



4TH TRAINING COURSE ON WMO SDS-WAS PRODUCTS

THE GAMBIA'S PRESENTATION

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Outline of Presentation

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3. Organizational Chart
4. Network of MET. Observation Stations within NMHS
5. Data collection, transmission and management
6. Forecasting Tool and Products
7. DustStorm Overview
8. Data application status
9. Key achievements & challenges
10. Future plans
11. Conclusion



1. INTRODUCTION

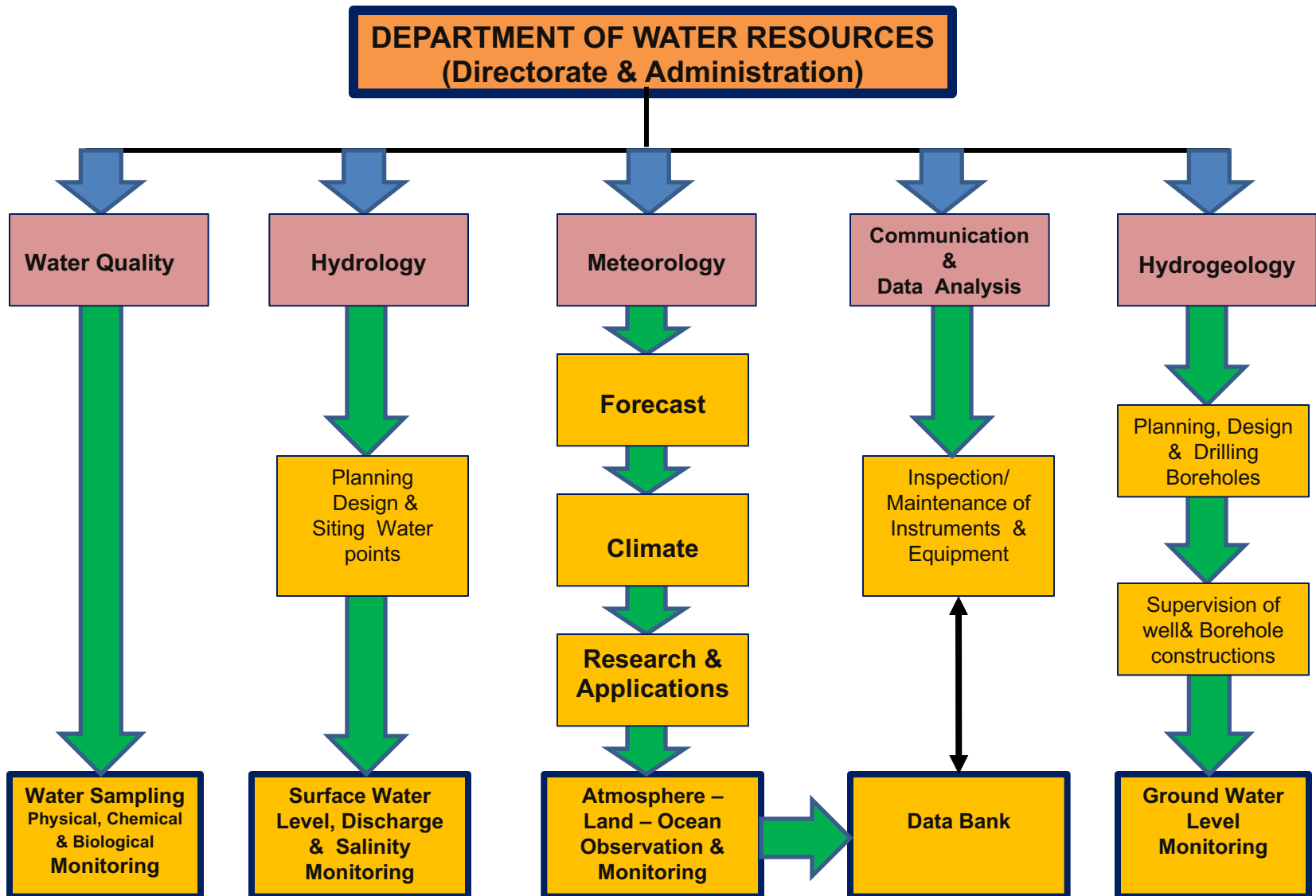
- The Gambia is located on the western edge of West Africa within the geographical coordinates of 13 - 14°N and 14 - 17°W and measures about 11,300km²
- The country's population is estimated at about Two (2) million inhabitants
- The Climate of the Gambia is tropical and characterized by the alternation of two seasons. The hot and wet (rainy) season from June to October and the dry and dusty season from Dec to April. "May and November being transition periods"
- Rainfall pattern is unimodal with an annual average of approximately 850mm
- The economy is driven mainly by Agriculture, Tourism, Fishing and Taxes levied on goods and services.



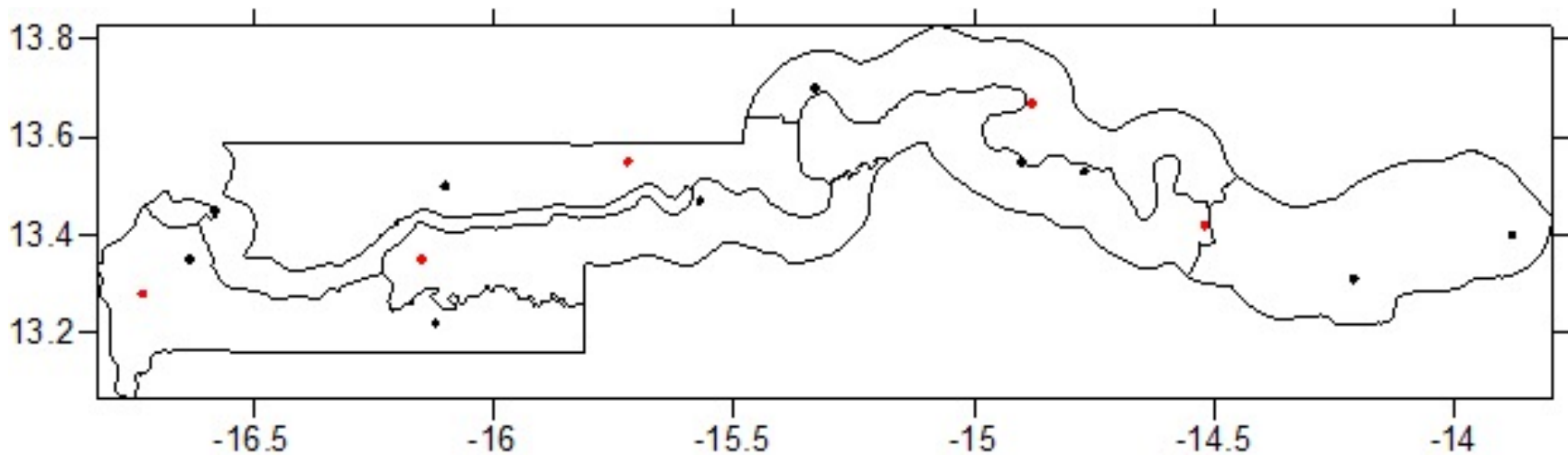
2. BASIC INFORMATION

- ❖ The National Meteorological and Hydrological Service (NMHS) is part of the Department of Water Resources (DWR) which is under the Ministry of Environment, Climate Change, Water Resources and Parks & Wildlife
- ❖ The NMS commences data collection since Mid-1940's under the Ministry of Works and Communications. Hydro-Meteorological services was establish in 1974 and in 1979 the Water Resources Act was enacted, transforming the Hydro-Meteorological services to the DWR
- ❖ The NMHS rely on a network of weather, climate and freshwater observation and monitoring stations to collect, analysed, transmit and store data and information
- ❖ Data and information obtained from the NMHS Network of Stations are crucial in the production of various Weather forecast products, Climate Change monitoring including Early Warning bulletins for Saving lives and the protection of properties including the enhancement of wellbeing
- ❖ The Aviation industry is the Major user of the Meteorological data and information.

3. ORGANIZATIONAL CHART



4. NETWORK OF MET. OBSERVATION & MONITORING STATIONS



- Met. Synoptic Stations operational
- Met. Synoptic Stations closed



5. DATA COLLECTION, TRANSMISSION AND MANAGEMENT

- ❖ Synoptic stations transmit their data to the National collection centre located at the Central Forecast Office using GSM Cell phones
- ❖ The National collection centre collate all available SYNOP data and retransmit the SYNOP report via GTS to the Regional Telecommunication Hub (RTH) Dakar – ASECNA for onwards transmission to Toulouse – Meteo France where it is eventually disseminated globally to National Meteorological and Research Centers
- ❖ Data is managed by both the Climate, Communication and Data Analysis Units and stored using the following formats and software; Excel and CLICOM.

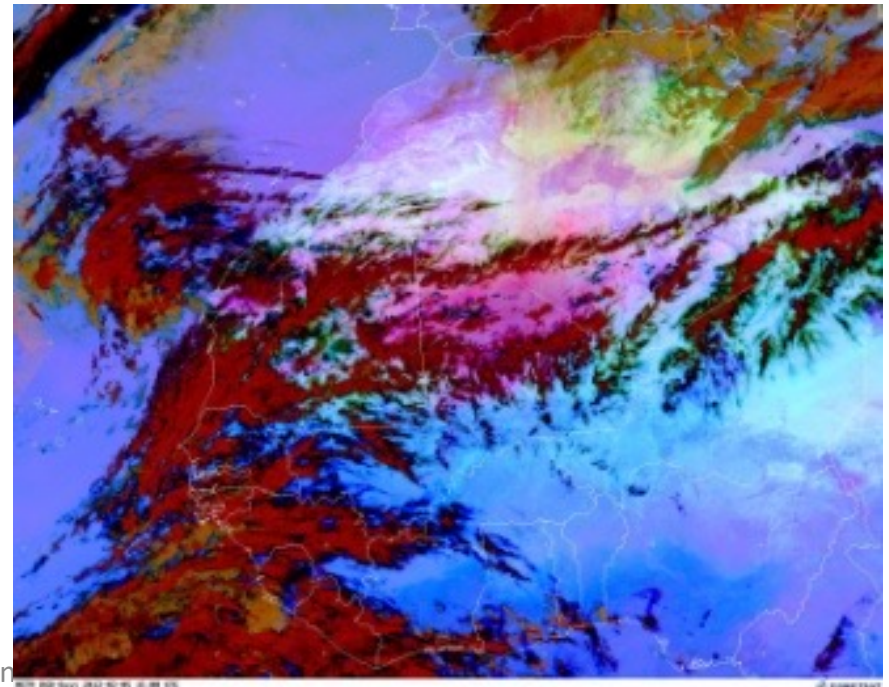
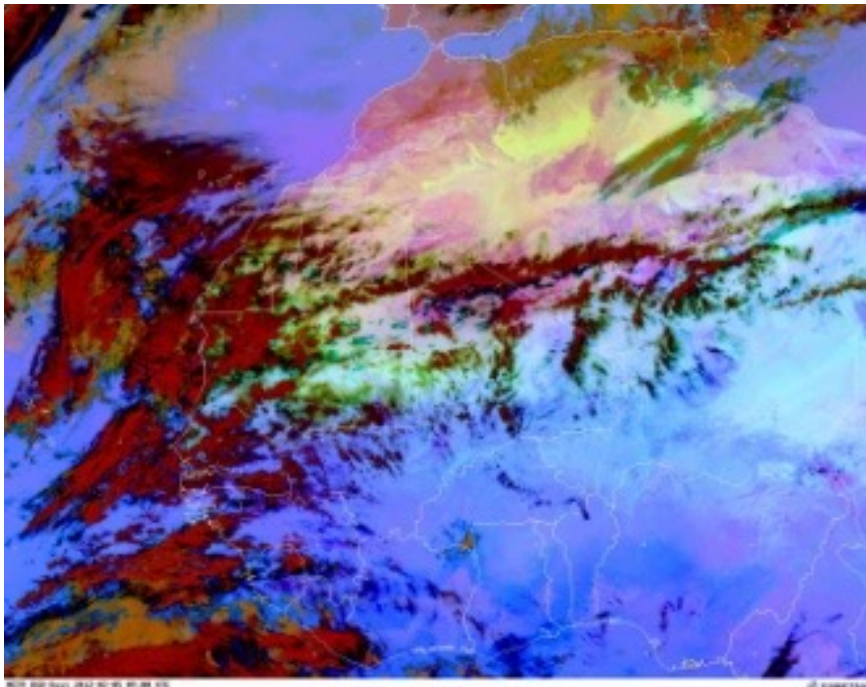


6. FORECASTING TOOLS & PRODUCTS

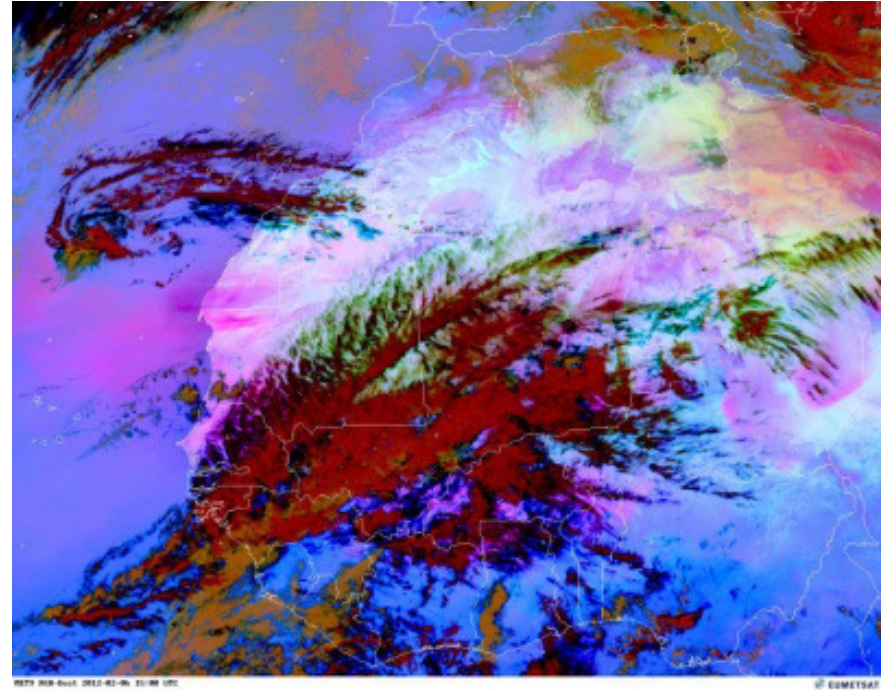
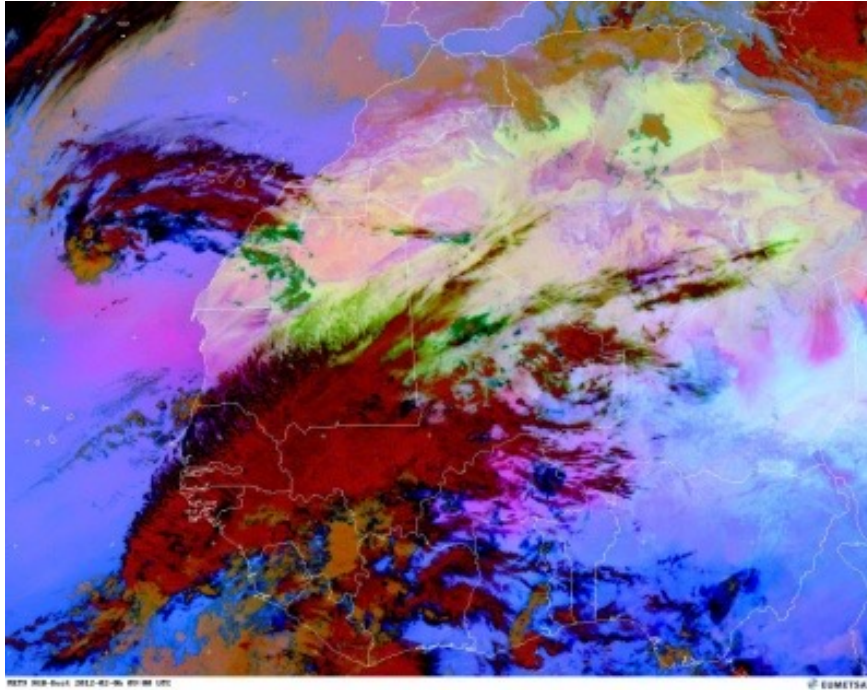
- ❖ EUMETSAT Satellite imagery
- ❖ ECMWF
- ❖ UK-METOFFICE
- ❖ METEO FRANCE
- ❖ **AEMET**
- ❖ NOAA/ NWS/ NCEP
- ❖ FNMOC / COAMPS
- ❖ ACMAD

7. DUSTSTORM OVERVIEW

- The most recent Severe Duststorm experienced over The Gambia occurred from 5th to 7th February, 2012. The first I could recall as a professional was on 02nd May 1993. These phenomena engulf the entire western Sahel region and adjacent Sea (Tropical Eastern Atlantic Ocean).
- Horizontal and vertical visibilities were seriously reduced to less than 100meters which led to Flight delays, diversions and cancellation; land transportation was temporally halted and there were reported cases of missing artisan fishing vessels
- Impacts realised were interruptions of Transportation services (Aviation, Land & Maritime operations) including commercial/ economic activities and the aggravation of health hazards.



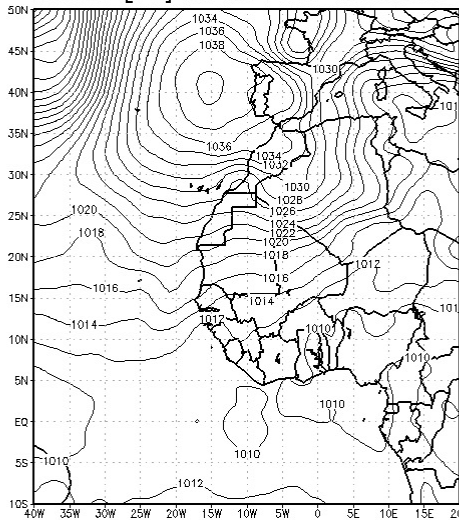
RECEPTION OF DATA FROM MSG/PUMA-3 EUMETSAT RGB-IMAGERY



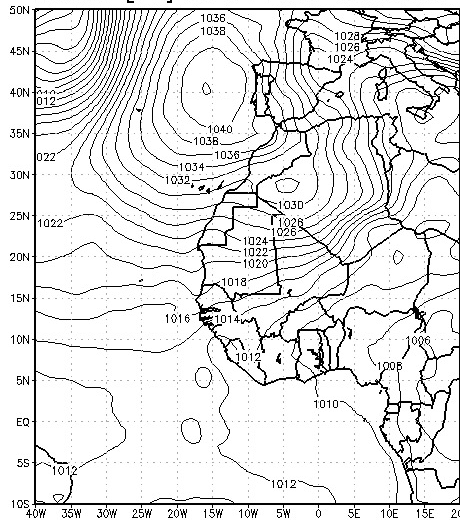
From 5th February, 2012 at approximately 0600UTC the RGB imagery clearly indicates the evolution of duststorm over the Ahaggar (Hoggar / Tassili) plateau which eventually is advected downwind as depicted by the wind plots. This extreme weather phenomenon emanated as a result of tight pressure gradients “strong cold air from Europe” being generated as a result of a surface depression centred over the Mediterranean Sea with its associated mid-latitude trough extended onto the Magreb in conjunction with a ridge from an intense Azores high pressure cell of 1040hPa centred off the coast of Portugal.

Scenarios for the evolution and or emission of sand/ duststorm

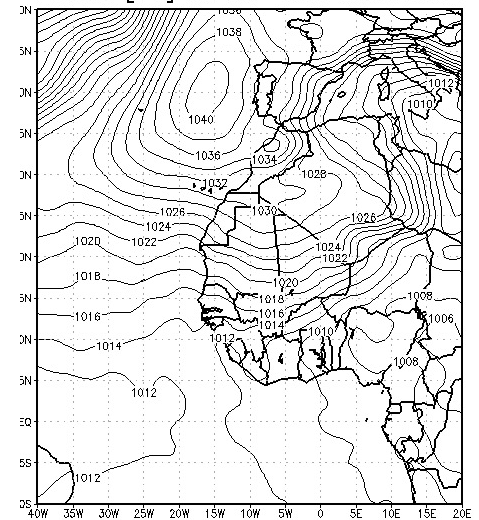
PRMSL [Pa] at 06Z Sun 05feb2012



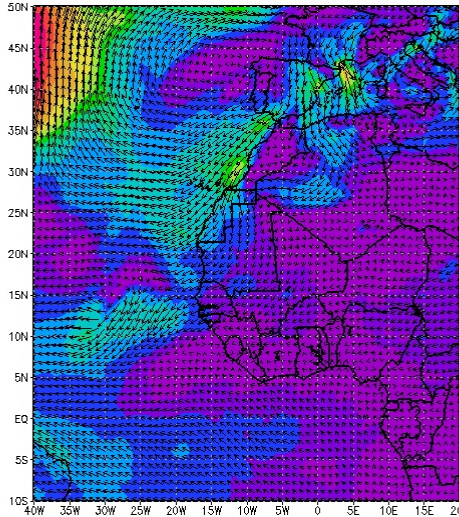
PRMSL [Pa] at 12Z Sun 05feb2012



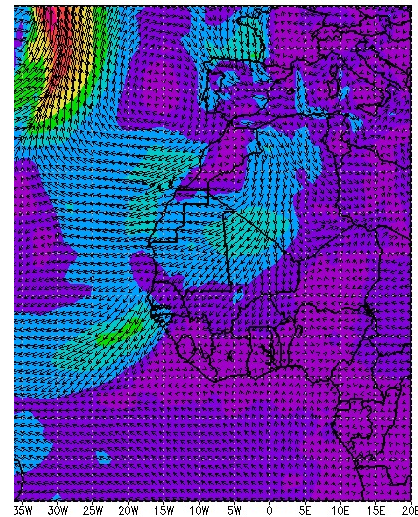
PRMSL [Pa] at 00Z Mon 06feb2012



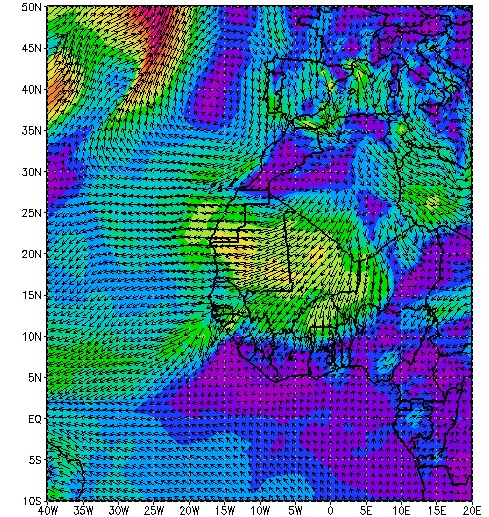
winds (knots) [] at 12Z Sat 04feb2012



s (knots) [] at 12Z Sun 05feb2012

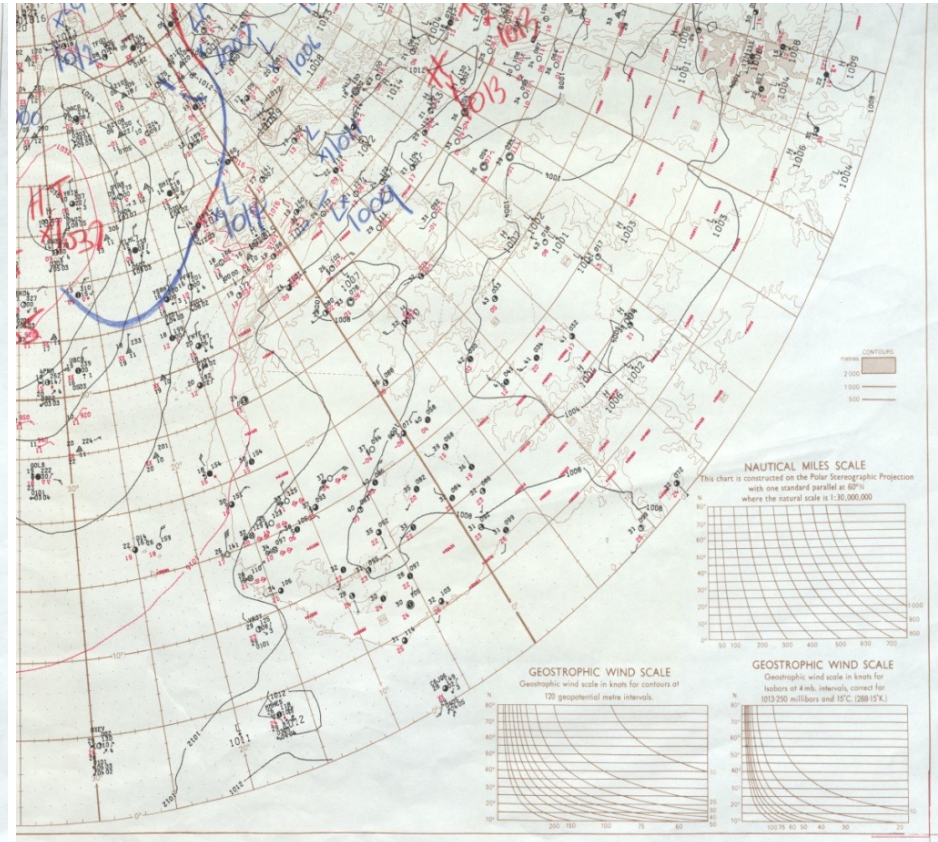
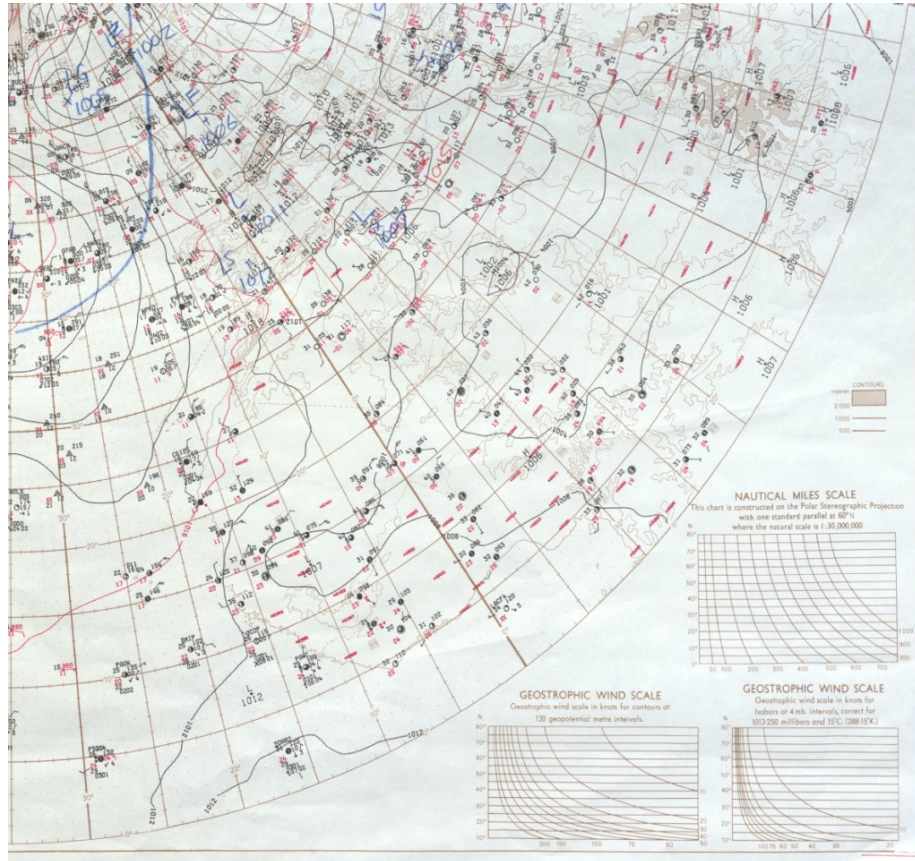


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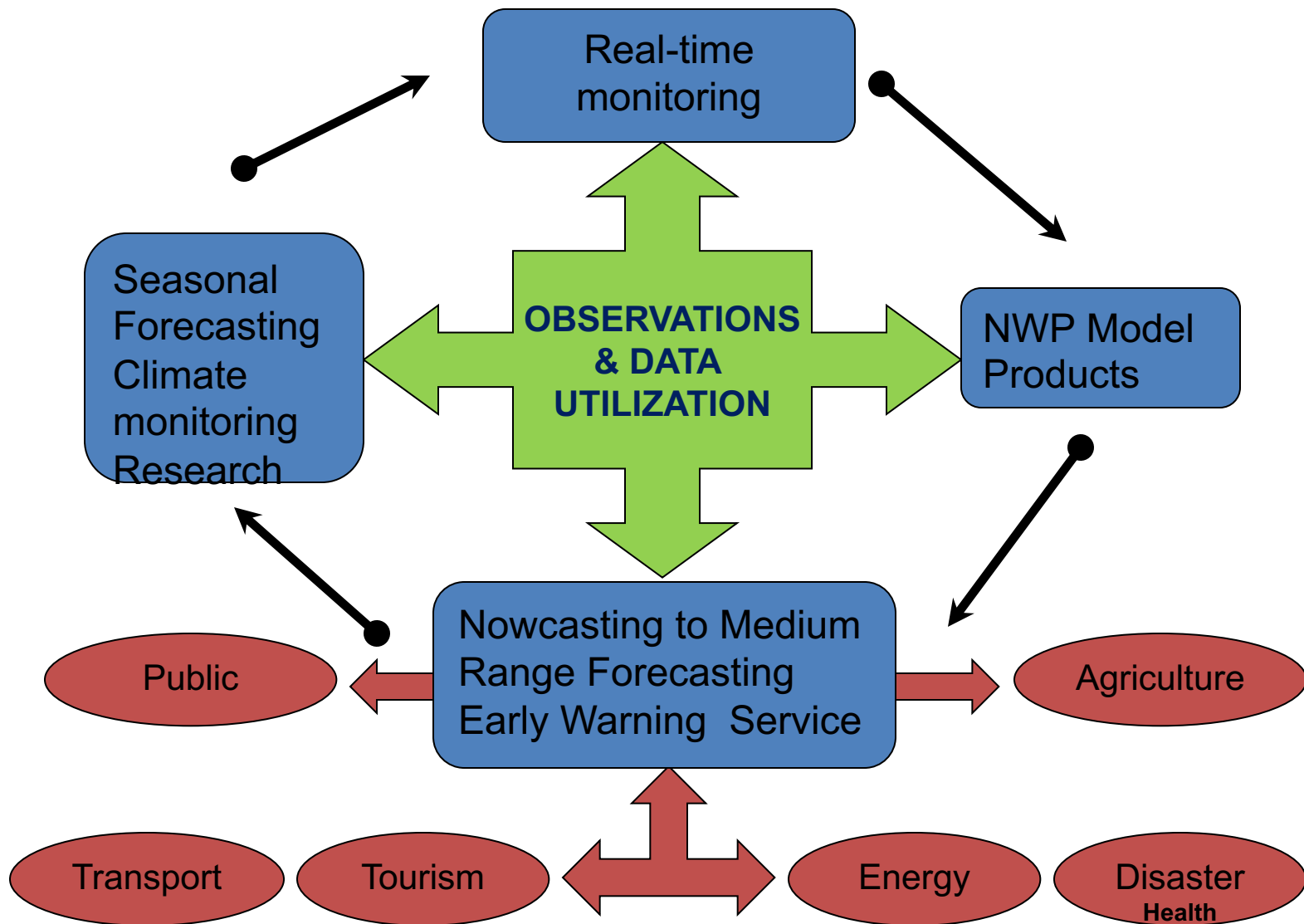


•NCEP GFS High Resolution Analysis and Forecasts Isobaric and Isotachs plus wind vectors in 800 x 600 plot resolutions obtained and generated using the interactive data viewer and quick plots Web Plotter from NOAA's National Climatic Data Center - National Operational Model Archive & Distribution System (NCDC-NOMADS).

Synoptic charts indicating severe sand / duststorm over Western Sahel



8. DATA APPLICATIONS STATUS





9 i). KEY ACHIEVEMENTS

- Improvement on the Department 's Visibility through Public and Media Sensitization and Workshops
- Ongoing Recruitment and Training of personnel
- Rehabilitation of some existing facilities and infrastructure
- Data rescue
- Stakeholder/ users consultation strengthened
- Focus groups (e.g. Radio listeners and Television viewers) established and feedbacks on products communicated.



9 ii). CHALLENGES

- Insufficient Monitoring Platforms (instruments / equipment) and spares, especially with regards to monitoring marine and oceanography variables, *Atmospheric Aerosols*, radiation (solar/terrestrial) etc
- Inadequate financial resources to acquire, operate and maintain instruments / equipment
- Improvement of data management systems, to ensure good quality data in support of climate services and to enhance forecast accuracies
- Insufficient trained personnel for data processing, archiving and management
- Inability to keep pace with rapid technological developments
- Lack of modeling experts
- Model Verification and or Evaluation
- Inadequate information from users / stakeholders with regards to their needs and feedbacks on products.



10. FUTURE PLANS: 5-10 years horizon

- ☛ Transformation of the Meteorological Service into an Autonomous Agency
- ☛ Construction of a Headquarters for the New Meteorological Agency
- ☛ Improvement on number of trained and competent personnel
- ☛ Improvement of Quality Control procedures and to be ISO Certified.
- ☛ ***Acquisition of a modern and robust AWOS for Banjul International Airport***
- ☛ Acquisition of 16 Terrestrial AWS for the Network.
- ☛ Acquisition of 3 Marine AWS (2 coastal and 1 offshore)
- ☛ Acquisition of 3 Upper Wind (Pilot Balloon) Stations
- ☛ Cost recovery for services rendered particularly to the Aviation Industries and other potential stakeholders and users
- ☛ Improvement on communication (transmission / dissemination) formats and systems.
- ☛ Digitize and proper storage of all available data
- ☛ Increase the density of observation and monitoring stations by reopening some closed stations for intense coverage
- ☛ Enhance and encourage research activities



11. CONCLUSION

- Despite the unavailability of in-situ and Remote Groundbased observation platforms; we rely heavily on Satellite Imagery which provide us with real-time data. When combined with Synoptic observations and Numerical Weather Prediction (NWP) Model products a complete state of the atmosphere is obtained.
- With the help of the Derived Dust Product (RGB Composite) and surface observations, the evolution, emission and propagation of Duststorms could be tracked in real-time as it moved across Southern Algeria, Eastern Mauritania, and Northern or Eastern Mali (Dust-Hotspots / source regions) towards Senegal and The Gambia respectively.
- Hence, proper interpretation skills of Meteorological data and products including knowledge on analyses offers us means by which to issue quality Forecasts and warnings of such potential Meteorological extreme significant weather events.



THANK YOU