Weather, Water and Climate Services

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Overview
NOAA Research and Services: Understanding Relationships

- Science is the foundation for all of what NOAA does.
- Services are at the heart of NOAA’s mission.
- Research builds the scientific foundation.
- Research also builds science-services connections.

Two important attributes for creating effective services are:

- **Responsiveness** – understanding current needs (user pull)
- **Innovation** – anticipating future needs (research push)
Research-Service Drivers

• **NOAA’s goals** (e.g., Climate, Weather and Water), mission requirements.

• **Needs of existing NOAA services** (our primary customers). Are there critical service gaps that we can address?

• **Needs of emerging NOAA services** – the NOAA Climate Service.

• **National imperatives** - National needs for information relevant to climate change adaptation and mitigation, water, energy, etc.

• **Public and decision-maker needs** - Can drive innovation.

• **Scientific advances** – breakthroughs and surprises.
A NOAA Service Need

- The research driver: NWS requirement for improved “week two” forecasts
- Improvement required innovation – “Reforecasting” (see Hamill poster)
- Method led to major skill advances (~1-2 day lead-time improvements)

This research did more than transition to operations: it *transformed* operations.

La Conchita flood/landslide 01/12/05

6-10 day forecast using Reforecast Method
A National Need: Improved Drought Information

Annual average U.S. drought-related losses are several billion dollars.

- 1980 Drought ($48.4B)
- 1988 Drought ($61.9B)
- 2002 Drought ($10.0B)

Damage Amounts in 2002 Dollars

Extreme Weather/Climate Events

NOAA Earth System Research Laboratory Review - Boulder, Colorado
March 9-12, 2010
Compelling Regional Issues

- **Challenges of future Western Water supply**
  (Western Water Assessment – Kristen Averyt)

- **Development of regional climate services**
  (Several speakers)

- **Anticipating and managing severe floods**
  (HMT and Atmospheric Rivers - Marty Ralph)
Some common threads in what follows

- The importance of understanding user needs and the decision context.
- Sustained interactions are often vital.
- Decisions are made across a broad range of time scales, from weather to climate.
- Water – too much or too little – is often of crucial importance to decision-makers.

HMT-SE User Needs Workshop

Andrea Ray – field research to understand the decision context
What you will hear, and what you won’t

You will hear a sample of research-service presentations by:

- **Marty Ralph**  
  Research to Improve Services
- **Marty Hoerling**  
  Development of an attribution services capability
- **Kristen Averyt**  
  The Western Water Assessment
- **Roger Pulwarty**  
  National Integrated Drought Information System
- **Robin Webb**  
  Summary and Way Forward

You won’t hear of numerous other important research-service activities by PSD and GSD.

*The good news:* Many of these other activities are covered in other oral presentations, poster presentations, and Division tours.