

HYDROLOGIC APPLICATION PROJECT (HAP)

Reporting Period: February - September 2006

Project Starting Date: Spring 2006

URL: (Under construction)

Chair: Eric F Wood (2006-2009)

Overview:

The research focus of GHP is to assist GEWEX in “demonstrating skill in predicting variabilities in water resources and soil moisture on seasonal to annual as an element of WCRP’s prediction goals for the climate system.”

The Hydrologic Prediction Project (HAP) began in the spring of 2006 and will contribute to GHP by focusing on scientific issues related to assessing current hydrological conditions (nowcasting) and determining the extent to which seasonal hydrological prediction is possible and useful for water resources. The activities include:

- developing procedures for assessing current hydrologic conditions, like water availability and drought assessment, through application of GEWEX supported data products, including remotely sensed observations;
- developing and testing of reliable, skillful hydrologic ensemble forecast procedures based on seasonal climate model forecasts;
- demonstrating that the procedures can be applied at scales useful for water resources through test-bed sites and demonstration projects;
- working with related GHP projects, like WISE, and non-GEWEX groups like the Hydrologic Ensemble Prediction Experiment (HEPEX) and Project for Ungauged Basins (PUB) to share demonstration project sites, approaches and results to further the project goals.

Status:

The project just got underway during the Spring of 2006. During this time we have initiated two activities as follows:

- *Development of a HAP Science Implementation Plan.* Limited effort on this has taken place in the absence of establishing members of a HAP working group.
- *Seasonal Hydrologic Predictions.* We plan on generating hydrologic hindcasts based on NOAA and ECMWF seasonal forecasts and a 50-year surface meteorological data set (Sheffield J, Goteti G, Wood EF 2006 Development of a 50-year high-resolution global dataset of meteorological forcings for land surface modeling, *J Climate* 19 (13): 3088-3111) that will serve as the basis for bias correction and downscaling. It is expected that this will be carried out over the GEWEX CSEs.

New directions:

HAP represents a new direction for water management activities within GHP. The previous project WRAP had a focus on interactions with water resources managers within CSEs, while HAP will be focused more on developing and testing procedures and methodologies for demonstrating skill in seasonal prediction and estimating current hydrologic conditions – goals more consistent with GEWEX and WCRP.

Future:

HAP will concentrate on the following activities:

- Establishing a working group.
- Developing a draft science/implementation plan, including a three year project timeline.
- Completing a global set of seasonal hydrologic hindcasts.

Key results:

At this time there are no key results.

Issues and Recommendations:

The biggest challenge facing HAP over the next year is the establishment of the HAP working group and making progress on the science/implementation plan. It is recommended that GEWEX nominate a HAP person to participate on the WCRP Task Force on Seasonal Prediction.

Contributions to WCRP strategic framework:

HAP will contribute to the strategic themes of WCRP, particularly as they relate to the activities of the Task Force on Seasonal Prediction (TFSP). The overarching goal of TFSP is “to determine the extent to which seasonal prediction is possible and useful in all regions of the globe with currently available models and data”, which is synergistic with HAP, with the latter having seasonal hydrologic prediction at scales useful for water management as its focus.

Contributions to society and to WCRP/GEWEX visibility:

The potential contributions of HAP in developing demonstration projects and data sets related to assessing current hydrologic conditions (nowcasting) and hydrologic forecasting to international efforts like GEOSS are significant. Understanding regions where hydrologic seasonal predictions have skill, and demonstrating this skill is critical for society.

Summary

HAP is the GHP activity that has as its goals determining the extent to which current hydrologic conditions can be accurately assessed and determining whether reliable, skillful hydrologic ensemble forecast procedures based on seasonal climate model forecasts can be developed and made useful for water resources. The project will demonstrate the above through demonstration projects and test-bed sites.

List of meetings, workshops:

No HAP specific workshops have been held.

Planned meetings, workshops:

June 2007. 3rd HEPEX Workshop (June 27-29, 2007 in Stresa, Italy). HAP is expected to participate.

List of members and their term dates:

The current Chair is Eric Wood (Princeton University) whose term began in the Spring 2006. At this time is no formal ‘organizational structure’ for HAP, but over the next year we plan to establish a working group with broad CSE involvement.