



Hydrologic Forecasting With and Without Advanced Hydrologic Prediction Services (AHPS) at National Weather Service (NWS) River Forecast Centers (RFCs)



! What will AHPS provide?

	non-AHPS RFC	RFC with AHPS
More accurate forecasts through the implementation of an advanced hydrologic model	Hydrologic model characteristics are representative of large regions (multiple states).	Hydrologic model characteristics are determined for each local river watershed and each tributary which will greatly increase forecast accuracy (20% in the Des Moines River basin).
Improved Products and Services equating to flood loss reduction and improved water resources management	Text formatted products for specific locations along a river (with forecast lead times of a few days).	Products provide more information: - text products and visual displays of river level and flow volume forecasts for 1 day to weeks to months, along with a measure of forecast accuracy, at specific locations (point forecasts) - maps of geographic areas forecasted to be flooded

! How does AHPS work?

	non-AHPS RFC	RFC with AHPS
Input Data from: NWS/NOAA Other federal and local agencies (i.e. USGS, USDA, USACE, and USBR)	- applies historical weather data - applies stream gaged data, channel cross-section data and water facility operations information	- applies historical and forecasted weather and climate data - applies stream gaged data, channel cross-section data and water facility operations information
Hydrologic Model	Hydrologic model characteristics are representative of large regions (multiple states).	Hydrologic model characteristics are determined for each local river watershed and each tributary which will greatly increase forecast accuracy by 20 percent.
Products and Services	Text formatted products for specific locations along a river (with forecast lead times of a few days).	Products provide more information: - text products and visual displays of river level and flow volume forecasts for 1 day to weeks to months, along with a measure of forecast accuracy, at specific locations (point forecasts) - maps of geographic areas forecasted to be flooded

! Where does AHPS run? NWS Modernized Workstations NWS Modernized Workstations

Further information on AHPS may be obtained at:
<http://www.nws.noaa.gov/oh/ahps>
and by email, **AHPS@noaa.gov**

General AHPS Benefits

Flood Loss Reduction

- provides more information than presently available to help make decisions for a range of possible flood-peak (river level) elevations and provide more time to:
 - evacuate people from potential flood areas, equating to saving more lives
 - move more goods and industrial property from flooded areas, equating to economic savings to homeowners and businesses
 - appropriately utilize reservoir storage capacity, equating to reduced flood impacts on people and businesses
 - decide when to reinforce levees and at what level, equating to reduced damages to areas meant to be protected by the levees
- defines flooded areas more accurately with real-time flood-forecast mapping, equating to more safe and efficient evacuations

Water Resources

- provides more time to efficiently operate reservoirs for:
 - increased water supply for industry and population, equating to lower water costs and increased employment
 - more crop production through increased availability of irrigation water
 - increased hydropower production, equating to lower electric costs
- provides more time to plan navigation allowing maximum tonnage, equating to lower costs of goods

Examples of AHPS Benefits

- “AHPS is very important to me... Without AHPS we’d have a real gap in knowing what’s coming...” — Terry Reekers, Emergency Manager, Emmet County, Iowa, 1998.
- During just one flow event, use of AHPS forecasts “provided the needed factor of safety to assure that the motors could be reinstalled in the (Mississippi River) locks and dams 48 hours in advance of original plans, saving the navigation industry \$300,000.” — William H. Koellner, Water Control Chief, US Army Corps of Engineers District, Rock Island, Illinois, 1998.
- Saylorville Reservoir (Des Moines River Basin, Iowa), Retrospective Analysis: using AHPS type forecasts, average annual flood damages downstream of the reservoir were reduced by 35% when compared to non-AHPS type forecasts — from Hydrologic Research Center, California, 1999.
- Folsom Reservoir, California, Retrospective Analysis: using AHPS type forecasted inflows to the reservoir, downstream flood damages were reduced by 79% when compared to historical regression-based forecasting — from Hydrologic Research Center, California, 1999.