Overview

The NASA Earth science research program has established the NASA Energy and Water Cycle Study (NEWS) that has the long-term grand challenge to document and enable improved, observationally-based, predictions of water and energy cycle consequences of Earth system variability and change. To achieve this goal, NASA collaborates with other Federal agencies including NOAA, NSF, DoE, USGS, DoI, the DoA, the scientific community-at-large, private industry, and the international community through the World Climate Research Programme (WCRP), especially GEWEX & CLIVAR.

Implementation of the NEWS research program is planned in three phases. The emphasis during Phase-1 is to exploit current capabilities and prepare for future developments of NEWS program elements. Phase-2 focuses on addressing deficiencies and building a viable “prediction” system. Phase-3 focuses on the delivery of an end-to-end system to address the NEWS vision, namely: comprehensive observations to accurately quantify the state and variability of the global water cycle, including time series data sets with no major gaps; routine analysis of variability in storage, transports and fluxes of water and energy; routine prediction of key water and energy cycle parameters (including clouds, precipitation, radiation interactions, energy budgets, and surface hydrological variables) and improved forecasts for use in decision support.

Selected NEWS Research Results

- Variations in Global Precipitation (1979-2005)
- Model Study Examining the Influences of Irrigation on Regional Hydroclimates
- Impact of the Changes in Observation Systems on the Reanalysis Datasets

NEWS Observation Strategy

- Water Cycle Missions
- Water and Energy Cycle Missions
- Energy Cycle Missions

Selected NEWS Research Results

- Precipitation anomalies in ERA-40 NCEP-DOE and GPCP
- Despite biases, seasonal anomalies are similar in terms of rainfall and precipitation

NEWS Prediction Strategy

- Global Warming Scenarios
- Water Cycle Prediction

For more information, please contact phouser@gmu.edu or visit http://www.nasa-news.org