Hydrologic Services

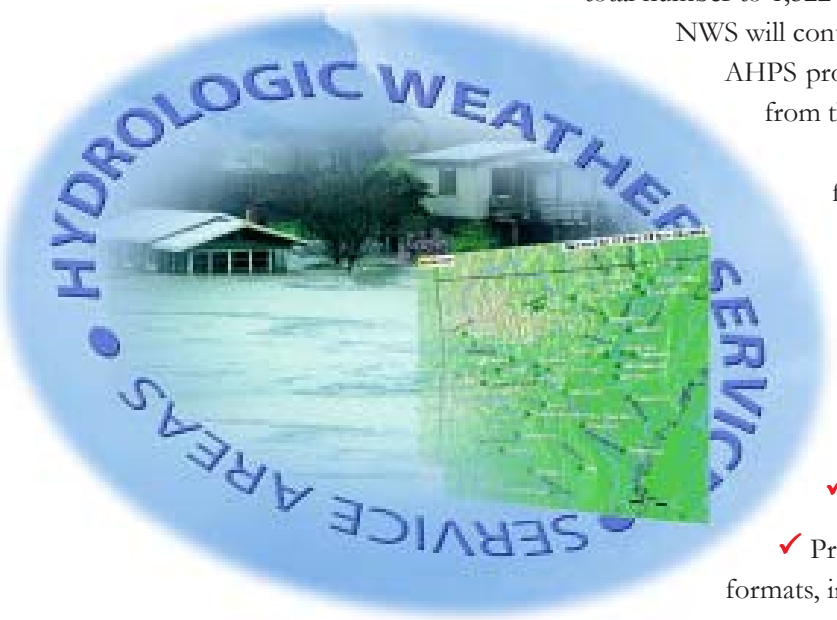
Vision

To provide water information for life's decisions for the protection of life and property and to ensure the Nation's economic well-being.

Concept of Operations

The Advanced Hydrologic Prediction Service (AHPS) infuses new science and technology into operations, and is the cornerstone of the NWS Hydrologic Services modernization. AHPS will enable the NWS to provide improved river and flood forecasts and water information, to meet our mission and the changing needs of our partners and customers.

In 2005, the NWS plans to implement basic AHPS services at an additional 386 forecast points, bringing the total number to 1,522 forecast locations. In addition the NWS will continue to enhance standardized AHPS products and information available from the Internet.



These enhancements will facilitate the following:

- ✓ Improved forecast accuracy.
- ✓ More specific and timely information on fast-rising floods.
- ✓ Additional types of forecast information.
- ✓ Longer forecast horizons.
- ✓ Products in more user-friendly formats, including graphics.
- ✓ More timely and consistent products and information.
- ✓ Expanded outreach.

The full Concept of Services and Operations for AHPS can be found at http://www.nws.noaa.gov/om/water/AHPSconcept.pdf.

Customer and Partner Requirements

The following items are identified as customer needs:

- Deliver probabilistic information to support risk-based decisions.
- Present flood-related information, including time of crest and category of flooding, in a simple, standardized format
- Generate visually oriented products, including hydrographs, graphical depiction of areas covered by flood watches and warnings, graphical representation of flood severity categories, and flood forecast innundation maps.

Link to Science and Technology Infusion Plan

The 10-year goal of the Hydrological Services Program is to increase the average flash flood warning lead time to 60 minutes, and reduce warning areas to specific portions of counties. For river floods, the 10-year goal is to increase the average warning lead time to 12 hours.

These warning schedules should allow time for orderly evacuation and for emergency managers to take actions to mitigate damage to communities.

Product and Service Changes

- Implement AHPS services at an additional 386 forecast points.
- Enhance AHPS products and information available via the Internet in a standardized format.
- Implement the VTEC in all Flood Watch and Warning products.
- Standardize the format for site-specific flood warning (FLW) products.
- Generate daily, gridded National Operational Hydrologic Remote Sensing Center (NOHRSC) National Snow Analysis (NSA) products at one square kilometer resolution over the continental U.S. (CONUS) to be ingested into NDFD for the water year (Oct. 1, 2004 - Sept. 31, 2005).
- Deliver daily gridded products including snow water equivalent, snow depth, mean snowpack temperature, snow surface sublimation, snowmelt, and snow/non-snow precipitation.

GPRA Performance Measures

Flash floods are the most destructive and life-threatening type of flooding. Flash floods occur within hours after heavy rainfall and typically provide little time to respond. The hydrological services GPRA goals concentrate on increasing advanced warning for these devastating events.

GPRA Performance Measures

GPRA Goal	1999 - 2003 (average)	2004 (goal)	FY 2005 (goal)
Flash Flood Warning (FFW) Probability of Detection	87%	88%	89%
Lead Time Performance Goal	45 minutes	48 minutes	49 minutes

Milestones by Quarter

1st Quarter

- Modify and certify new NOHRSC Turbo Commander snow survey aircraft mission ready.
- Develop documentation for AWIPS Operational Build 4 (OB4) hydrologic application enhancements.
- Conduct second biennial National Hydrologic Program Managers (HPM) Conference.
- Modify the Integrated Flood Observing and Warning System (IFLOWS) grants process from an institutional to a competitive solicitation.

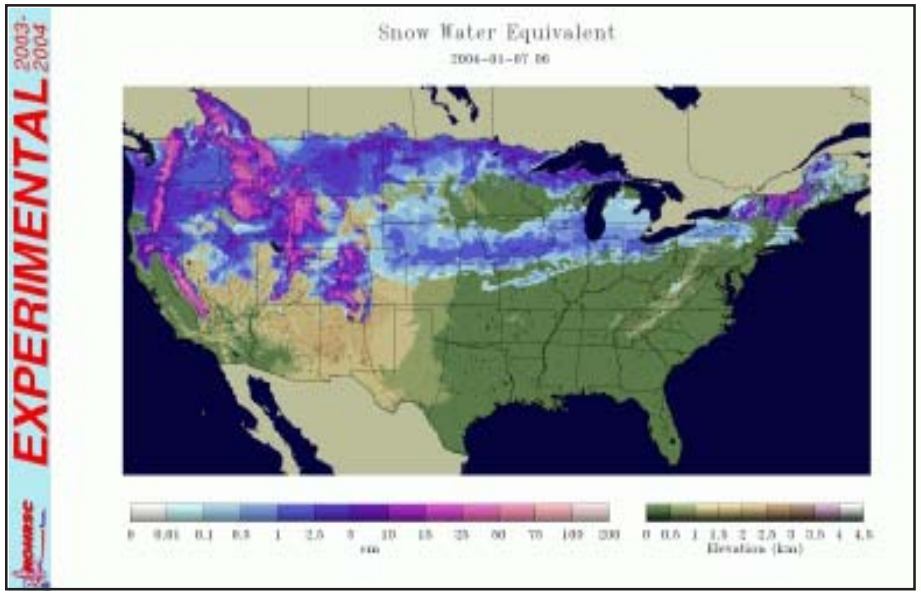
2nd Quarter

- Complete annual flood loss summary.
- Make airborne snow water equivalent measurements over CONUS and Alaska.
- Report airborne data in alphanumeric and map format over AWIPS and the NOHRSC Web site in near real time.
- In cooperation with the National Safety Council (NSC), produce, distribute, and provide Internet access to flood safety brochures.

- Update the Web-based AHPS Information Tool Box.

3rd Quarter

- Prepare national hydrologic assessment in support of the NOAA spring press briefing.
- Develop documentation for AWIPS Operational Build 5 (OB5) hydrologic application enhancements.
- Deploy software to establish and maintain an integrated national river forecast location database.
- Implement technology to process and distribute IFLOWS gauge data at a central facility to improve data availability.
- Expand the number of forecast point locations in the River Forecast Center (RFC) verification database.



Snow water equivalent from the National Snow Analysis

4th Quarter

- Collect background terrestrial gamma radiation data to calibrate new flight lines as requested by RFCs.
- Provide operational, Web-based, NOHRSC NSA products and data sets in map, alphanumeric, time-series, text discussion, and gridded formats for CONUS during the water year (Oct. 1, 2004 - Sept. 31, 2005).
- Conduct a National Senior Hydrometeorological Analysis and Support (HAS) Forecaster Conference.
- Deploy the initial version of a Web-based graphical user interface for the national river forecast location database.
- Implement a national flood warning verification system.
- Implement a gridded NDFD Quantitative Precipitation Forecast (QPF) Verification System.

Integrated Requirements

The following three capabilities will become available through AWIPS in 2005:

- ✓ Generate improved site-specific hydrologic forecasting capabilities for small, headwater basins.
- ✓ Deliver product formatters capable of including VTEC data in hydrologic products.
- ✓ Develop an initial distributed model capability for selected RFC basins, which will enable the generation of higher resolution forecast information.

Outreach

The Hydrologic Services Division will participate in the following outreach activities:

- ✓ Quarterly meetings with the U.S. Geological Survey.
- ✓ Annual meetings with the National Resources Conservation Service.
- ✓ Semi-annual meetings with the Advisory Committee on Water Information's Subcommittee on Hydrology.
- ✓ National Hurricane Conference
- ✓ NOAA Hurricane Conference
- ✓ Interdepartmental Hurricane Conference
- ✓ Interagency Coordinating Committee on Hurricanes
- ✓ National Safety Council
- ✓ Association of State Flood Plain Managers
- ✓ National Hydrologic Warning Council
- ✓ Southwest Association of Alert Users
- ✓ IFLOWS Users Group
- ✓ FERC Dam Safety Council

Verification

Verification statistics have been generated routinely for Flash Flood Warnings (FFW) since 1986. Since the spring of 2001, verification statistics have been generated for RFC forecasts at a subset of forecast points. The number of forecast points at which RFC forecasts are verified will be expanded in FY 2005. Additionally, in 2005, the NWS will begin verification of Flood Warnings issued by WFOs.

Regional Initiatives

In FY 2005, NWS Regions will implement basic AHPS services at an additional 386 river forecast points throughout the continental United States and Alaska, and will work collaboratively with NWS Headquarters personnel to achieve the aforementioned milestones.

Contact

Glenn Austin, Chief, Hydrologic Services Division, 301/713-0006, ext. 150, or glenn.austin@noaa.gov.

Standard AHPS map depicting river forecast locations and river status for central and western Maryland, eastern West Virginia, and northern and central Virginia. To view this interactive map, visit http://ahps.erh.noaa.gov/cgi-bin/ahps.cgi?lwx.