

Sudan Meteorological Authority Historical Data Assessment and Future Prospective

By

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Historical Background

- Sudan started weather observations earlier on 1891 in Sawaken at the Coastal area of the Red Sea.
- Most of our Stations started observation during the period 1930 to 1940 (**the first world war**).
- During the eighteens the number of stations grow to 46 stations of different purposes beside 2000 rain gauges.

Historical Background..... Cont

- Due to the prolonged civil war the number of working stations decreases to 36 stations.
- Rain gauges also deteriorated to 300 instead of 2000.
- This deterioration affected negatively the network efficiency and the forecast reliability.
- After the separation of South Sudan we remain with 28 stations.

SMA New Look

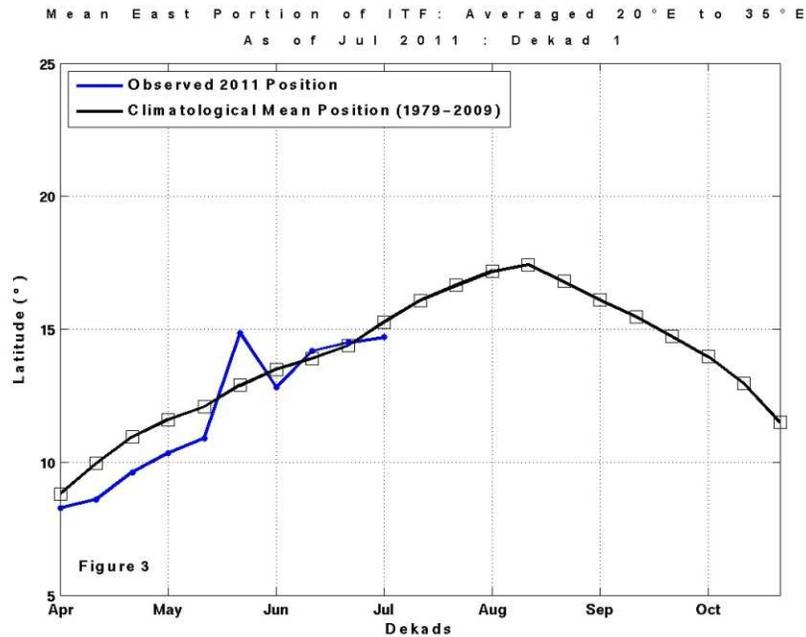


SMA Products

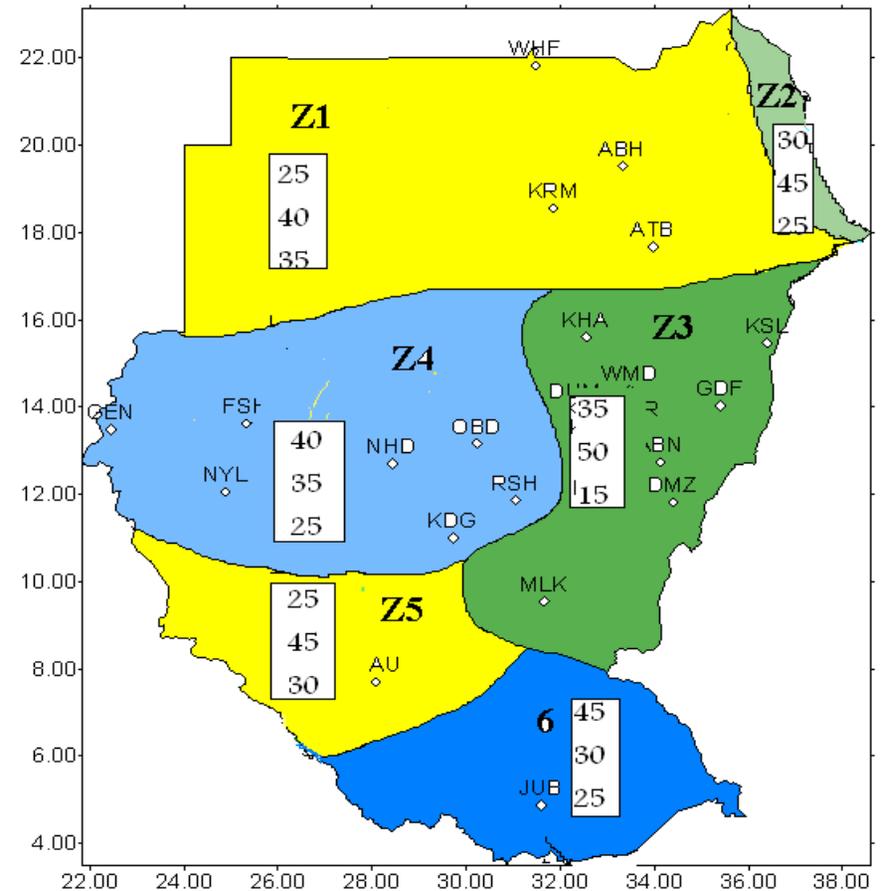
- Pentad and Decadal Bulletins, Monthly weather Bulletin, climate normal's and Monthly and Seasonal Agro-Meteorological Monitoring Bulletins.
- Agro – meteorology products RFE , NDVI , Satellite.
- daily forecast .
- Climate information products.
- Seasonal forecast.
- Numerical Weather Predictions.
- All based on 1 to 3 hours observations.

SMA Products

Average position of the ITCZ over Sudan along the current season compared to a 20-year average. (Source: CPC). Note the retreat in the position in early July (circled)

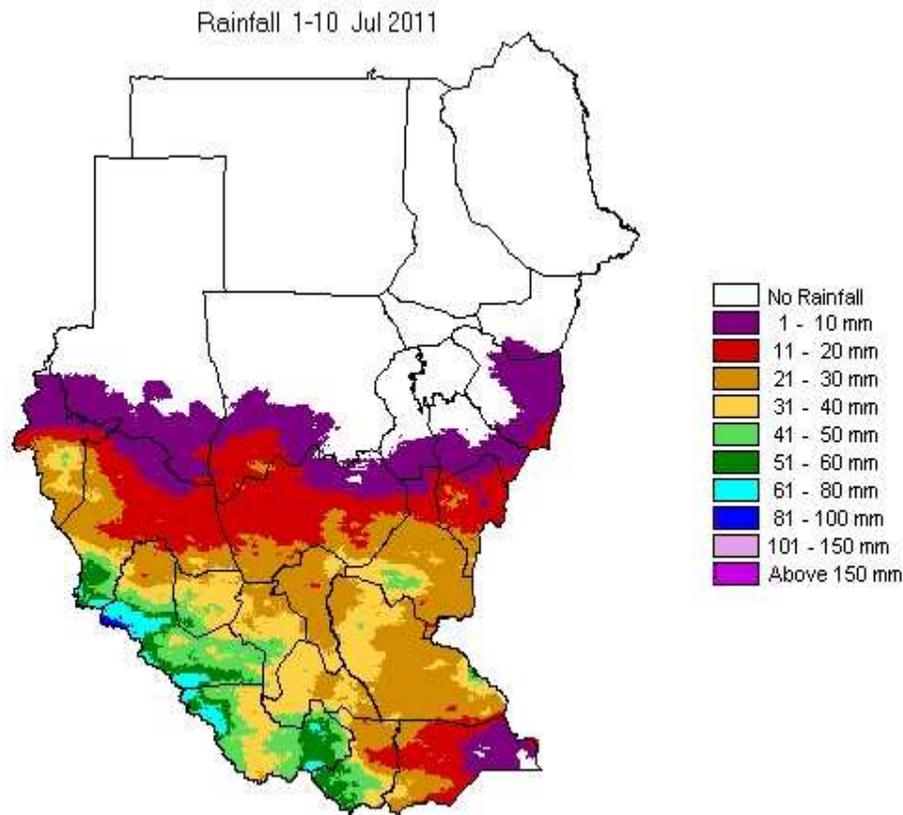


Seasonal forecast for JJAS 2011

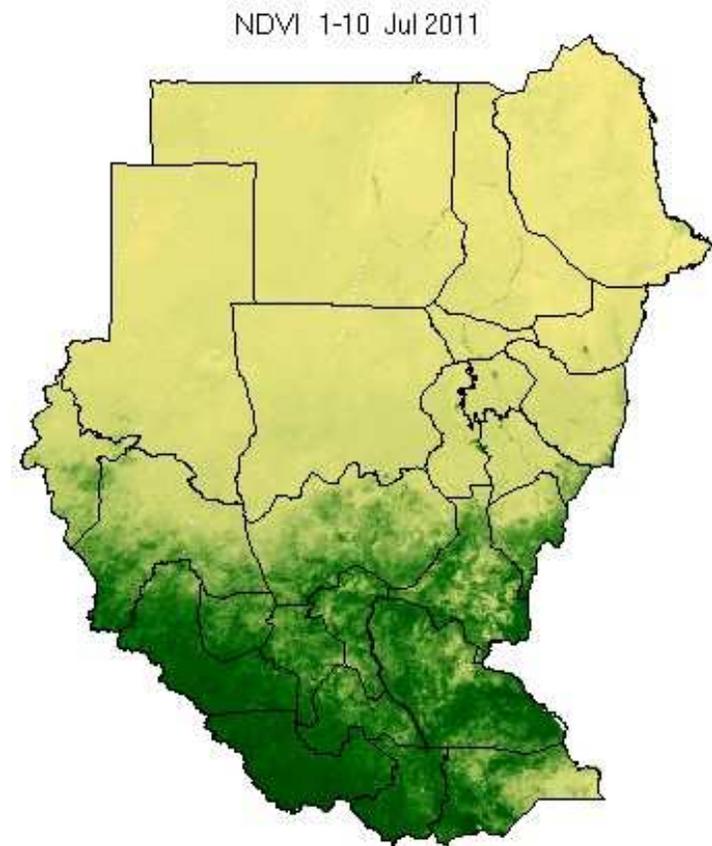


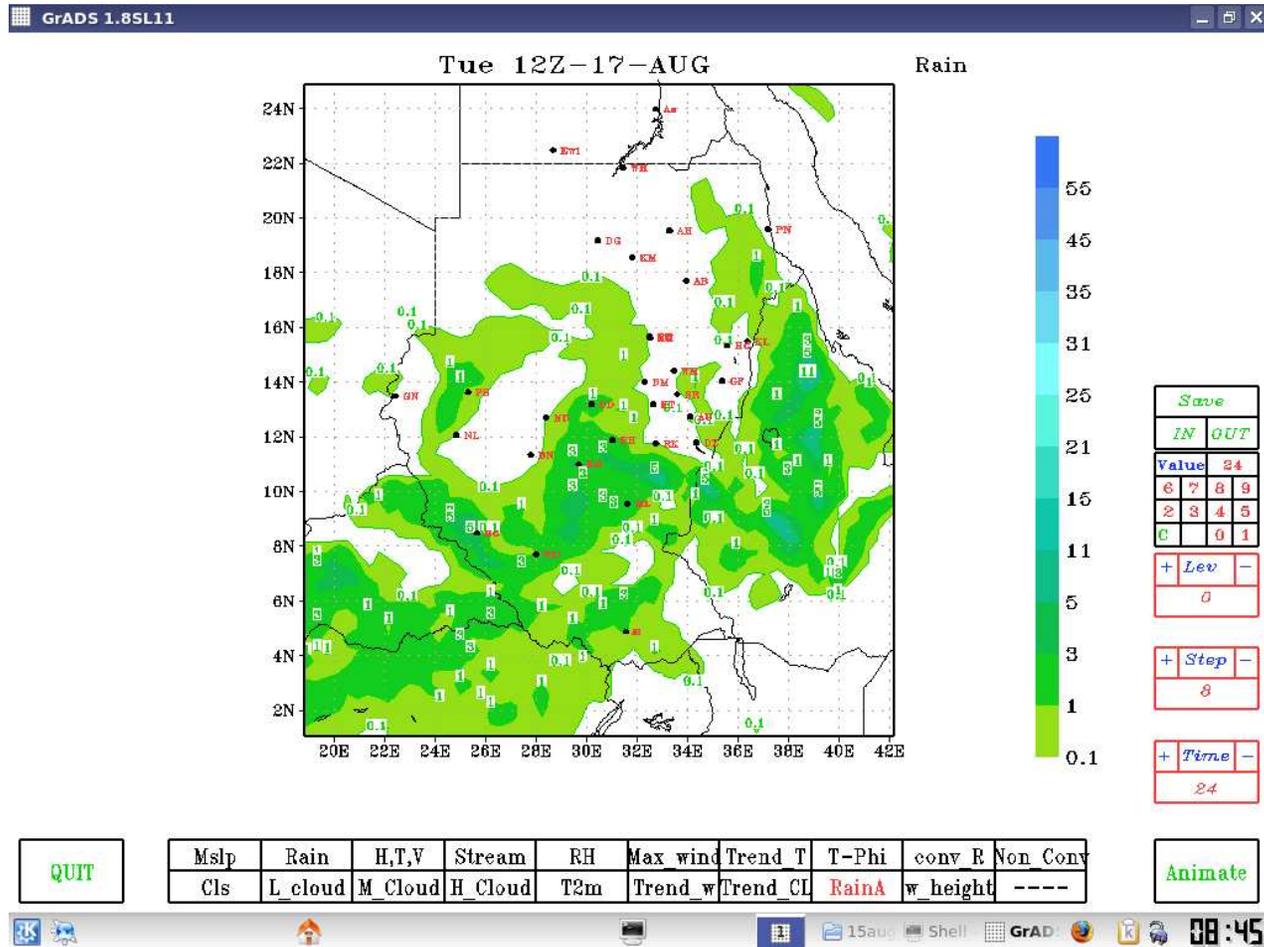
SMA Products

Total rainfall during 1-10 July 2011



Vegetation cover during 1-10 July 2011.





- Eta and MM5 Models were used for rainfall short and medium forecast up to 10 days.

Current Situation

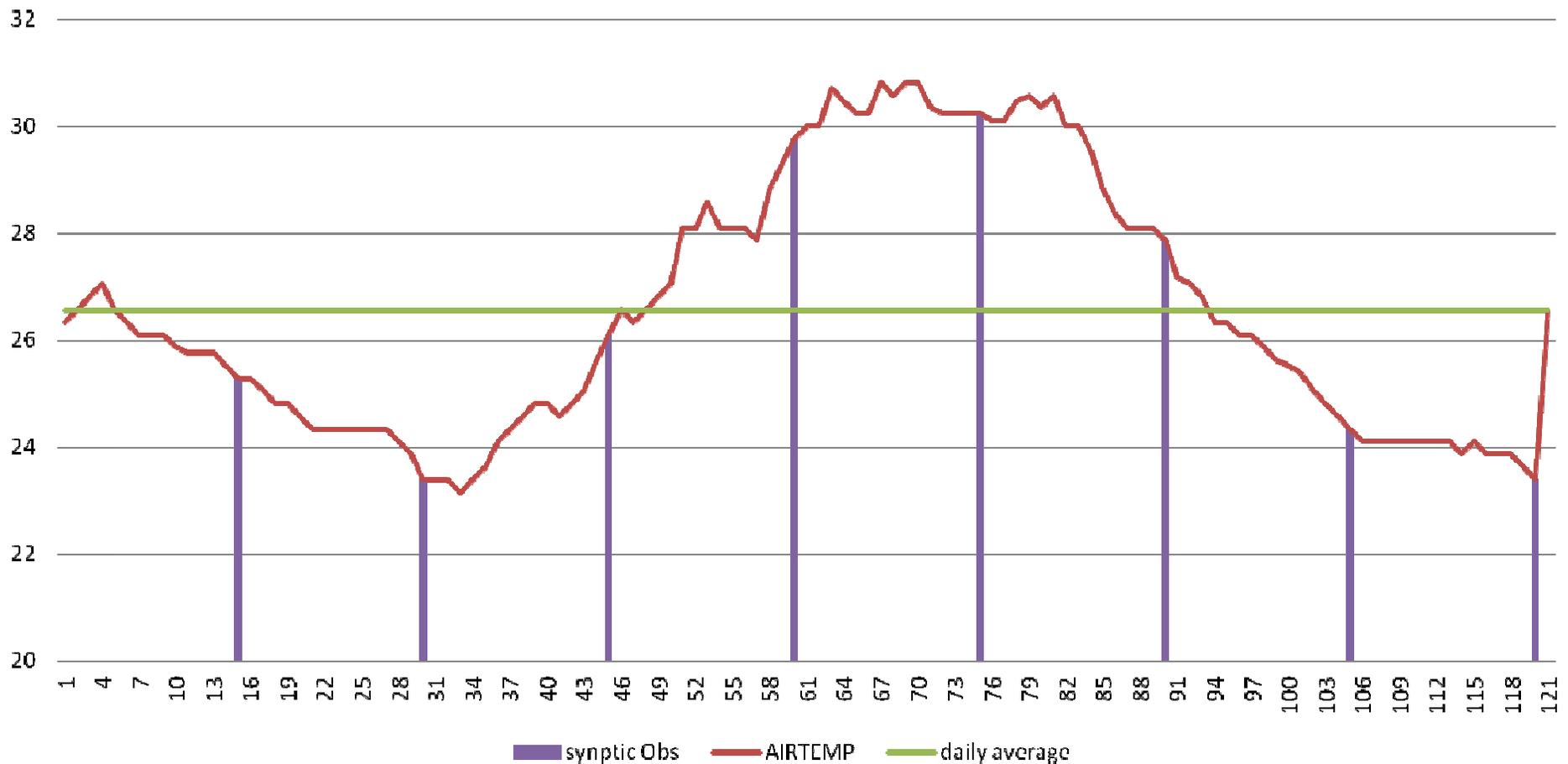
- SMA is adopting a project of rehabilitation in collaboration with **Fenland Meteorological Institute FMI**, the objective is to modernized SMA network by replacing the conventional observation system by Automatic weather observation system.

Benefits of AWOS

- Observation every 9 minutes.
- Calculate other parameter fluxes automatically.
- Easy communication with no lack time.
- supporting a number of data communication options.
- managing all communication protocols for the various sensors and other associated data communication equipment.
- providing the first level of quality control on both data measurement and message generation.
- allowing authorized users to access data remotely.

Hourly intensity of Wad-madani temperature

Temperture for Wad Madani 31st August 2010



Disadvantages of AWOS

- Limited area representation, an area of about 3-5 km around the sensor site.
- More intense ongoing periodic routine maintenance.
- Increased periodic testing and calibration.
- Insure that a staff of well trained technicians and specialists is maintained.
- Insure that a well trained staff of operators is maintained.
- Resulting higher cost of instrumentation and operation. However, efficiencies gained through greater levels of automation may result in some cost benefits.

Other Pilot Projects

Climate Early Warning System in Sudan – Proposed joint project with University of Reading and Rain watch- Cooperative Institute for Mesoscale Meteorological Studies (CIMMS), University of Oklahoma.

The objectives are:

To develop an early warning system for pastoralist herders and farmers in three areas within Sudan (Darfur, Kassala and Blue Nile).

Understanding the role of partnerships for successful early warning systems for improved food security in Sub-Saharan Africa.

Other Pilot Projects

- Africa Climate Exchange (**AfClix**) Boundary Organization.
- GIS near real time rainfall monitoring data will be used.
- SMA will provide 50 years rainfall daily data for at least 6 station representing the country.

Quality Management System

- SMA is adopting a **QMS** to get **ISO9001/2008** Certificate for Aviation Services, been recommended by ICAO and WMO Organizations.

Challenges and the way forward

- Analysis of historical extremes at different levels (station, zones and regional).
- Data rescue project.
- Implementation of climate watch system.
- Data policy and meteorological governance .
- Orientation of training plans, topics and projects.
- Investment initiations to develop and improve statistical and dynamical modelling.

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chance to visit Pretoria
town**