



NWS Office of Hydrologic Development

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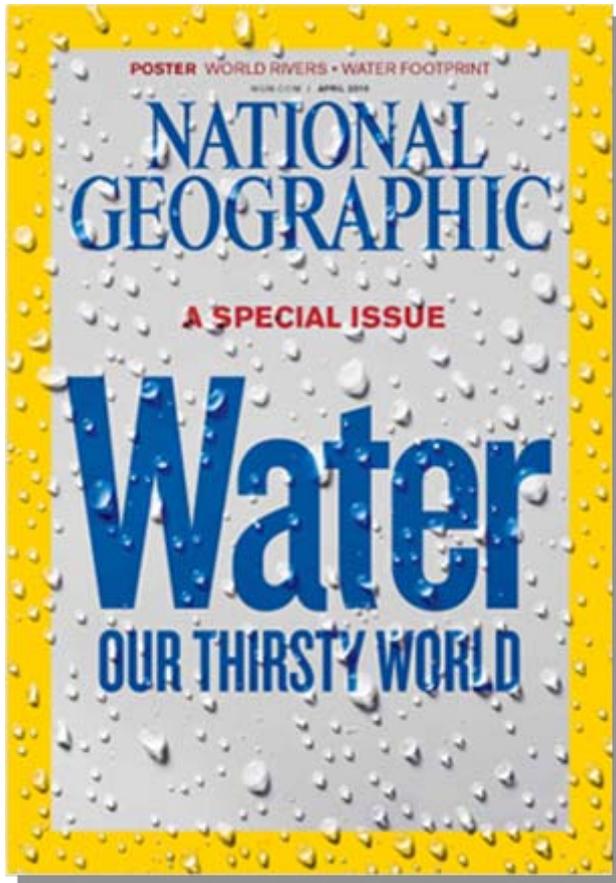
NWS Office of Hydrologic Development (OHD)



- OHD provides:
 - science and software research, development and support
 - operational hydrologic data and information services
- Principal internal customers:
 - NWS River Forecast Centers and Weather Forecast Offices
- Software is delivered via:
 - Community Hydrologic Prediction System (CHPS)
 - AWIPS
 - Stand-alone software packages
- OHD leads the multi-agency development and implementation of Integrated Water Resources Science and Services (IWRSS)



The Global Water Imperative



Protect Life and Property

- Floods and droughts cause more U.S. economic losses than any other type of natural disaster

Support Economic Security

- Water has always been a critical component in the success of any economic endeavor

Protect Health and Environment

- Water is the lifeblood of this planet

Mitigate Escalating Risk

- Triple Threat: Scarcity and floods, climate change, and aging infrastructure

“Nearly half of the streams and lakes in the U.S. are not clean enough to sustain swimming and fishing and our infrastructure has been given a D grade”

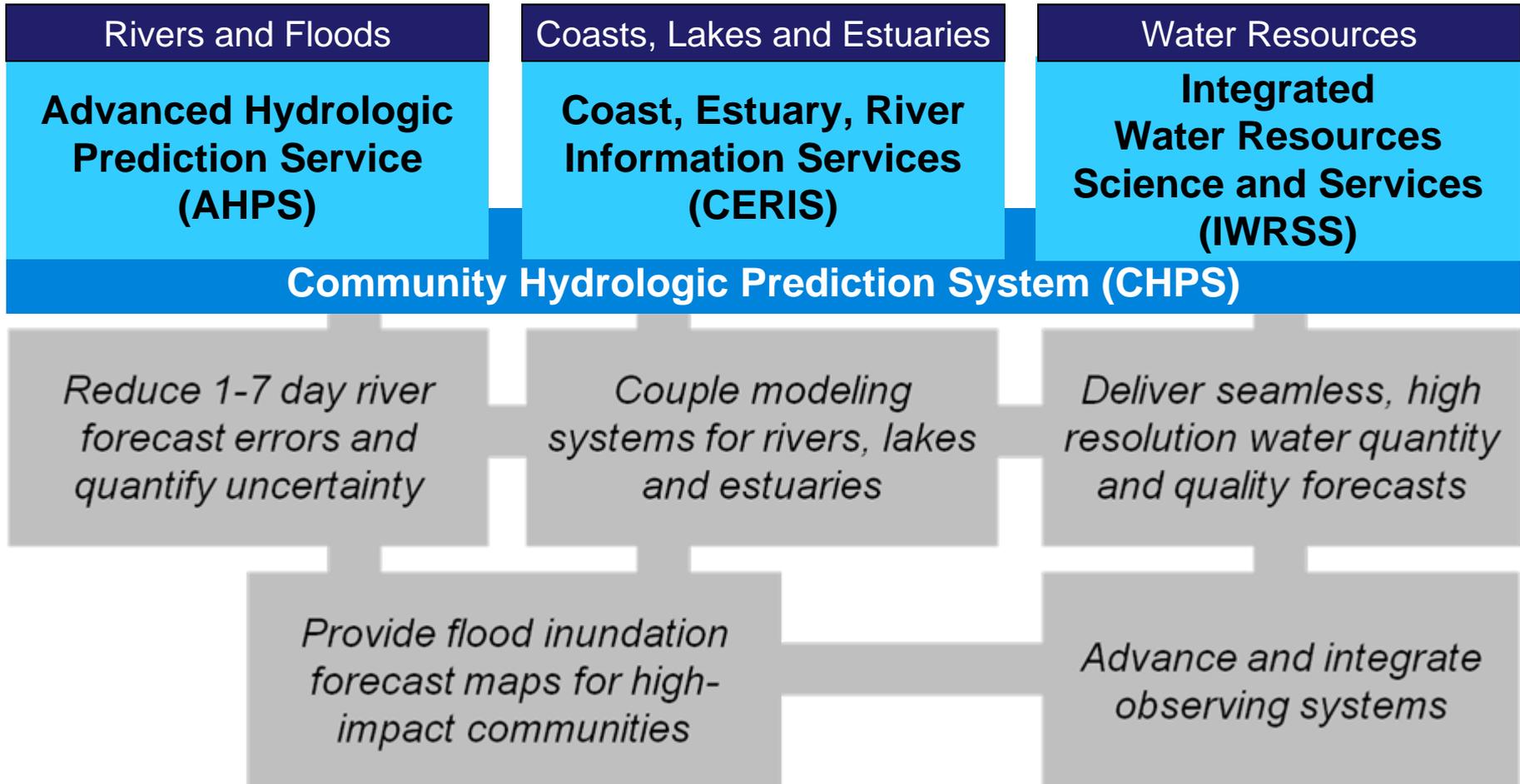


Integrated Water Forecasting Program



NOAA's Role: Provide accurate and reliable water forecasts (*where, when, and how much*)

Seamless Suite: Summit-to-Sea, Floods-to-Droughts, Short-to-Long Term





Integrated Water Resources Science and Services



Leap Ahead

Implement information and tools for next-generation adaptive water-related planning, preparedness and response activities

National Water Resources Information System

Goals

1

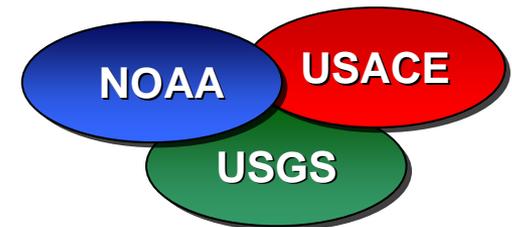
Integrate Information and Simplify Access

2

Increase Accuracy and Timeliness of Water Information

3

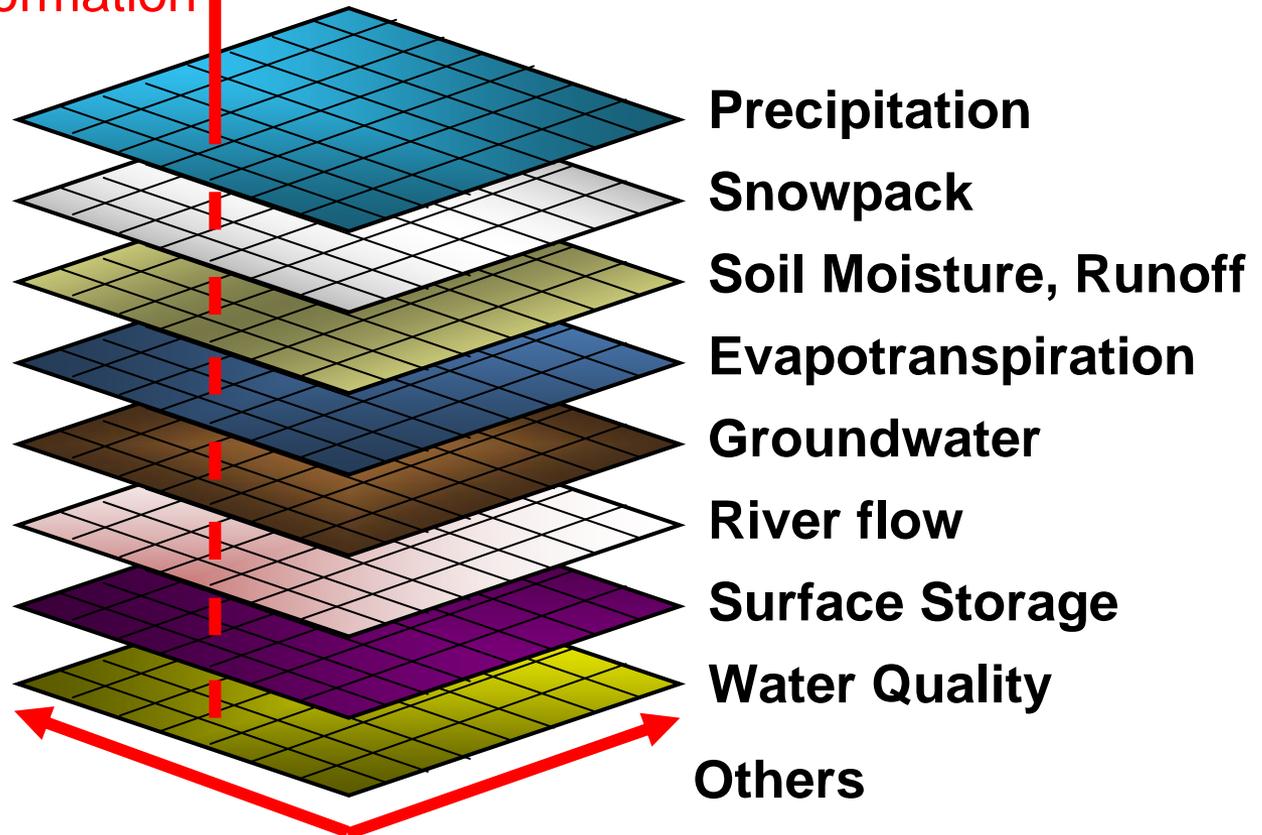
Provide New Summit-to-Sea High-resolution Water Resources Information and Forecasts



Provide new “summit-to-sea” high-resolution water resources information and forecasts.

$$(P - ET + G_{in} - G_{out} + Q_{in} - Q_{out})\Delta t = \Delta S$$

Local Information



Resolution

- Spatial: 0.5 – 1.0 km
- Temporal: 0.1 – 1 hr

Watershed – to – National
Information



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River Prediction/Water Resources



Observation Requirement	T/O	Geographic Coverage	Vertical Resolution		Horizontal Resolution		Measurement Accuracy		Measurement Precision		Sampling Interval		Data Latency	
Precipitation Accumulations	T	Hemispheric U.S.	NA		4	km	1	mm/h	1	mm/h	1	hr	15	m
	O	Hemispheric U.S.			0.5	km	0.25	mm/h	0.25	mm/h	1	min	1	m
Precipitation Type	T	Hemispheric U.S.	NA		4	km	1				1	hr	15	m
	O	Hemispheric U.S.			0.5	km					6	min	3	m
Precipitation Rates	T	Hemispheric U.S.	NA		1	km	1	mm/h	1	mm/h	6	min	1	m
	O	Hemispheric U.S.			0.5	km	0.25	mm/h	0.25	mm/h	1	min	1	m



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Gaps in current satellite product suite

- **Spatial (coverage) gaps:** Alaska
- **Temporal gaps:** Much of cool season over CONUS
 - IR-based techniques perform poorly
 - Snow detection and estimation via satellite is not mature
- **Latency gaps:** Microwave precipitation estimates have lags of multiple hours
- **Accuracy shortcomings:**
 - Limitations on IR satellite approaches in the warm season (blended IR/MWV performs better)
 - Snow detection
- **How GPM era products might help:**
 - Coverage for high latitudes
 - Improvement on IR-only algorithms
 - Reduction of time lag in product delivery



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Next Steps for GPM-era data & products

- What are funded activities within your program/project over the next five years?
 - Now completing NESDIS-funded investigation of IR/microwave (SCaMPR) precip estimate impact on hydrologic modeling
- What are your funding gaps & limitations?
 - Support for product validation and application development
 - Support for data dissemination, software updates
- What are your plans to work with other elements of NOAA?
 - Involvement through NOAA Precipitation Measuring Mission Steering Group
- What are your plans to work with NASA?
 - No direct interaction



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Questions?



WW-IWF Requirements - CORL



Observation Requirement	Program Acronym	Prty	T/O	Geographic Coverage	Vertical Resolution		Horizontal Resolution		Measurement Accuracy		Sampling Interval		Data Latency	
					V	U	V	U	V	U	V	U	V	U
Precipitation Amount														
Precipitation Amount	WW-IWF	1	T	Hemi US	na	na	1	km	1	mm	6	min	3	min
Precipitation Amount			O	Hemi US	0	na	0.5	km	0.25	mm	1	min	1	min
Precipitation Rate														
Precipitation Rate	WW-IWF	1	T	Hemi US	na	na	1	km	1	mm/hr	6	min	3	min
Precipitation Rate			O	Global	0	na	0.5	km	0.25	mm/hr	1	min	1	min
Precipitation Type														
Precipitation Type	WW-IWF	1	T	Hemi US	na	na	1	km	na	na	6	min	3	min
Precipitation Type			O	Global	na	na	0.5	km	na	na	1	min	1	min

Legend:

T = Threshold O = Objective
 V = Value U = Unit