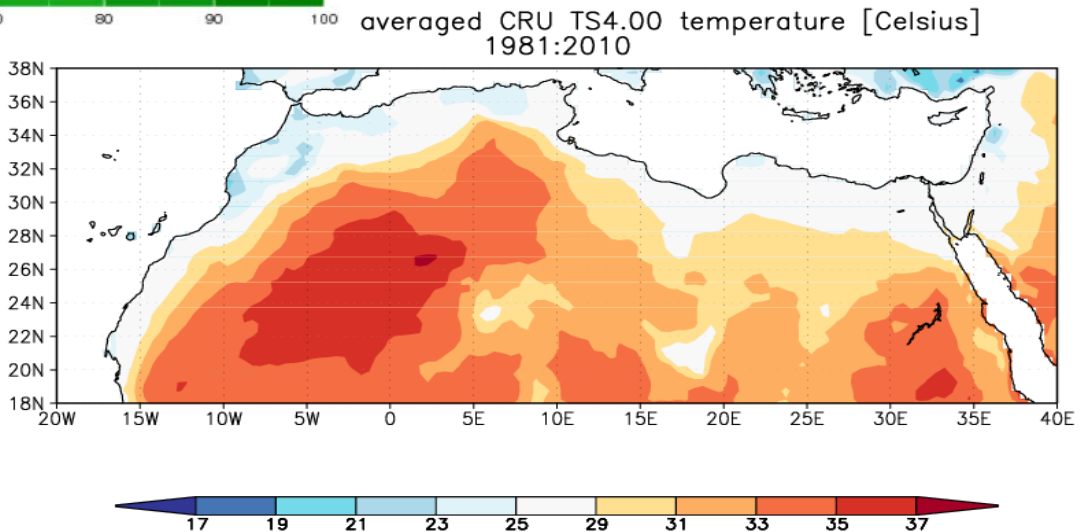
Regional climate features

Frontal excursion through the Atlantic and Europe during wet season (October to May), and **convective clouds due to the subtropical air mass** that converge to the southern during dry season.



Percentage of annual precipitation that occurs during December-January-February in North Africa using the 1981-2010 base period (Source: IRI)



Surface air temperature climatology in Summer season (1981- 2010) in North Africa (Source: CRU TS4.00)

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Potential applications

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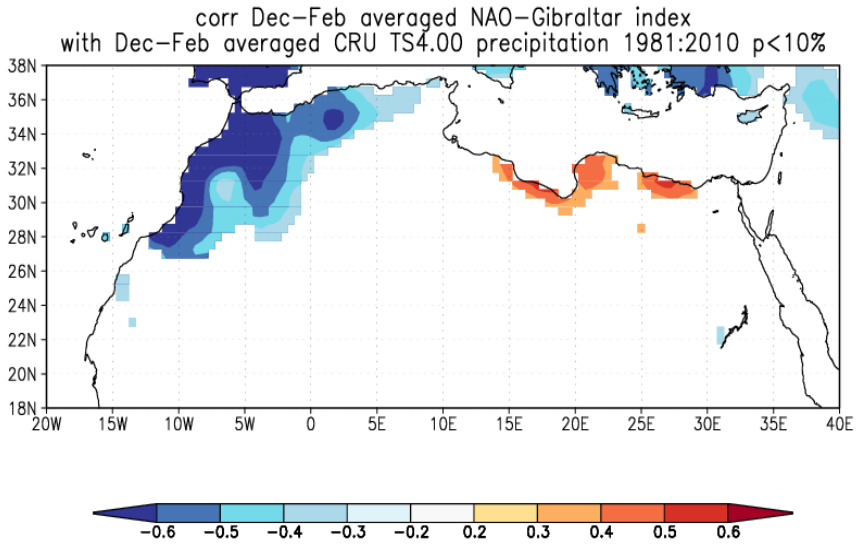
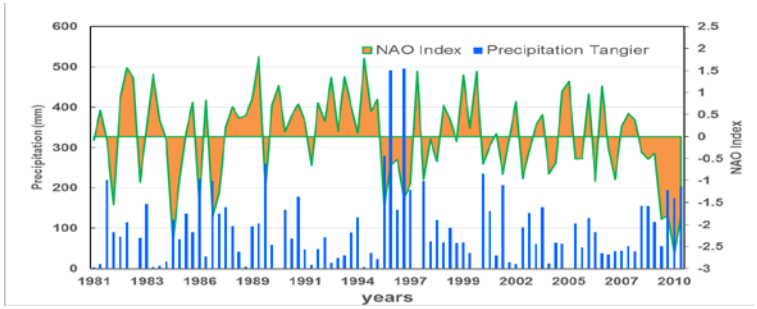
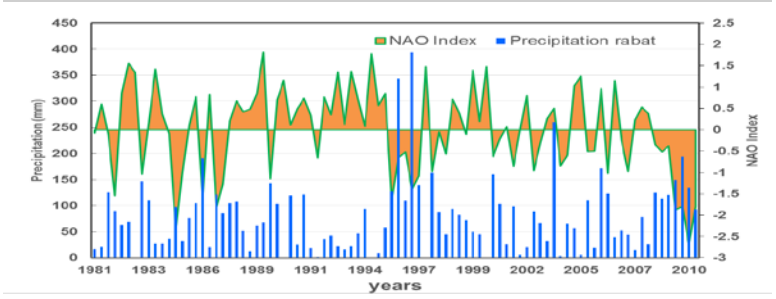
Factors influencing North African seasonal climate

- North Atlantic Oscillation (NAO)
  - The NAO plays an important role in the interannual variability of North African climate.
  - Negative NAO phases leads, for example, to wetter than normal winter in Northwestern Africa.







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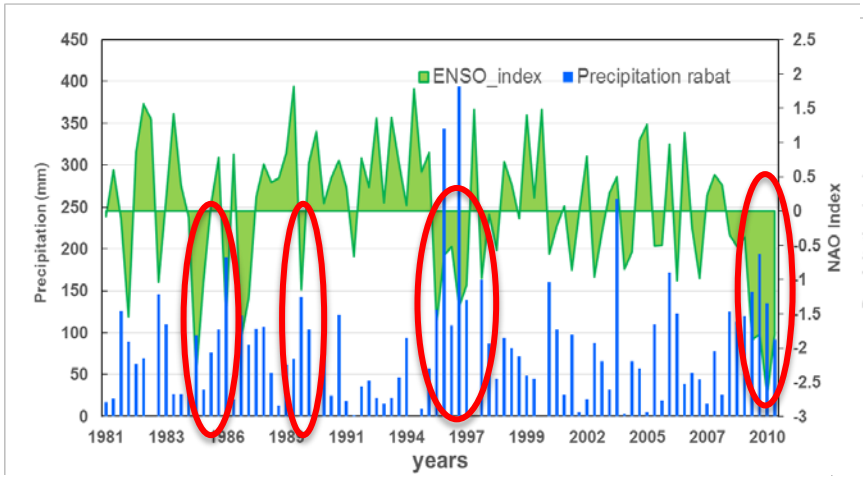
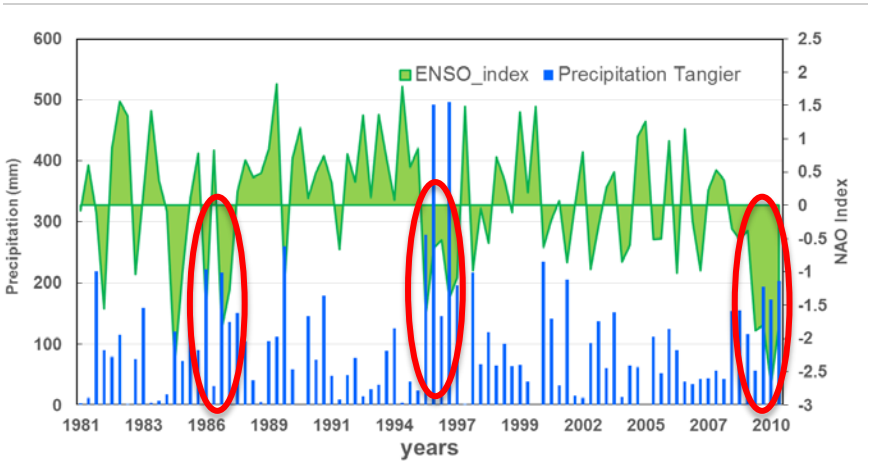
Factors influencing North African seasonal climate

- Evidence for ENSO-related precipitation variability in northern Africa and southern Europe

  - In winter, El Niño Southern Oscillation shifts in the upper troposphere jet over the eastern Mediterranean region with synoptic systems as additional features impacting climate in the Mediterranean area.

  - In summer, Asian and African monsoons, and Mediterranean Sea Surface Temperatures (SSTs) significantly modulate climate in the region.





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Factors influencing North African seasonal climate

- ✓The SSTs of the equatorial Pacific,
- ✓Tropical North Atlantic,
- ✓The Eurasian snow cover, the Scandinavian pattern,
- ✓The Quasi- Biennial Oscillation (QBO),
- ✓Tropical intrusion, troughs, ridges and blockings

PRESANORD: PREvisions climatiques SAisonnières en Afrique du NORD

- First forum was held in January 2012 in Alger and leaded by ACMAD with collaboration of WMO, NMHs and Partners.

- Currently, PRESANORD sessions are being held together with MedCOF, which **operates in support** of two RCOFs : the PRESANORD and SEECOF.

PRESANORD: PREvisions climatiques SAisonnières en Afrique du NORD

Tables summarizing seasonal temperature forecast for August-September-October 2017

Model/multi-model	Morocco	Algeria	Tunisia	Libya	Egypt
ARPEGE-Climat	Atlantic Coast / Elsewhere				
ECMWF	Almos… / Moroc…				
UK Met-Office					
IRI	Almos… / Moroc…				
Statistical Model					
Synthesis	Probab… norma… to above norma… conditio…				

Legend

Below-Normal

Normal

Above-Normal

No special scenario

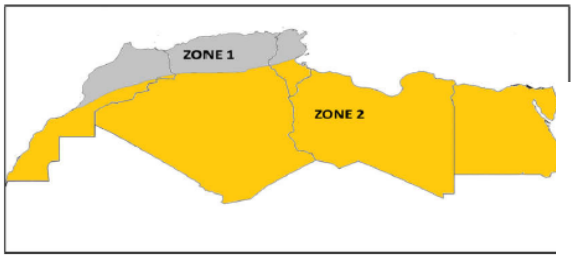
N: North · S: South · W: West · E: East · C: Center

PRESANORD-10

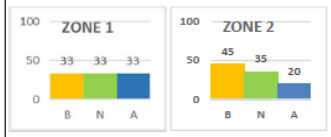
SEASONAL PRECIPITATION FORECAST

VALID FOR DECEMBER-JANUARY-FEBRUARY 2016-2017

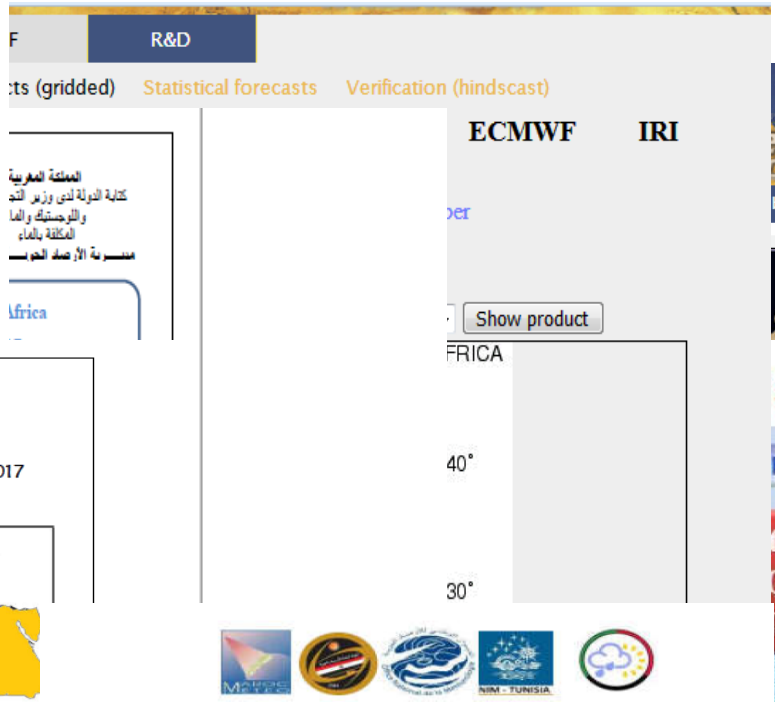
ISSUED ON NOVEMBER 24 2016



LEGEND :



B : BELOW NORMAL N : NEAR NORMAL A : ABOVE NORMAL



PRESANORD-10

CONSENSUAL SEASONAL FORECAST OUTLOOK

OVER NORTH AFRICA

Valid FOR DECEMBER-JANUARY-FEBRUARY DJF 2016/2017

Rome, 24 NOVEMBER 2016

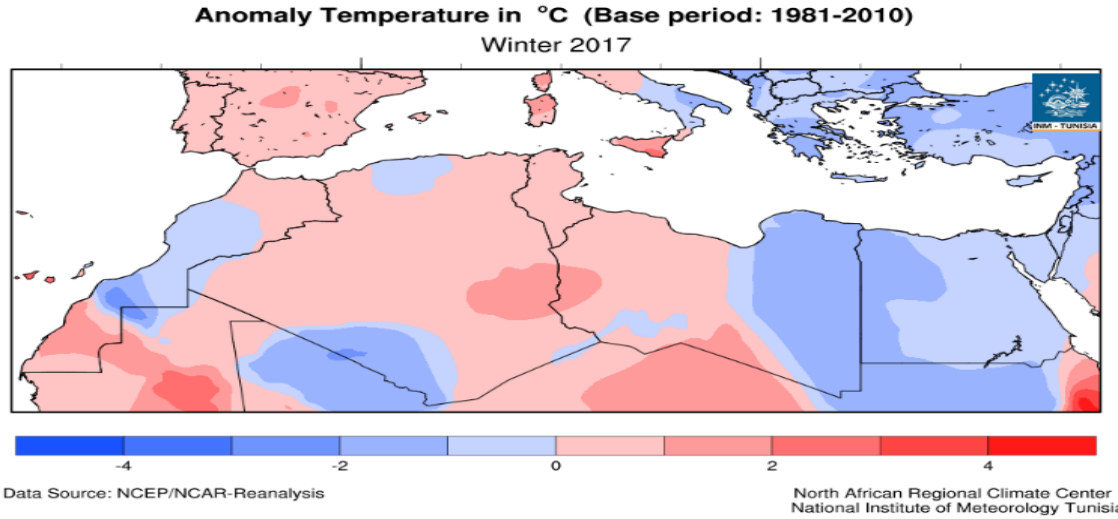
Consensual Seasonal forecast for DJF2016/2017 season over North Africa countries is based on known teleconnections of large and regional patterns as well as on dynamical models .

Evaluation of products

- The evaluation of PRESANORD seasonal forecast products is carried out twice a year for winter (December-January and February) and summer (June-July-August) seasons.

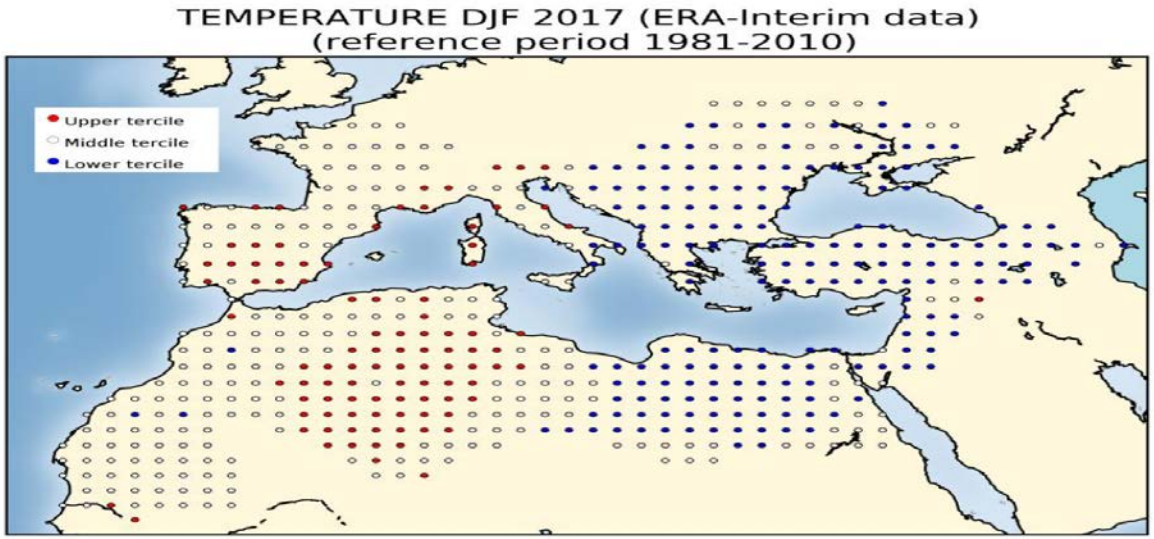
- The evaluation is based on National Climate reports and climate monitoring information from MEDCOF and PRESANORD.

Evaluation of products



Verifying winter 2016/2017 temperature for North Africa region using anomaly of temperatures relative to the period 1981-2010.

Verifying winter 2016/2017 temperature using tercile categories of temperature anomalies relative to the period 1981-2010.



Seasonal forecast verification are done using ARPEGE-Climat model (comparison with reanalyzes : GPCC for precipitation and ERA-interim for temperatures and three types of scores were calculated: ACC, RMSE and MSSS)

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Capacity Development activities

• **Sessions** are held together with the Mediterranean Climate Outlook Forum (MedCOF) which operates as **an overarching entity** in support of two RCOFs in the Mediterranean Region: the PRESANORD and the South East European Climate Outlook Forum (SEECOF).

•A **training workshop** on seasonal climate prediction to strengthen the capacity of national and regional climate scientists; generally preceding the November and including MEDCOF, PRESANORD and SEECOF sessions.

• **Meetings** of regional and international climate experts: **first** to assess the consensus of seasonal climate outlook for the previous season; **second** to develop a consensus for the regional climate outlook.

User Involvement

- **User ‘s session:** climate scientists and representatives of user in different sectors discuss on the potential applications of RCOF products: representatives of research centers and academics, and representatives of institutions using climate information for diverse sectors such as agriculture and food security, water resources, energy, health, tourism, natural ecosystem and disaster management.

- **At national level:_** monthly seasonal forecasts bulletin for the three upcoming months is produced and disseminated to governmental authorities, public services for various sectors (water, energy, agriculture, tourism).

Success stories based on user feedback

- Morocco: Works are undertaken in order to evaluate the use of seasonal forecast information to strengthen the resilience of Agriculture; collaboration between DMN (Direction de la Météorologie Nationale) and INRA (Institut National de la Recherche Agronomique) is established.

SWOT ANALYSIS

Strengths

- Most of North African countries have their economies dependent of climatic factors, thus have similar needs of seasonal climatic forecasts and are members of international organisms and collaborate within weather and climate forecasts (eg. Aladin, ECMWF, etc.).

- RAI North African RCC network is established and operational, and each country participate in the network and contribute or lead to the performance of RCC which deliver several products including seasonal forecasts.

Weaknesses

- Seasonal prediction still a challenge for dynamic and statistical Models for regional and local scales and models skill verification tools still not so robust in the region.

- Impact studies and the monitoring of the product delivered to end users still rare because of the nature coordination with seasonal forecast users and with governments.

SWOT ANALYSIS

Opportunities

- Global and regional concern about climate change is an opportunity to demand more funding from governments to improve capacities.
- Organization of workshops or forums gathering climate experts and politicians is an opportunity to come closer from decision makers and explain the benefit of seasonal forecasts.

Threats

- Weather and climate station network density and its maintenance are not sufficient to better understanding historical climate variability needed to better forecast climate, and some data sharing are restricted by rules and legislations.
- Private company start to deliver weather and climate products and competing NMCS.

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Sustainability of RCOF

- PRESANORD was at the beginning leaded by ACMAD. The North Africa RCC-Network has been officially designated by CBS at its 16 session in 2016. Since then, it ensures the coordination along with the MedCof for the organization of PRESANORD.

- All the five North African countries participate to PRESANORD and express their needs to have better forecast for the winter season. Each country has a focal point and functions but still there is a need to enhance more the collaboration and contribution.

- PRESANORD is organized at least once a year, thanks to the contribution of Agencia Estatal de Meteorología (Aemet-Spain).

- At the end of the rainy season, web meeting is a good solution to assess the seasonal forecasts of PRESANORD.

Way forward

- Conduct more Scientific research on ocean-land-atmosphere modeling in order to improve regional climate model forecast over the region,
- New predictors for statistical forecasting tools,
- Improve NAO forecast,
- Searching a better understanding relationship between NAO and ENSO to improve seasonal prediction in North Africa region.
- Demonstrate the usefulness , for different socioeconomics activities ,of the seasonal forecast at long term through practical project,
- Regular monthly updates to the forecast are strongly recommended in order to include Sub-seasonal variations and local factors that may shape local variability at regional level,
- An annual synthesis report which will be designated to WMO describing all activities and functions realized by RCOFS Members in accordance with their commitment.

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Thank you
Merci

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