

End to End Multi Hazard Warning and Response in the United States



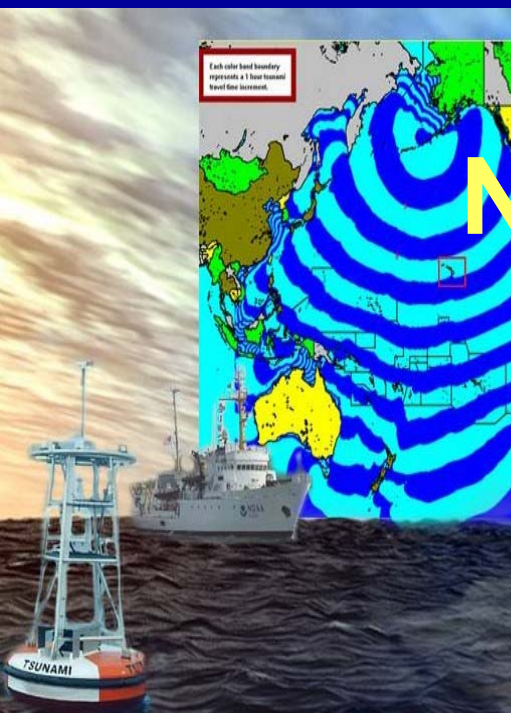
Curtis B. Barrett, Lynn Maximuk

National Oceanic and Atmospheric Administration

Michael Selves

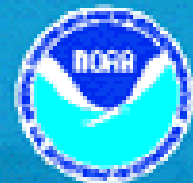
International Association of Emergency Managers

Symposium on Multi-Hazard Early Warning Systems -5-7
May 2009, WMO, Toulouse, France

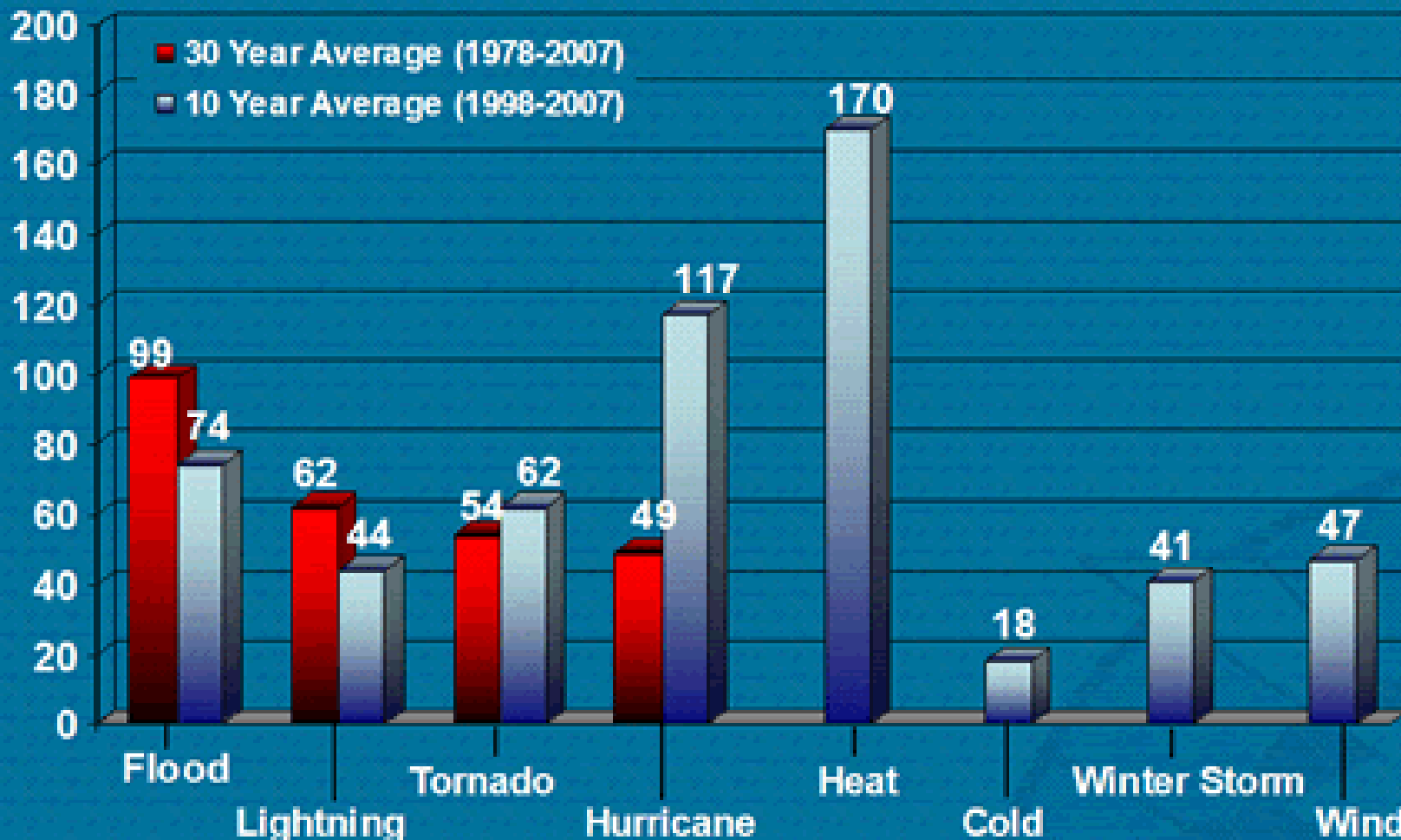


**Natural Hazards in the US
have a huge impact on
the Economy and on
human life**





Weather Fatalities



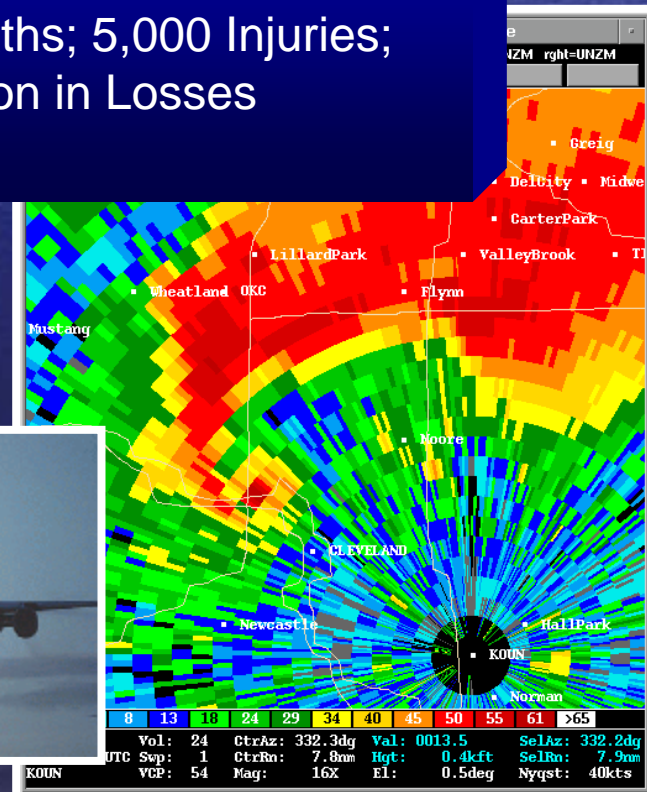
About the National Weather Service

- Provide climate, water, weather forecasts and warnings to protect **life** and **property** and enhance the economy

- Data and products are used by other government agencies, the private sector, public, and the general community.

A Typical Year Brings:

- 7 Hurricanes
- 1,000 Tornadoes
- 5,000 Floods
- 10,000 Violent Thunderstorms
- Drought Conditions
- 500 Deaths; 5,000 Injuries; \$14 Billion in Losses



U.S. EMERGENCY MANAGEMENT

- A national system comprised of Local, State and Federal E.M. agencies
- Responsible for coordinating the preparedness for, response to, recovery from & mitigation of disaster events
- Authority derived from statutes and chief elected officials at each level
- Local agencies primarily responsible for severe weather preparedness/warning

Federal, State, Local NGO Roles in Weather Warnings/Disasters

- Pre-Event:
 - FEMA & State EM Agencies not involved
 - Local EMs plan with NWS field offices
 - Local EMs & NGOs (Red Cross) provide public awareness materials/presentations
- During the Event:
 - Local EMs coordinate directly with NWS
 - NWS and Local EMs activate numerous warning methods

Federal, State, Local NGO Roles in Weather Warnings/Disasters

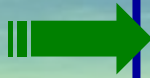
- After an Event:
 - Disaster Declarations: Local CEO → State Governor to the President (Through FEMA regional offices/HQ FEMA)
 - State, Locals, FEMA and NGOs operate from a joint field office to provide resources & coordinate assistance to communities/citizens

ESSENTIAL LOCAL "PARTNERSHIP"

- Continuing communication between local EM agency and local NWS Forecast Office
- Based on mutual trust, respect and understanding
- Collaboration in preparing the public for severe weather events.
- Real-time interaction during events
- NWS Warning Coordination Meteorologists (WCM) a key element.

Observations to Forecasts to Warnings to Response

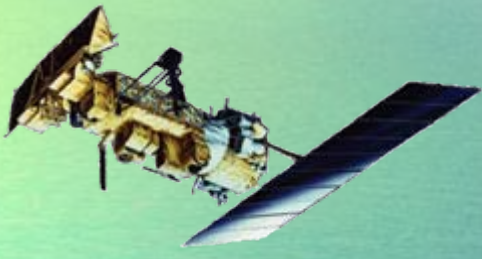
Observations



Forecast Model
Inputs



Geospatial
Products



Precipitation



Snow Pack



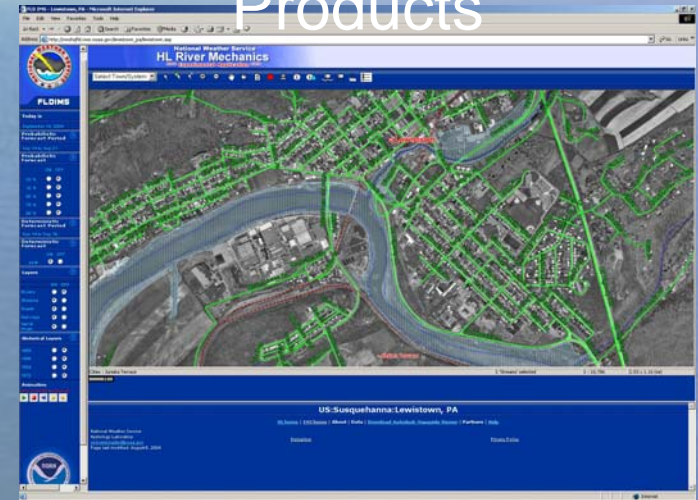
Soil Moisture



River Flow



Coastal Water
Conditions



End to End

Observation and Detection

Analysis

Coordination and Dissemination

Recovery and Assessment

Response

Mitigation, Planning and Education





Disseminating Warnings along Multiple Pathways

Users

- Public
- Emergency Management
- Private Sector
- Government Agencies
- Academia

Methods

- NOAA Weather Radio
- NOAAPORT
- Weather Wire
- Internet
- Emergency Managers Weather Information Network (EMWIN)M
- Media
- Private Sector





THANK YOU



**FLOODING AHEAD
TURN AROUND
DON'T DROWN**

