FY 2010 Annual Guidance Memorandum
Hydrology Program

(3 November 2009)

This Annual Guidance Memorandum provides direction for the Core Goal Teams as they formulate recommendations for projects to be funded by the AHPS and Water Resources projects of the Hydrology Program during FY 2010. The NOAA Hydrology Program Manager's priorities for each of the high priority core goals, as determined by the AHPS Review Committee (ARC), are listed. Of course, Team recommendations are not restricted to projects that directly support these objectives. Core Goal Teams are free to propose and justify the funding necessary to continue or initiate other critical activities.

In addition, the following core goals and associated program areas will continue to be funded: New Service Locations; Outreach; Training; Web Page Deployment; and Program Management. FY 2010 work plans in these areas will be developed by program area focal points and reviewed by the ARC.

Highest priority core goals and associated teams are:

- **Community Hydrologic Prediction System (CHPS) Acceleration Team (CAT)**
  - *Core Goal: Software refresh – enhance the usability and/or internal workings of existing software*
    - Complete the conversion of all required OHD modeling software from the NWSRFS environment to CHPS for BOC-II
    - Begin the migration of CAT-II RFC operations to CHPS
    - Support parallel operations at CAT RFCs
    - Deliver enhancements of the CHPS Interactive Forecast Display for use at the CAT RFCs
    - Deliver the Graphics Generator (Phase 1) in CHPS for CAT RFCs
  - *Core Goal: Archive information required to support the Hydrology Program now and in the future*
    - Develop methods to ensure the continuity of the RFC Archive in the transition to CHPS
- **Experimental Ensemble Forecast System Team**
  - *Core Goal: Quantify the uncertainty of our forecast information*
    - Deliver to the CAT RFCs an improved prototype Ensemble Pre-Processor component for integration via CHPS
    - Deliver to the CAT RFCs improved prototype ensemble streamflow processor components for integration via CHPS
    - Protoype advanced hydrologic ensemble prediction techniques
    - Develop a CHPS-compatible prototype data assimilator for probabilistic hydrologic routing
- **Inputs and Forcings for Hydrologic Models Team**
  - *Core Goal: Improve the quality of physical inputs and forcings*
    - Define and develop temperature forcings for CHPS
    - Identify MPE changes needed to provide forcings for CHPS
    - Evaluate prototype technique to produce 0-6h probabilistic quantitative precipitation forecasts
    - Quantify the accuracy of new, satellite-based infrared/microwave precipitation products in comparison with rain gauge reports
- **Hydrologic River Forecast Center Verification Requirements Team**
  - *Core Goal: Verify our forecast and uncertainty information*
    - Continue development of the National Baseline Verification System within the CHPS environment

        - Produce prototype ensemble hindcasting-verification workflows for CHPS and an evaluation report for western test basins
- **Flash Flood Theme Team**
    - *Core Goal: Deliver improved flash flood and debris flow monitoring tools (site specific, FFMP, statistical distributed modeling, dam break, for example)*
        - Support implementation of HL-RDHM derived gridded flash flood guidance in the northern tier River Forecast Centers
        - Demonstrate and evaluate the Distributed Hydrologic Model (DHM)-Threshold Frequency (TF) decision assistance application at one or more Weather Forecast Offices
        - Evaluate flash flood decision support methodologies to develop concept of operations for flash flood warning services
    - *Core Goal: Improve forecast and warning services based on the effect of dam failures*
        - Develop concept of operations and prototype tools for supporting field operations for flash floods caused by dam breaks
- **Innovation**
    - *Core Goal: Improve hydrologic forecasts impacted by reservoirs and regulation*
        - Evaluate results from current collaborative research projects to provide uncertainty information for hydrologic forecasts impacted by reservoirs and regulations and determine if either can produce an implementable approach
- **Hydraulic Model Team**
    - *Core Goal: Improve the routing techniques used to conne*ct forecast locations (includes coastal effects)
        - Support the introduction of HEC-RAS into field operations.
        - Investigate improved river-estuary-ocean interaction modeling techniques to improve river forecasts through Potomac River prototypes
- **Distributed Model Team**
    - *Core Goal: Provide, then improve, gridded water resource data production capability*
        - Complete distributed hydrologic model intercomparison studies for the western basins
        - Develop and deliver a new set of distributed hydrologic model channel routing parameters for the CONUS
        - Complete research project to improve the calculation of evapotranspiration in hydrologic models
        - Develop a distributed hydrologic model implementation strategy based on the approved operations concept and the Strategic Science Plan
- **Flood Inundation Mapping Team**
    - *Core Goal: Improve flood forecast inundation maps - Static Maps*
        - Update the NOAA Flood Inundation Map Guidelines to document recommended methods and standards to produce Flood Inundation Map Libraries affected by levees and bridges
        - Implement, via the AHPS web portal, additional flood inundation mapping libraries and provide assistance to the regions for development/implementation of other AHPS flood inundation mapping
- **Integrated Water Forecasting Services Team**
    - *Core Goal: Define and coordinate Hydrology Program requirements with other NOAA programs and federal water partners (conduct external projects)*
        - Support the Hydrometeorological Testbed – West demonstration
        - Coordinate Coast, Estuary, River Information Services activities with other coastal river demonstration projects both internal and external to NOAA
    - *Core Goal: Allow the hydrology community to more fully participate in research to operations*
        - Produce and coordinate an updated version of the roadmap plan to guide the development and provision of Integrated Water Resources Science and Services (IWRSS)