Integrated Water Resource Services

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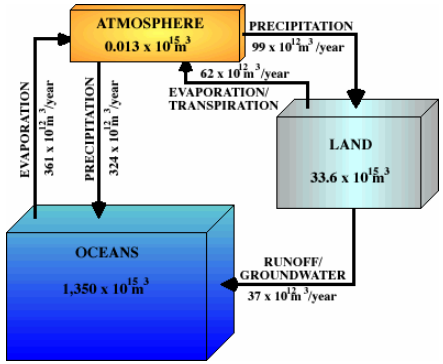
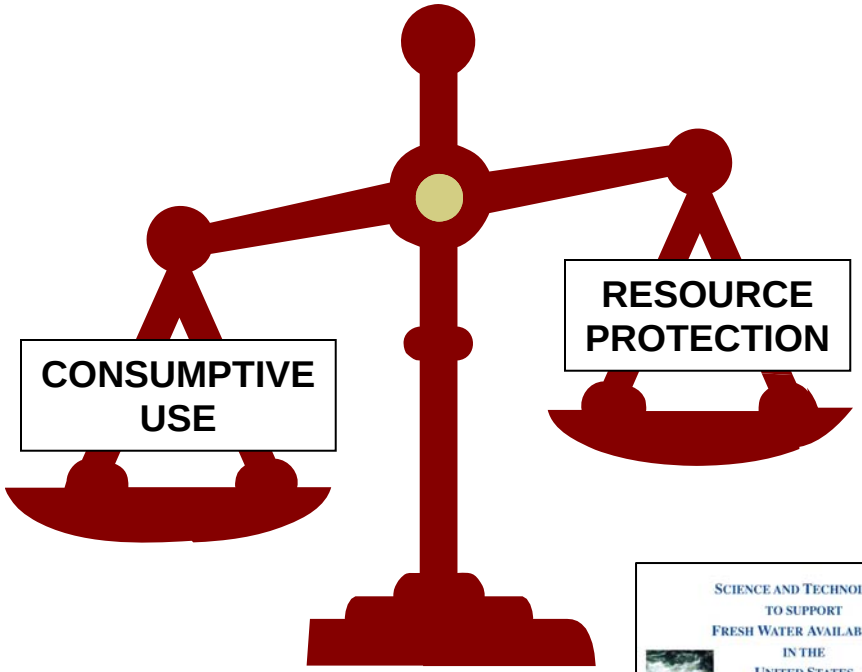
[POC for IWRS: Gary Carter, NWS]



Challenge:
National Water Resource Impacts

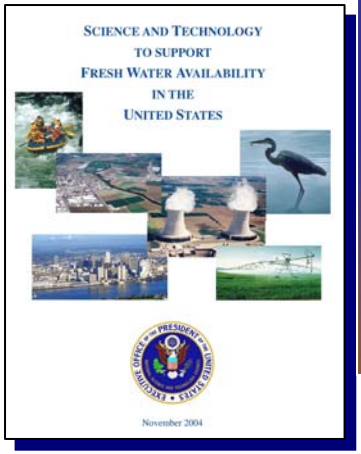
- Economic Prosperity (energy, transportation, recreation, agriculture)
- Population Growth and Demand (~1%/yr with dramatic shifts to the highlands and drylands)
- Water Contamination (increasing by ~4%/yr)
- Challenges for Ground Water Management and Sustainable Irrigation
- Drought Risk Mitigation
- Ecosystem Health

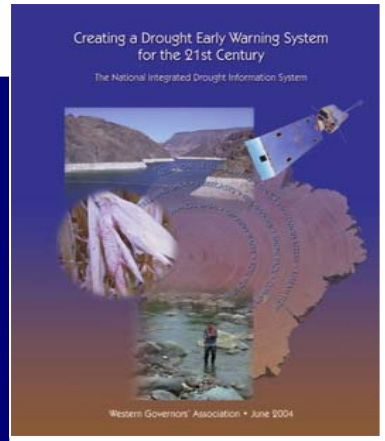


Where is the water, what is the quality, where is it going?

How can water resources be managed more efficiently?

What are the requirements for recovery planning and restoration?





Terms of Reference

- NOAA Executive Council decided (2006) to improve the value and efficiency of NOAA's products and services by:
  - Promoting a collaborative approach [outreach, communications and programmatic integration]
  - Showcasing NOAA's extensive expertise, products and capabilities on a regional scale
  - Offering place-based and user-specified products and services that are consistent with its responsibilities as a federal agency

NEC approved three national programmatic areas to be addressed with regionally defined priorities

I. Integrated Ecosystem Assessments

II. Integrated Water Resource Services

III. Hazard Resilient Coastal Communities

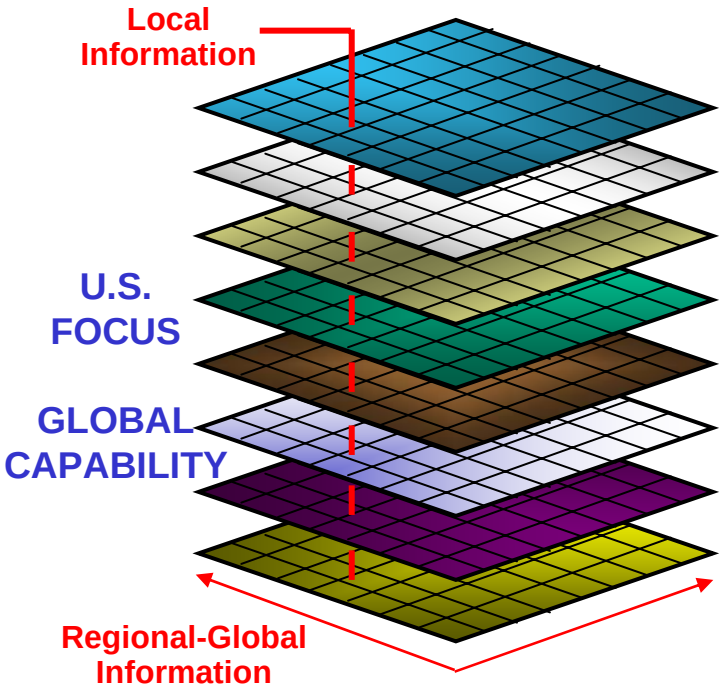
Outreach and communications: Target customers, partners, stakeholders and seek to increase environmental literacy

Regional Collaboration: Organizational Setup

- Executive Oversight Group
  - Guidance and evaluation
- Priority Area Task Teams
  - Strategy, programmatic requirements, management and funding mechanisms, performance measures
- Regional Teams
  - Customer needs, implementation, reporting

Primary Objective: Integrated Products and Services

High-Resolution Gridded Water Resources Product Suite (WRPS)



- Precipitation
- Snowpack
- Soil Moisture, Runoff
- Evaporation
- Groundwater
- River flow
- Surface Storage
- Water Quality
- Others

Applications

Drought
Flood Management
Flash Flood Prediction
Water Supply
Transportation
Emergency Management
Agriculture
Debris Flows
Ecosystems Management
Research

Customers

NWS
NOAA
Federal Agencies
Tribal Agencies
State Agencies
Local Agencies
Private Sector
Academia

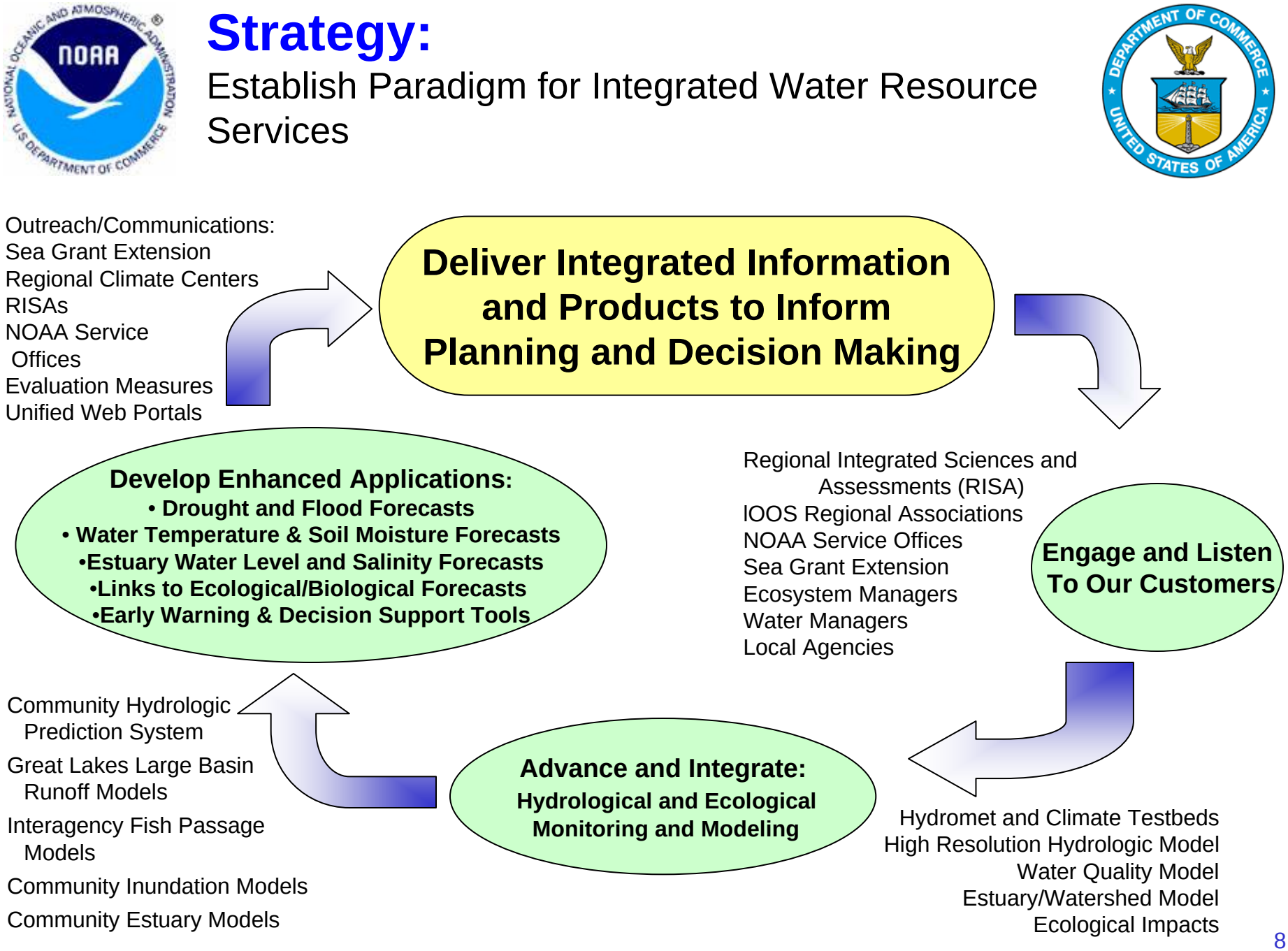
The WRPS includes a comprehensive suite of high-resolution (1-10 km) gridded hydrologic state variable and flux datasets and derived products to support a wide range of future applications and services. Temporal characteristics of WRPS range from current-hour analyses to forecasts of several months. Datasets include rainfall, snowfall, snow water equivalent, snowpack temperature, snowmelt, soil moisture, soil temperature, evaporation, sublimation, streamflow, and surface storage. Other hydrologic variables such as groundwater, fuel moisture, soil stability (e.g. debris flows potential), water quality, etc. are also possible in this framework.

Integrated Water Resource Services

- Augment and integrate weather, water and climate services
- Link NOAA's weather, water, climate ad biological analysis and forecast activities
- Strengthen partnerships and increase education

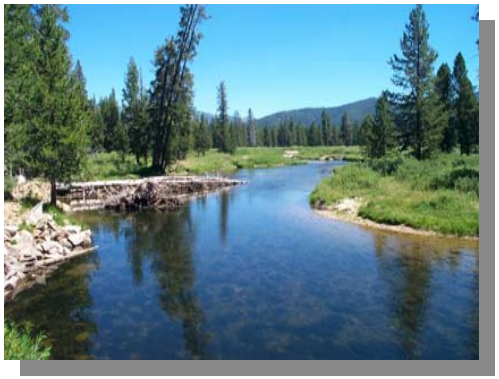
Strategy:

Establish Paradigm for Integrated Water Resource Services



Long-range Objective:

"Summit to the Sea" – Ecological Aspects



Freshwater Spawning/Rearing

- ***Snowpack***
- ***Air Temperature***
- ***Nutrients***

Downstream Migration

- ✓***River Flow***
- ✓***Water Temperature***
- ✓***Water Quality***
- ✓***Dam Operations***

Estuary/Coastal Ocean

- ***Water temperature, turbidity, salinity***
- ***Nutrient availability; production***
- ***Water Quality***
- ***Biological Populations and communities***

Integrated Water Resource Services – Priority Areas

1. Support National Integrated Drought Information System [initial focus: southwest]
2. Apply Hydrometeorology Testbed to flood-vulnerable regions [initial focus: American-Sacramento Rivers]
3. *Coordinate with NWQMN Pilot Studies and address user-specified water quality-related issues and concerns, including water quantity [additional: Gulf of Mexico]*
4. Develop and implement a Coastal-Estuary-River Information System [initial focus: South Atlantic – Coastal and Inland Flooding Observation and Warning Demonstration Project]

What we plan to do in the near-term – IWRS Activity 3

- White paper – Forecasting Surface Water Quality Conditions for the U.S.
- Supplemental document detailing regional water quality issues, customer needs, and key partners

NOAA Supporting Groups

- Regional Integrated Sciences and Assessments [Climate Program Office]
- National Centers for Coastal Ocean Science [National Ocean Service]
- National Centers for Environmental Prediction [National Weather Service]
- River Forecasting Centers [National Weather Service]
- National Estuarine Research Reserve System [National Ocean Service]
- NOAA Fisheries Regional Science Centers [NOAA Fisheries]
- National Sea grant Office [NOAA Research]
- Etc.

What we need from you

- Concepts and projects relevant to Activity 3 [and IWRS in general]
  - Transformed resource use
  - Altered ecological services
  - Restoration scenarios
- Relevant expertise that could be enhanced through NOAA's observations, analysis and modeling portfolios
- Broader engagement with our regional partners and collaborators

Epilogue: Clean Environment is Good for the Economy

Commercial Fisheries Resources

- Dockside value: $3 billion
- Consumer Expenditures for fishery products: $55 billion

Recreational Fishing

- People: 17 million
- Amount spent: $25 billion

Enjoyment of Nature, Photography

- People: 50 million
- Amount spent: $10 billion

Water Contact Recreation

- People: 110 million-trips
- Valued at: $40-50 billion

Waterside Property

- Value increases with improved water quality