



The Future of NWS Hydrologic Services

Meeting America's Water Resource Information Needs

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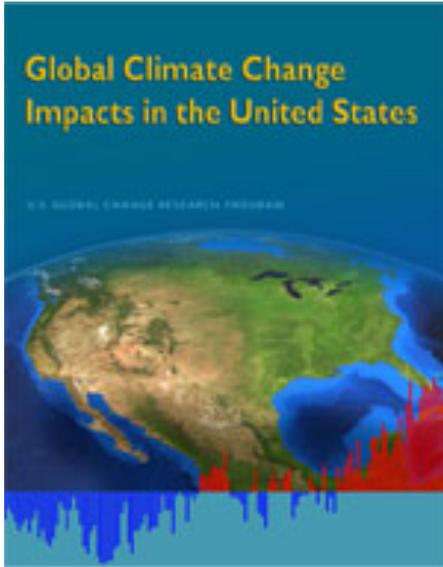
Director, Office of Hydrologic Development

National Weather Service

National Oceanic and Atmospheric Administration

2010 HMT Workshop

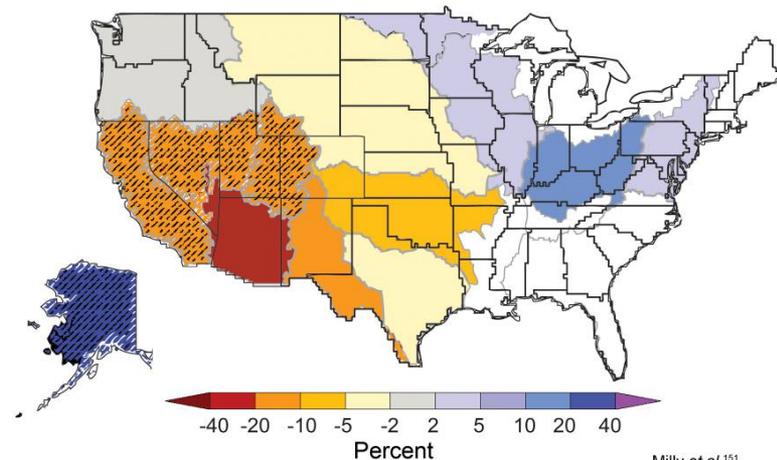
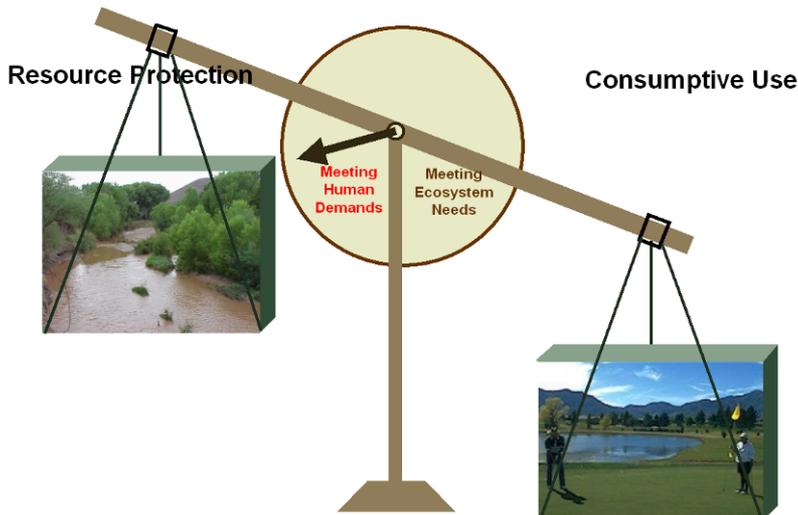
National Water Resource Issues



- Current Situation

“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”

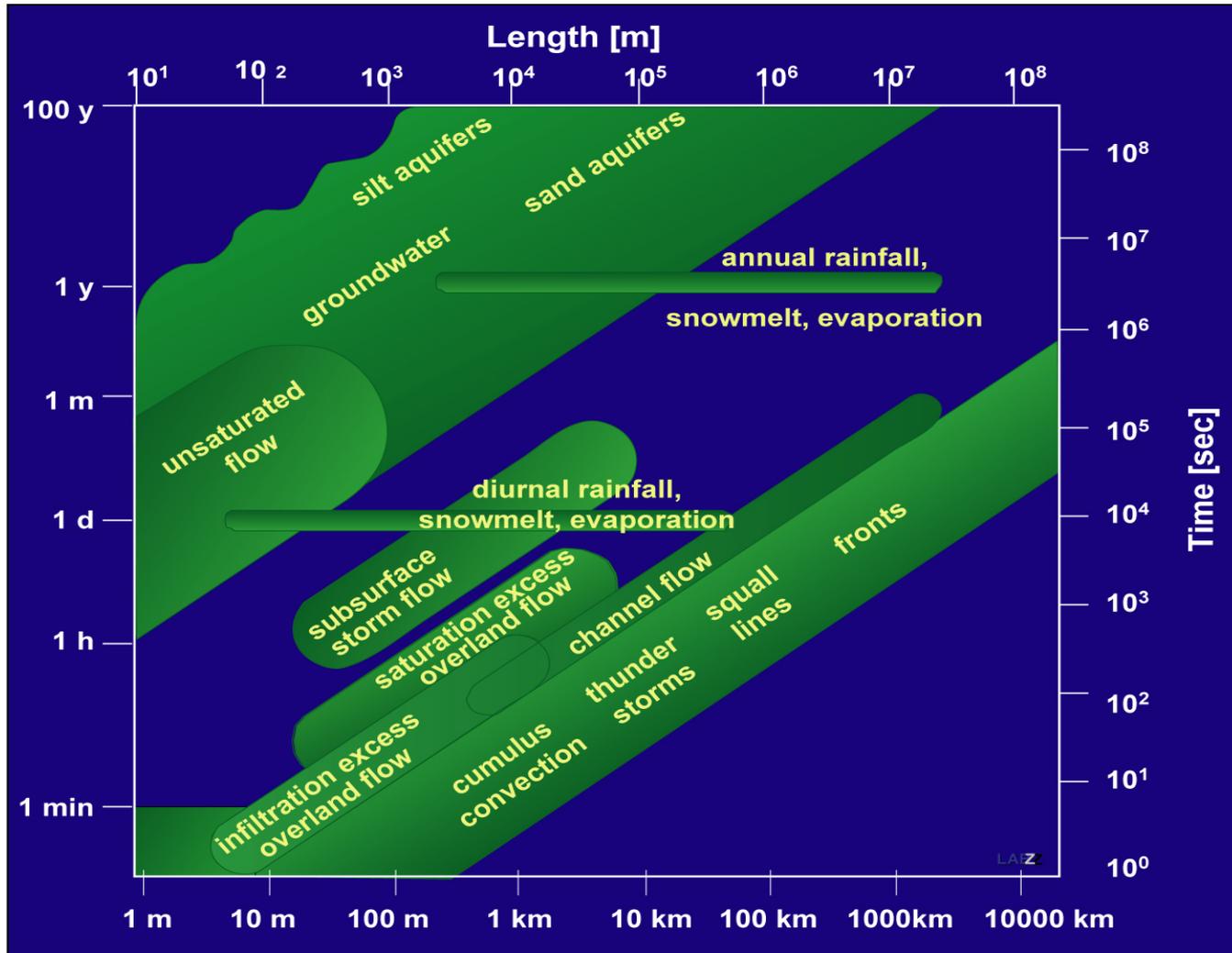
- Future Changes in Runoff



Milly et al.¹⁵¹

Runoff, which accumulates as streamflow, is the amount of precipitation that is not evaporated, stored as snow pack or soil moisture, or filtered down to groundwater. Projected changes in median runoff for 2041-2060, relative to a 1901-1970 baseline, are mapped by water-resource region. Colors indicate percentage changes in runoff. Hatched areas indicate greater confidence due to strong agreement among model projections. White areas indicate divergence among model projections. Results are based on emissions in between the lower and higher emissions scenarios.⁹¹

Hydrologic Time / Space Scales





Integrated Water Forecasting Program



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

Rivers and Floods

Advanced Hydrologic Prediction Service

Coasts, Lakes and Estuaries

Coast, Estuary, River Information Services

Water Resources

Integrated Water Resources Science and Services

Community Hydrologic Prediction System (CHPS)

Objective 1

Reduce 1-7 day river forecast errors and quantify uncertainty

Objective 3

Couple modeling systems for rivers, lakes and estuaries

Objective 4

Deliver seamless, high resolution water quantity and quality forecasts

Objective 2

Provide flood inundation forecast maps for high-impact communities

Objective 5

Advance and integrate observing systems to improve QPE and QPF



Community Hydrologic Prediction System

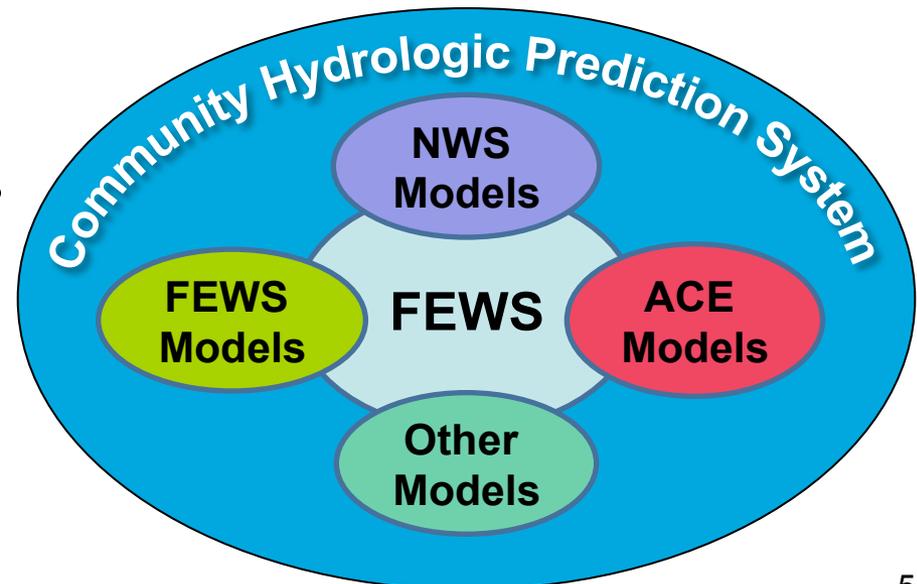


Flexible, open modeling architecture *linking* program elements

- Modular software to enhance collaboration and accelerate R2O
- Extension of the Flood Early Warning System (FEWS) architecture:
 - Incorporates NWS models with models from FEWS, U.S. Army Corps of Engineers (ACE), and academia

Implementation Status:

- ✓ AWIPS-II compatible prototype hardware and software for all RFCs
- ✓ Conducting parallel operations at 4 RFCs, remaining by early 2011
- ✓ Retire legacy system in early 2012





National Water Center Vision



- Enable hydrologic forecasting operations and research to fill several critical gaps:
 - Provide new high-resolution forecasts of critical water resource variables to help decision makers optimally manage our increasingly limited water supply
 - Extend river and flood forecasting (currently limited to selected points on rivers) to provide maps showing forecasted extent and depth of flooding
 - Integrate critical water resources information (scattered across multiple federal agencies) and provide one-stop shopping for stakeholders
 - Establish multi-agency proving ground to accelerate transition of research to operations



Future Operating Concept

