Overview

In 2003 NASA established the NASA Energy and Water-cycle Study (NEWS) whose long-term grand challenge is to document and enable improved, observationally based predictions of water and energy cycle consequences of Earth system variability and change. However, recognizing that the broad objectives of energy and water cycling related climate research extend well beyond the purview of any single agency or program, and call for the support of many activities that are outside of each agency's respective roles and missions, NEWS continues to seek critical (interagency) integration between NASA research programs and satellite missions, other agencies, and international efforts.

**NEWS objectives**

- Develop and deploy experimental E&WC global observing system.
- Document the global E&WC by obtaining complete observational record of all associated relevant geophysical properties.
- Build fully interactive climate models that can predict weather-scale extremes.
- Create global surface and atmosphere data assimilation system for E&WC variables.
- Assess variability of the global E&WC on time scales ranging from seasonal to decadal, and space scales ranging from regional to continental to global.
- Support the application of climate prediction capabilities for estimating the impact of climate variability and change on water resources.

**NEWS Integration Highlights**

- Water & Energy Climatology
  - In order to evaluate water cycle consequences of climate change, the Climatology working group is to understand the role of latent heat fluxes in the climate system, including energy transports and their role in weather phenomena. Accomplishing this mission requires the “best” latent heating flux data for a range of scales and applications, including global and regional water and energy balance down to the smaller space-time scales of individual extreme events.

- Evaporation & Latent Heating
  - The mission of the Evaporation and Latent Heating Working Group is to understand the role of latent heat fluxes in the climate system, including energy transports and their role in weather phenomena. Accomplishing this mission requires the “best” latent heating flux data for a range of scales and applications, including global and regional water and energy balance down to the smaller space-time scales of individual extreme events.

- Drought & Flood Extremes
  - Hydrological years (2006 and 2007) are defined as “two golden years” as there are no other examples of two highly contrasting extremes that occurred within two consecutive years and no comprehensive dataset available concerning the droughts and floods in the SGP relative to other periods in history. This working group is exploring the predictability of hydrological extremes on seasonal to decadal time scales and interacts with the NEWS Modeling and Water Cycle Prediction working group to achieve their goals.

- Modeling & Water Cycle Prediction
  - Models inherently consider all components of the water and energy cycles, and so have capabilities to be a multi-disciplinary integration platform. This modeling group also serves in an advisory role to other modeling groups outside of NEWS.

**NEWS Working Groups**

- Water & Energy Climatology
- Evaporation & Latent Heating
- Drought & Flood Extremes
- Modeling & Water Cycle Prediction

For more information (including publications) go to [newssite.nasa.gov](http://newssite.nasa.gov) or contact:
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**Overview**

The principal goal of the working groups is to propose & implement the development of papers that integrate various NEWS research within the working group topic.