



Weather & Water Goal

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Presentation Outline

- Mission / Vision
- Weather and Water Programs
- Demand for Weather and Water Services
- Guidance
- Benefits and Challenges
- NOAA's Role in Weather and Water Services
- NOAA's Partners and Relevance
- Balancing Weather and Water Priorities



Weather and Water Goal Mission

- **Together, we monitor, enhance, and deliver environmental information, science, and services to save lives, protect property, and support environmental stewardship.**



Weather and Water Goal Vision

The W&W Strategic Portfolio identifies goal priorities:

- ✓ **Priority 1: Robust observing and information technology infrastructure to ensure reliable services**
- ✓ **Priority 2: Research and improved services for high impact events: hurricanes, severe weather, fire weather, water, coasts, and other services as resources permit**
- ✓ **Priority 3: Strong program for advanced observing technologies**



Weather and Water Programs





High Impact Weather Services Demand

- **NOAA's customers and partners require high impact weather information to:**
 - **Plan, prepare, and help communities respond to weather's impacts faster, safer and smarter (Federal, regional, state and local decision makers)**
 - **Protect lives and property (emergency managers and the public)**
 - **Optimize the production of goods and services (the private sector)**



Public Demands for Water Services

- **Integrated and Expanded Services**

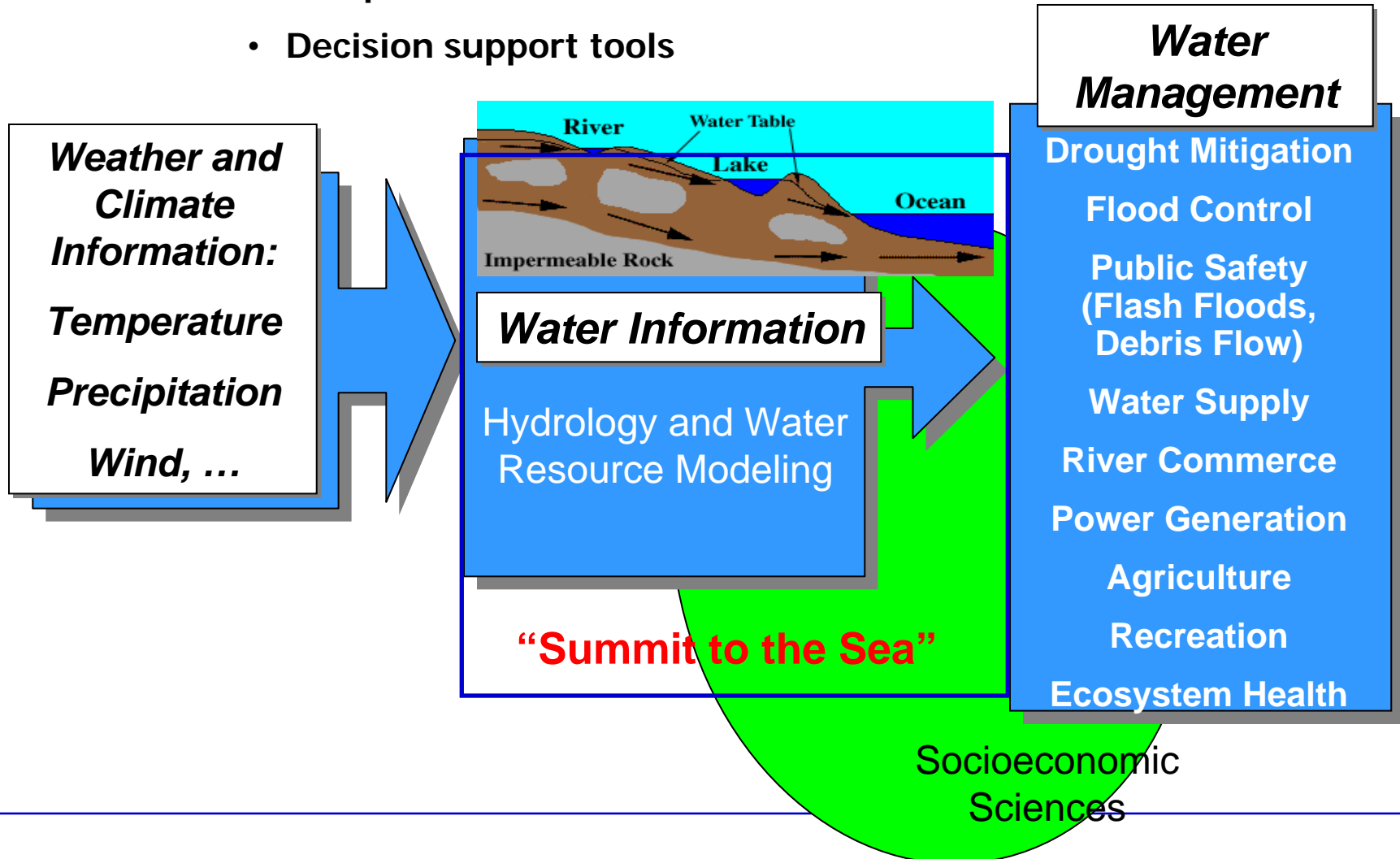
- ***"There is a lot of water information on NOAA's website for those who are willing to dig long enough.*** That is sometimes frustrating especially when unsure of a technical or industry name for the information being searched." **
- "We use the various drought products: drought monitor, soil and Palmer indices, etc., frequently for general information and for reservoir decisions. But ***it seems that there are different products on different NOAA sites.***" **
- ***"NOAA should ... support an integrated approach to oceans management and reduction of land based pollution."*** (2004, U.S. Commission on Ocean Policy)
- "I wish that the National Weather Service would ***forecast more rivers and streams across the nation*** to better suit the needs of individual cities and towns nationwide." **

** (2006, Customer Satisfaction Survey, Hydrologic Services Program)



Demand: More Useful Water Information and Services for Decision Makers

- Higher spatial and temporal resolution
- Comprehensive forecasts for the entire watershed
- Decision support tools





Nation's Coastal Demands

Ecosystems, Communities, and Economies at Risk

Coastal ecosystems are in decline

- 44% of U.S. estuaries impaired for human and aquatic life uses
- Majority of estuaries show signs of eutrophication
- Coastal habitats disappearing at a rate of between 1.2% and 9% a year

Coastal communities are more vulnerable

- 53% of population living in coastal areas, only 17% of Nation's land area
- 71% of annual U.S. disaster losses are from coastal storms
- 25,000 beach closings in 2006

Coastal economies are at risk

- 57% of U.S. GDP from coastal watershed counties
- \$6-30 billion per year from beach recreation
- \$10-26 billion per year from recreational fishing
- \$4.9-\$49 billion per year generated from coastal wildlife viewing
- \$15 billion spent yearly by local government on Great Lakes restoration

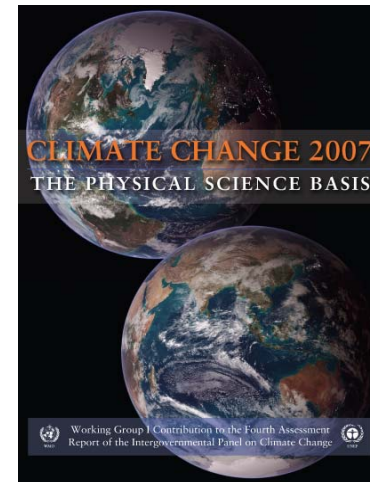


Demand for Coastal Action



“Maintaining the economic and ecological viability of our oceans and coasts will require decision makers to have access to sound information and up-to-date tools and technologies.”

“While the problems . . . must be addressed at the local level, additional tools and support that the Federal government can provide are also needed to truly resolve the most pressing issues.”



“Coasts are very likely to be exposed to increasing risks due to climate change and sea-level rise and the effect will be exacerbated by increasing human-induced pressures on coastal areas.” – *Intergovernmental Panel on Climate Change (2007)*



NOAA Stakeholder Guidance

"Stakeholders ... want NOAA to draw together resources within our agency and with partner agencies to comprehensively meet user needs for ongoing critical services as well as addressing emerging requirements.

... stakeholders do not want integration and new areas of growth in NOAA's portfolio to come at the expense of core mission responsibilities

-- the nation still needs the services that NOAA's core mission provides every day."

Admiral Lautenbacher

NOAA Stakeholder Forum All Hands email

June 2007



NOAA Strategic Plan

- **Letter from the Under Secretary**
 - **As an agency with responsibilities ... for delivering valuable weather, climate, and water information and services, ... NOAA must remain current and responsive in an ever-changing world.**
 - *We do this in concert with our partners* **and stakeholders in federal, state, and local governments and private organizations.**
 - *Every year we re-evaluate our progress and priorities,* **look for efficiencies, and take advantage of new opportunities to improve our information, products, and services.**



NEC Guidance

Develop Plan to:

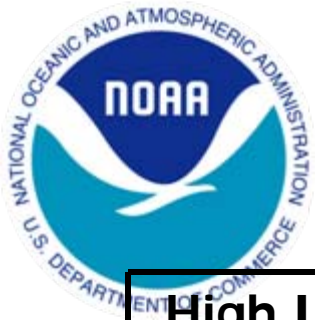
- ✓ Mitigate risks to core weather services
- ✓ Upgrade mission critical infrastructure reliability
- ✓ Improve hurricane and high impact weather operational forecasting

NEC Programming Guidance (8/3 & 9/19, 2007)



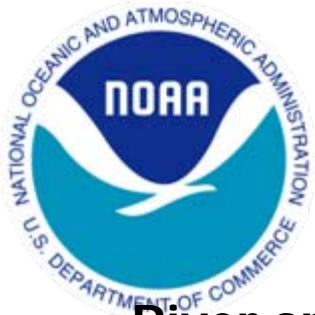
Weather and Water Benefits

- Weather and climate sensitive industries, both directly and indirectly, account for about one-third of the Nation's GDP (\$4 trillion in 2005 dollars) ranging from finance, insurance, and real estate to services, retail and wholesale trade and manufacturing
- Industries directly impacted by weather such as agriculture, construction, energy distribution, and outdoor recreation account for nearly 10 percent of GDP
- Average annual damage from tornadoes, hurricanes, and floods is \$11.4 billion of which:
 - hurricanes average \$5.1 billion and 20 deaths per year
 - floods account for \$5.2 billion, and average over 80 deaths per year
 - tornadoes cause \$1.1 billion in damages
- During 1980-2003, the U.S. sustained 58 weather or climate related disasters, with damage and costs exceeding \$1 billion per event. Total inflation adjusted direct losses from these events were more than \$350 billion.



High Impact Weather Services Impact/Benefits

High Impact Weather	Service Improvement
Air Quality	Quantitative particulate matter predictions to provide additional information needed for Federal, state and local governments and the public to act for both daily decisions and long-term planning.
Fire Weather	Timely, accurate forecasts which allow fire and emergency managers to stay ahead of changing fire situation to deploy resources to address most costly fires.
Hurricane	Improved track and intensity forecasts for improved disaster planning and focused hazard mitigation.
Severe Weather	Longer lead times to more completely alert communities to take shelter and mitigate losses.
Space Weather	Longer warning lead times to protect critical national infrastructures and mitigate large economic losses.
Tsunami	Education and Outreach for Caribbean communities to improve their resilience to tsunami events.



NOAA Forecasts Water

River and Stream Forecasts (NWS)

- Flash Floods
- Streamflow
- Water Supply

Great Lakes (OAR)

- Water Levels
- Hazardous Spill Response

Major Bays and Ports (NOS)

- Water Levels
- Currents



Numerical Weather Prediction (NWS, OAR)

- Precipitation
- Land Surface Conditions

Research and Development (OAR, NWS, NOS, NESDIS)

- Observations and Models
- Coupled Modeling Systems

NOAA-wide Strengths

- Discipline specific approaches, infrastructure, and service delivery capabilities
- Expertise in hydrologic science, observations, education/training, and operational forecasting
- Strong partnerships to use observations and scientific advances from other organizations (USGS, USACE, USBurRec, EPA, academia, private)
- Trusted source of hydrologic products and services for water infrastructure managers (USACE, USBurRec, Power Authorities, River Transportation Managers, Water Supply Authorities, Recreational Users, Natural Resource Conservation Organizations)



Water Resources Challenges

Issues:

- **Precipitation and snowfall patterns are changing**
- **More wet and dry extremes are expected**
- **Impacts are exacerbated by population shifts to coasts, highlands, and drylands**
- **Communities, ecosystems and economies are at risk**
- **America needs better information to manage risks for the potential water "crises"**

Response:

NOAA is well positioned to play a major role in providing water resource forecasting services to the nation

Emerging Water Forecasting Concerns:

"The dozens of recent levee collapses along the Mississippi river have prompted calls for stronger protection, but if those levees had held, the water would have risen even higher downstream.

And now there's more of it. Global warming seems to be creating a modest increase in violent downpours, but the real problem is the transformation of Midwestern wetlands into farmland and asphalt. Farmers have sucked their fields dry with millions of miles of tile drains, which helps explain why the Iowa and Cedar rivers rose so quickly last week."
(Time Magazine, June 23, 2008)





Benefits of NOAA Coastal Products and Services

- **Increase predictive capability (e.g., sea level rise and HAB/hypoxia/pathogen forecasts)**
- **Increase capacity building (e.g., tools and training for state, local, and other decision makers)**
- **Foster education and outreach for an environmentally literate society**
- **Coordinate planning and management (habitat protection/restoration, land acquisition)**
- **Offer incentives for partners and customers to use science-based tools and information to make better decisions (e.g., national goals and policy development; management assistance; program evaluation, and competitive grants)**



Weather and Water Services

NOAA's Role

- **"The Secretary of Commerce shall have charge of [entrusted to NOAA for] forecasting of weather, the issue of storm warnings, the display of weather and flood signals for the benefit of agriculture, commerce, and navigation...."**
 - National Weather Service Organic Act of 1890, 15 U.S.C. §313
- **NOAA is the sole U.S. government authority for issuing official weather and water warnings during life-threatening events.**
- **NOAA is the federal agency with the authority and responsibility to:**
 - Establish national coastal priorities and frameworks
 - Promote multi-sector management of coastal resources at local, state, regional and national scales
 - Observe and understand coastal and marine ecosystems
 - Promote coastal capacity building, education, and extension



Weather and Water Partners

- NOAA works with partners in all service areas
- NOAA provides National leadership and critical scientific expertise, tools, and forecasts
 - **Air Quality (EPA)**
 - **Fire Weather (Interagency Wildland Fire Agencies – BLM, BIA, FWS, NPS, NFS)**
 - **Hurricanes (DoD/Navy, DHS/FEMA)**
 - **Severe Weather (tornadoes) (Local Emergency Managers, Media)**
 - **Space Weather (NASA, DoD/Air Force)**
 - **Tsunami (USGS)**
 - **Water (USGS, USACE, USBurRec, USDA, EPA)**
 - **Coasts (Federal and State agencies, Fishery Management Councils and Fisheries Commissions, NGOs, Education and Scientific communities)**
- NOAA must balance support for these services to remain relevant in this changing environment.



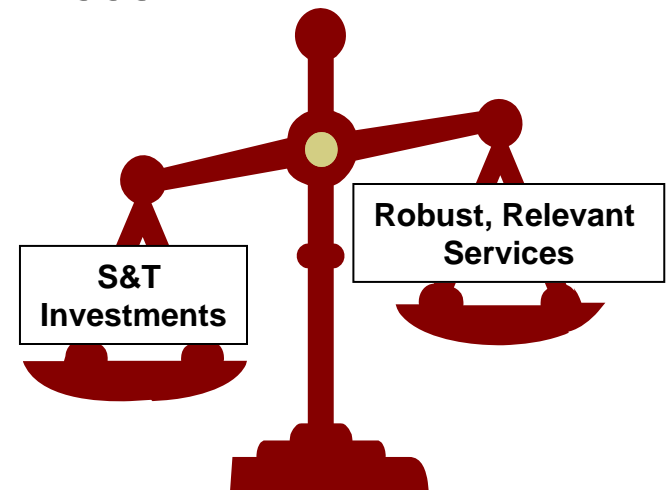
NOAA's Continuing Relevance

- **For NOAA to remain current and responsive we must evolve science and services to meet changes in**
 - **Climate (Air Quality, Fire Weather, Water, Coasts)**
 - **Technologies people depend on (Space Weather)**
 - **Demographics (Hurricanes, Severe Weather, Tsunami, Air Quality, Fire Weather, Water, Coasts)**



Weather and Water Goal

- **Balance NOAA's investments to:**
 - **sustain a robust infrastructure to provide continuous, relevant, and reliable services; and**
 - **invest in new science and technology to substantially improve current services**





Questions?

