EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Applications and Economic Benefits (5)

Author: Mr. Joseph Ejike Alozie
Nigerian Meteorological Agency, Nigeria, jealozie@gmail.com

EARTH OBSERVATION: ACCURATE PREDICTION OF THE SEVERE 2012 FLOODS IN NIGERIA USING SPECIAL SEASONAL WEATHER OUTLOOK MODELS

Abstract

The Nigerian Meteorological Agency (NiMet) undertakes the routine observation and collation of weather data and process information for informed decisions in all climate-sensitive sectors of the economy as part of its mandate enshrined in the NIMET Establishment Act 2003. NiMet's state–of-the-art equipment and infrastructure, particularly the over 50 synoptic weather stations equipped with conventional and automated instruments for hourly collection of weather data, the 8 upper air stations, and satellite receivers for observing weather from space are strong decision-support for accurate weather forecasting, monitoring and response to weather disasters, managing natural resources such as energy and agriculture as well as addressing emerging diseases and other health risks. Other equipment include the Doppler weather radars for real-time tracking of hazardous weather, satellite receivers such as RETM and MSG, and low level windshear alert system.

The processed weather data are used for forecasts for short duration validity which find extensive use in aviation services, while others of long duration such as the Seasonal Rainfall Prediction (SRP) assist proper planning in the key economic sectors such as agriculture, water management, environment, health, disaster management, power generation, oil and gas, communication and research. This presentation is focusing on the use of the Drought and Flood Monitor Bulletin (DFM) and the Seasonal Rainfall Prediction for the prediction of the severe and devastating floods of 2012 in Nigeria.

The DFM is produced using the Standardized Precipitation Index technique, and analyses the 1-month, 3-month, 6-month and 12-month moisture condition for agriculture and water resources planning in the country. On the other hand, the SRP parameters which include onset and cessation dates of the rainy season, length of the rainy season and seasonal amount of rainfall, are produced using two daily time step models for maize and millet which mimic growth of these crops in a farmers' field. They respond to cultural farming practices, environmental temperatures, radiation and rainfall as well as movement of water and nutrients in the soil and plants. Despite NiMet's early warning with at least 30day lead-time, the 2012 floods killed about 363 people, injured 18,282 people and displaced over 2.1m others (NEMA, 2012). As human activity continue to degrade the environment leading to increased frequency and intensity of extreme weather and climate events, NiMet will continue to deploy modern technology towards improvement of the accuracy and timely release of the warnings and advisories for safety of lives and property.