

# National Severe Storms Laboratory Review

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National Weather Center  
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# Wrap Up

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Director



# Relevance: 20 Year Research Vision

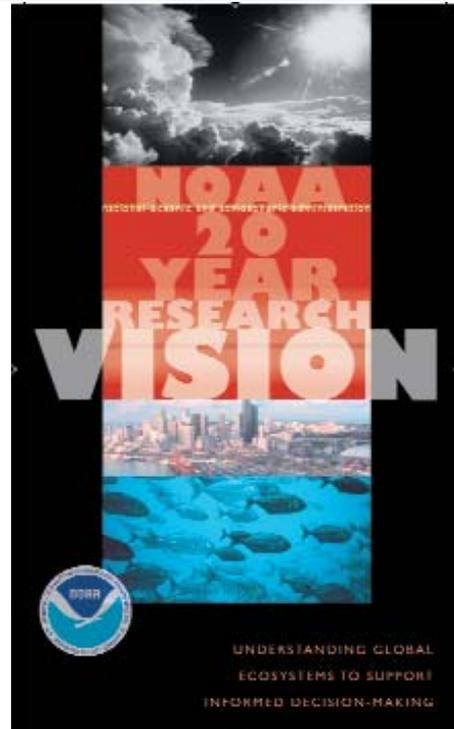
Warn-on-  
Forecast

“...tornado warning lead times will be on the order of one hour, rather than minutes...”

“Technology like the phased array radar, significant improvements in our understanding of mesoscale weather processes, and the development of models that embody this understanding will enable this [1 hour tornado warning lead times] accomplishment.”

Phased  
Array Radar

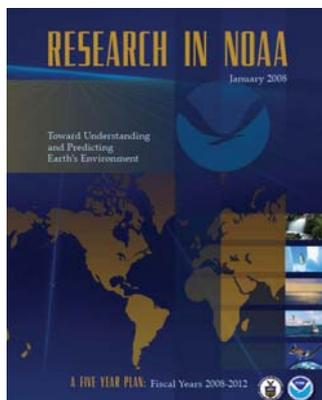
“Severe thunderstorm and tornado track forecasts at the sub-county level with one hour or more lead time...”



# Relevance: 5 Year Research Plan

NOAA Relevant Mission Goal:

**“Serve Society’s Needs for  
Weather and Water  
Information”**



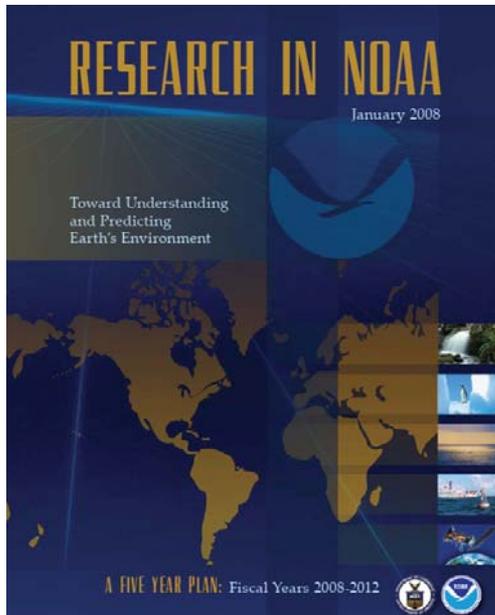
NSSL is contributing  
to all 7 Performance  
Objectives

Outcomes	Performance Objectives
Reduced loss of life, injury, and damage to the economy	<ul style="list-style-type: none"> <li>Increase lead time and accuracy for weather and water warnings and forecasts</li> </ul>
Better, quicker, and more valuable weather and water information to support improved decisions	<ul style="list-style-type: none"> <li>Improve predictability of the onset, duration, and impact of hazardous and high-impact severe weather and water events</li> </ul>
Increase customer satisfaction with weather and water information and services	<ul style="list-style-type: none"> <li>Increase application and accessibility of weather and water information as the foundation for creating and leveraging public (i.e., Federal, state, local, tribal), private and academic partnerships</li> <li>Increase development, application, and transition of advanced science and technology to operations and services</li> <li>Increase coordination of weather and water information and services with integration of local, regional, and global observation systems</li> <li>Reduce uncertainty associated with weather and water decision tools and assessments</li> <li>Enhance environmental literacy and improve understanding, value, and use of weather and water information and services</li> </ul>

# Relevance: 5 Year Research Plan

NOAA Relevant Mission Goal:

**“Serve Society’s Needs for  
Weather and Water  
Information”**



**“Improve Weather Forecast & Warning Accuracy & Amount of Lead-time”**

- Develop prototype PAR applications for tornado warnings...
- Provide decision-support services based upon probabilistic model guidance for coastal officials for storm surge...
- Testbed...
- Improved detection of severe storms using low-altitude, high-res Doppler data
- Deploy dual polarization...
- Implement a field project in Lower Miss/Gulf of Mexico...water quality/quantity
- Probabilistic forecasts for hazardous weather and explore Warn-on-Forecast

**“Improve Water Resources Forecasting Capabilities”**

- Deliver echo classification scheme to improve QPE using Dual Pol. radar
- Evaluate community-wide rainfall-runoff distributed hydrologic models
- Improve AHPS through multi-sensor QPE (Q2), including Dual Pol. and radar mosaics (NMQ)

**“Improve understanding & forecast capability in coasts, estuaries, & oceans”**

- Demonstrate a transition zone modeling system to integrate river, estuarine, and coastal models



# Quality

Many Quality Indicators but it is the people, the men and women of NSSL that make this a quality organization.

- ✦ Publication metric
- ✦ Awards, service to professional societies are strong.

What sets NSSL apart:

- ✦ Number and importance of collaborations with Universities, DOD, DOT, DHS, private companies.
- ✦ Collocation with five NWS customers.
- ✦ Other connections to stakeholders.
- ✦ Contributions to educating the next generation of scientists.



# Performance

NSSL is a leader among NOAA laboratories in successfully transferring research and technology into the operational NWS.

Doppler weather radar is now available in most large and medium sized television market areas.

Michael Crichton and Steven Spielberg made a movie based on our science and way of doing research. It is the only Spielberg movie where the scientists were the “good guys”.



# Challenges

- Aging scientific workforce
- Difficulty in attracting PhD Electrical Engineers
- Diversifying scientific workforce
- Cultural differences with the NWS. NSSL takes the long view while NWS' needs are more immediate.
- Encouraging creativity within the research environment vs. accountability and process oriented management.