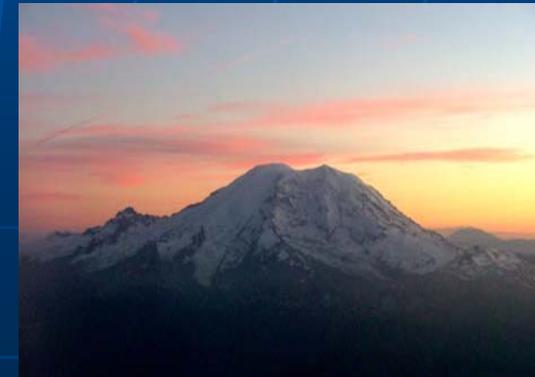


U.S. Case Study - June 14, 2005 and Role of the Media



Ted Buehner,
Warning Coordination
Meteorologist
National Weather Service
Seattle, Washington, USA





National Weather Service Mission

Serving America Since 1870



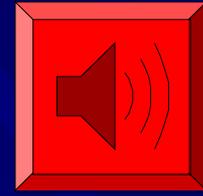
Provide Weather, Hydrologic, and Climate Forecasts and Warnings for the United States, its Territories, Adjacent Waters and Ocean Areas, for the Protection of Life and Property and Enhancement of the National Economy.

The Warning System

- Detection / Warning
- Dissemination
- Response



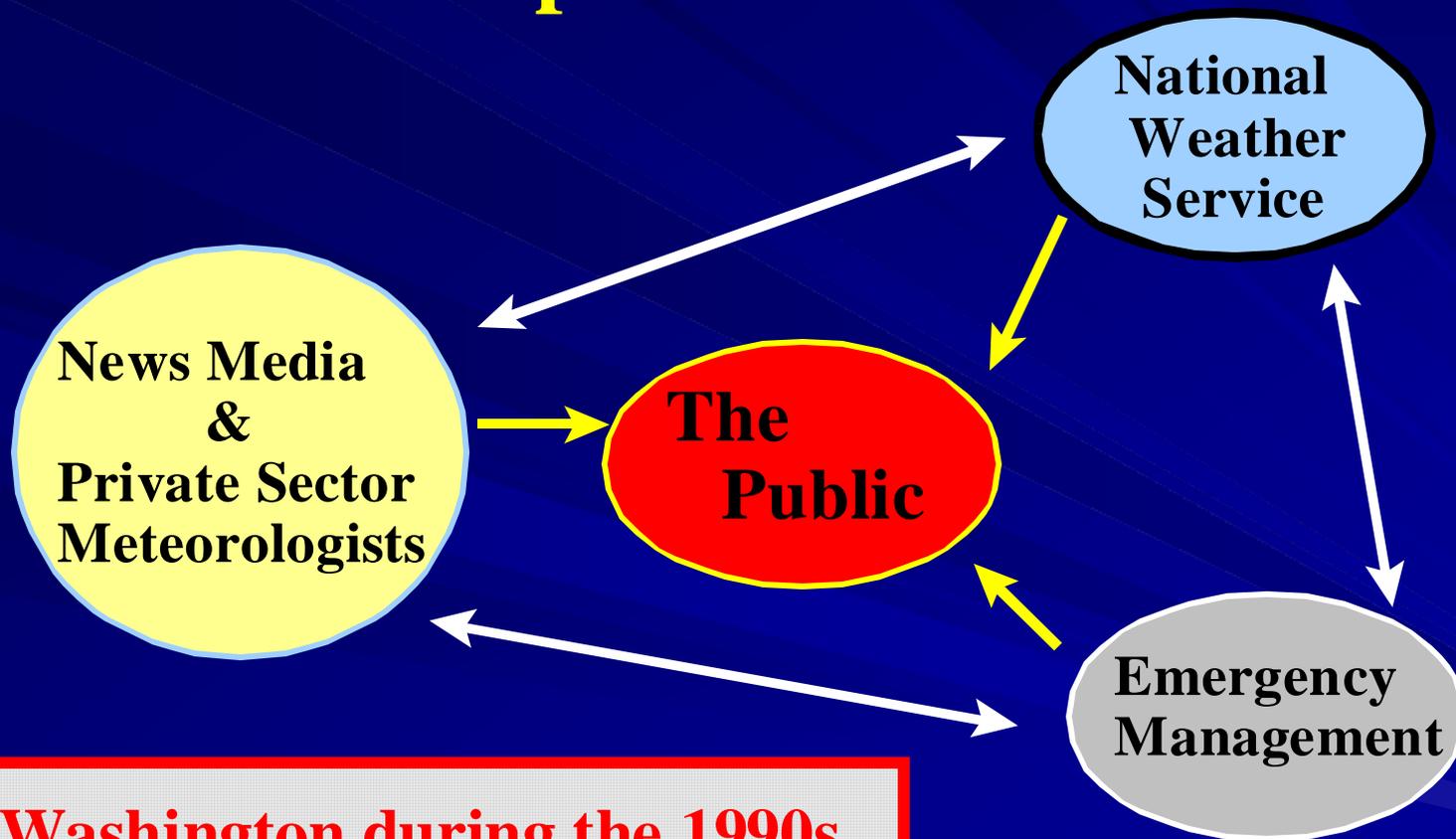
Warning System Goal:



To maximize the number of people who take appropriate and timely action to minimize injury, death, and property damage due to hazardous weather and flooding.

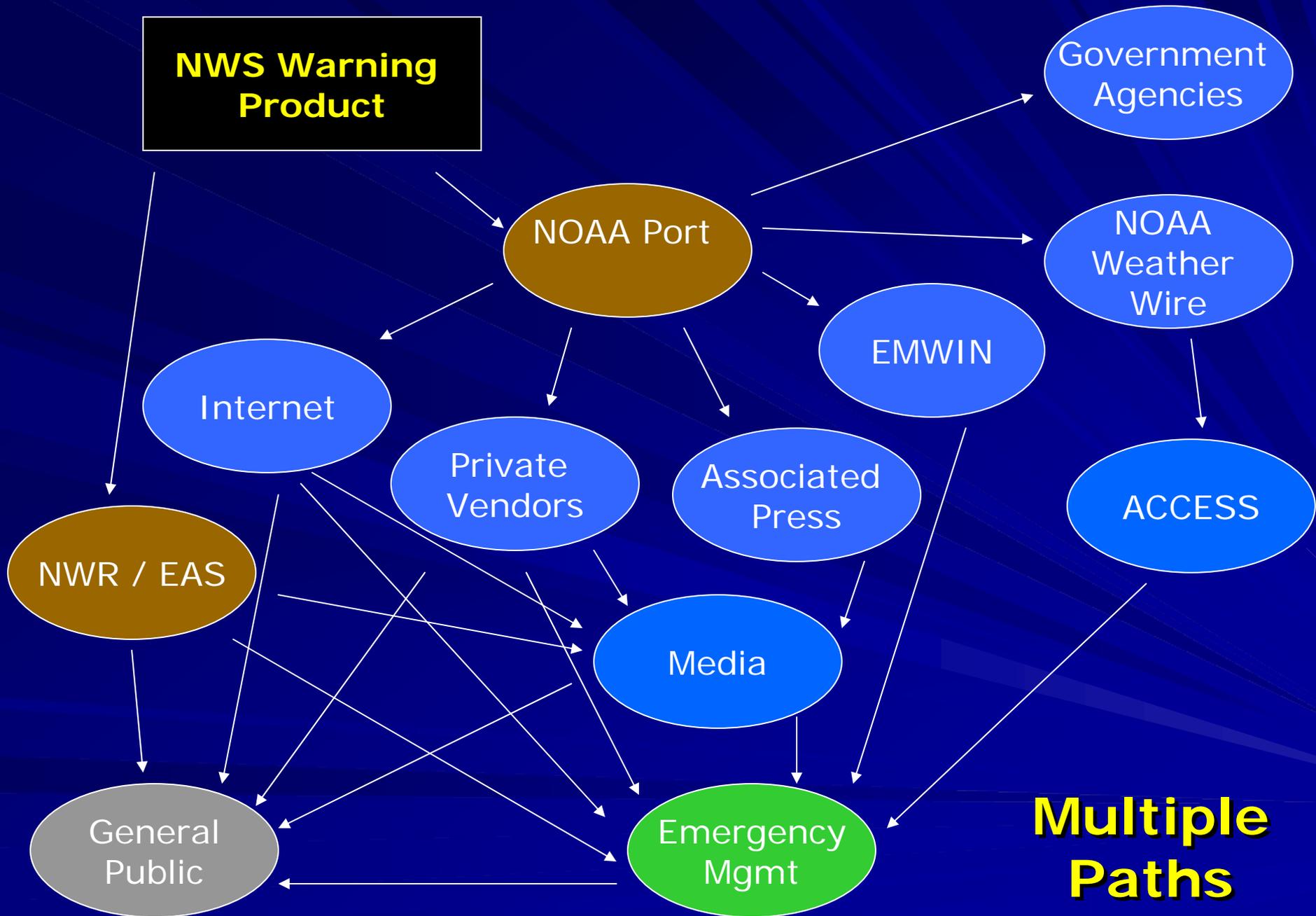


The Weather Warning Partnership:

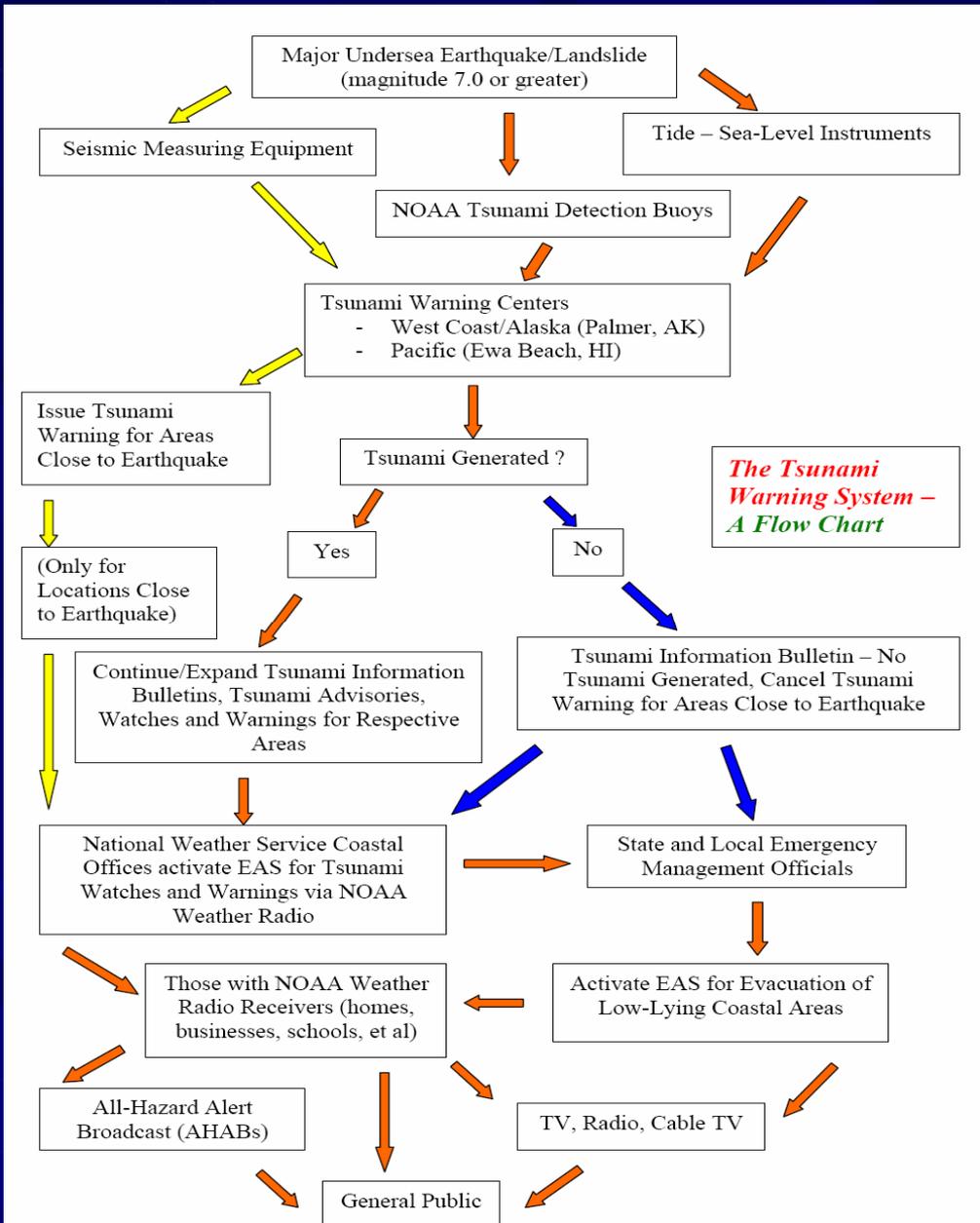


In Washington during the 1990s

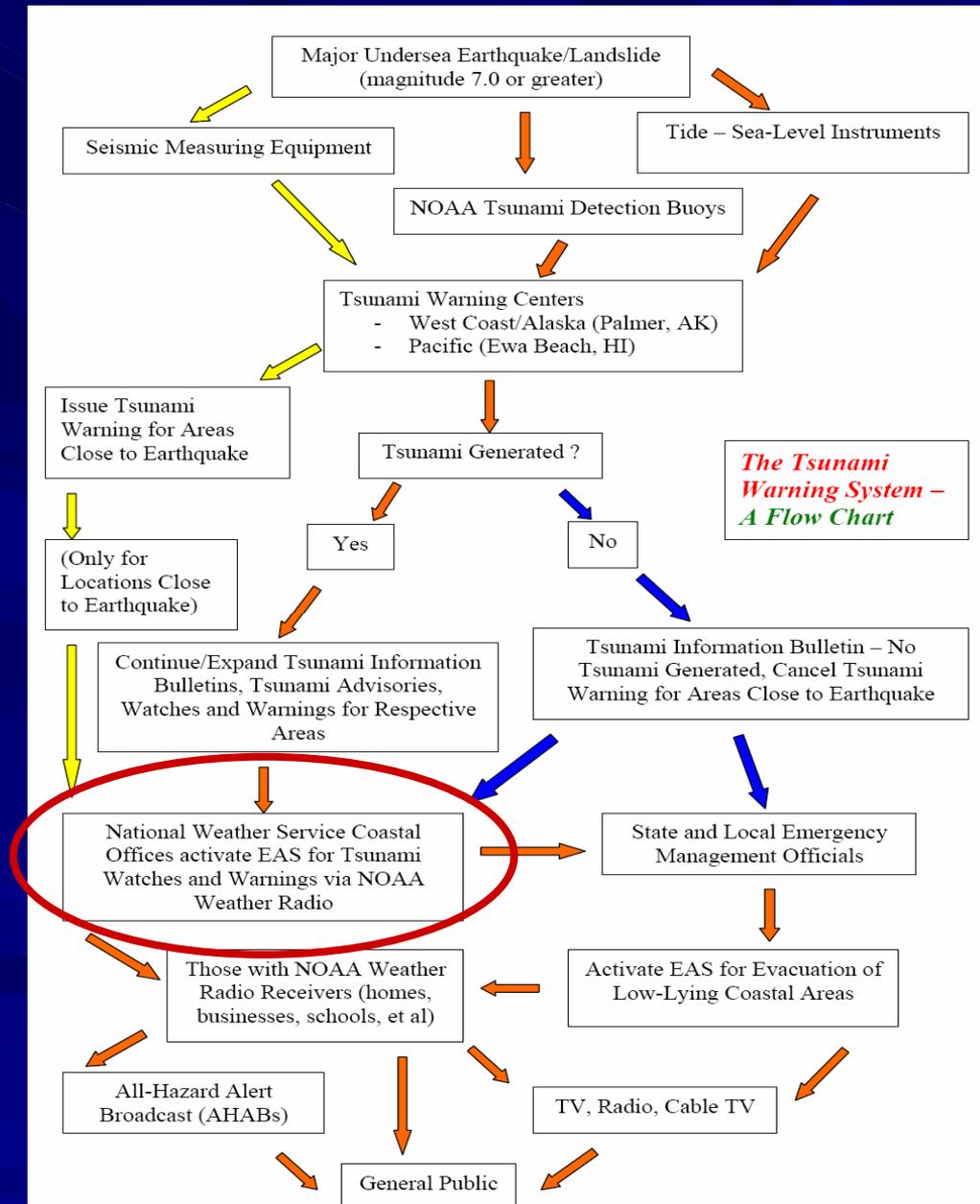
- Nearly 100 Fatalities,
- Hundreds Injured,
- Over \$1 Billion in Property Damage



The Tsunami Warning System



The Tsunami Warning System





Who Receives EAS Messages via NOAA Weather Radio



- **All Broadcasters**
 - TV
 - Radio
 - Cable TV
- **Weather Radio Receivers**
 - Homes
 - Businesses
 - Schools
 - Health Care Facilities
 - All-Hazards Alert Broadcast (AHAB) Units
 - Any With Receivers



**Ocean Shores
"AHAB"**



Emergency Alert System (EAS) Message Elements



- **Header Code**
 - Who – Originator Code
 - What – Event Code
 - Where – Location Code
 - When – Duration Time and Issuance Time
 - Who – Station Identification
 - Takes About One Second – Repeated 3 Times
- **NOAA Weather Radio Warning Alarm**
- **Voice Message (Up to 2 minutes)**
- **End of Message Tones/Codes**
- **EAS Tones Are Digital**

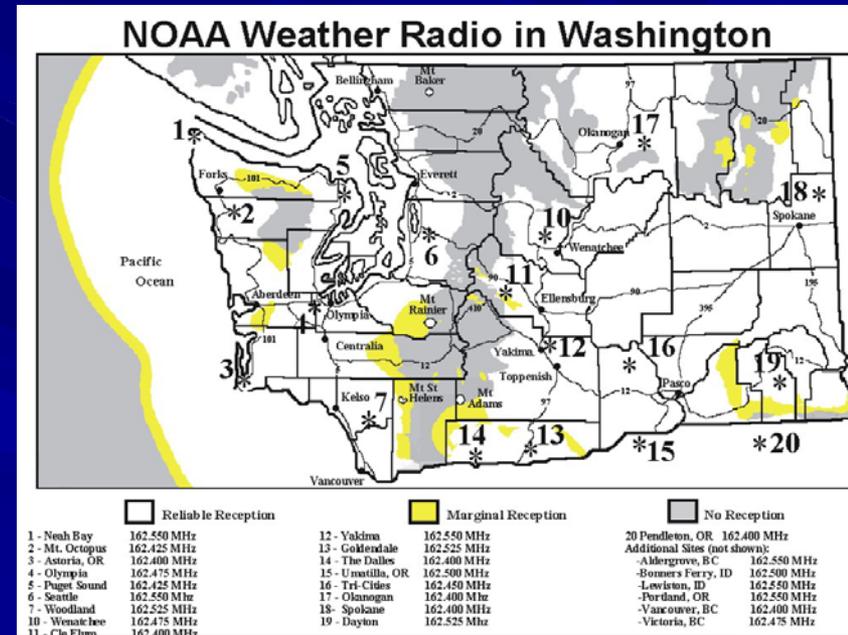
June 14, 2005

- **751 PM** - 7.4 Magnitude Earthquake about 160 km off the Northern California Coast
- **756 PM** – **Tsunami Warning** issued by West Coast/Alaska Tsunami Warning Center for Washington, Oregon, California
 - Within 2 hours travel time
- **800 PM** – **No Tsunami Generated** Message issued by the Pacific Tsunami Warning Center in Hawaii for rest of Pacific basin beyond the U.S. west coast
 - Both messages are disseminated to all mediums (media, emergency management, et al)

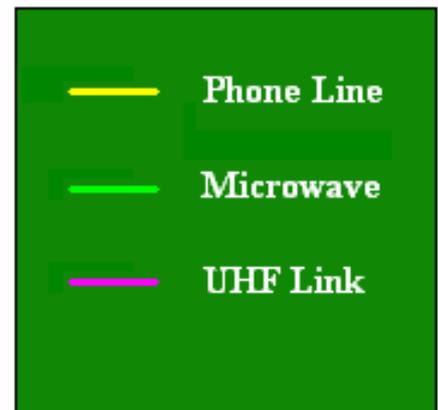
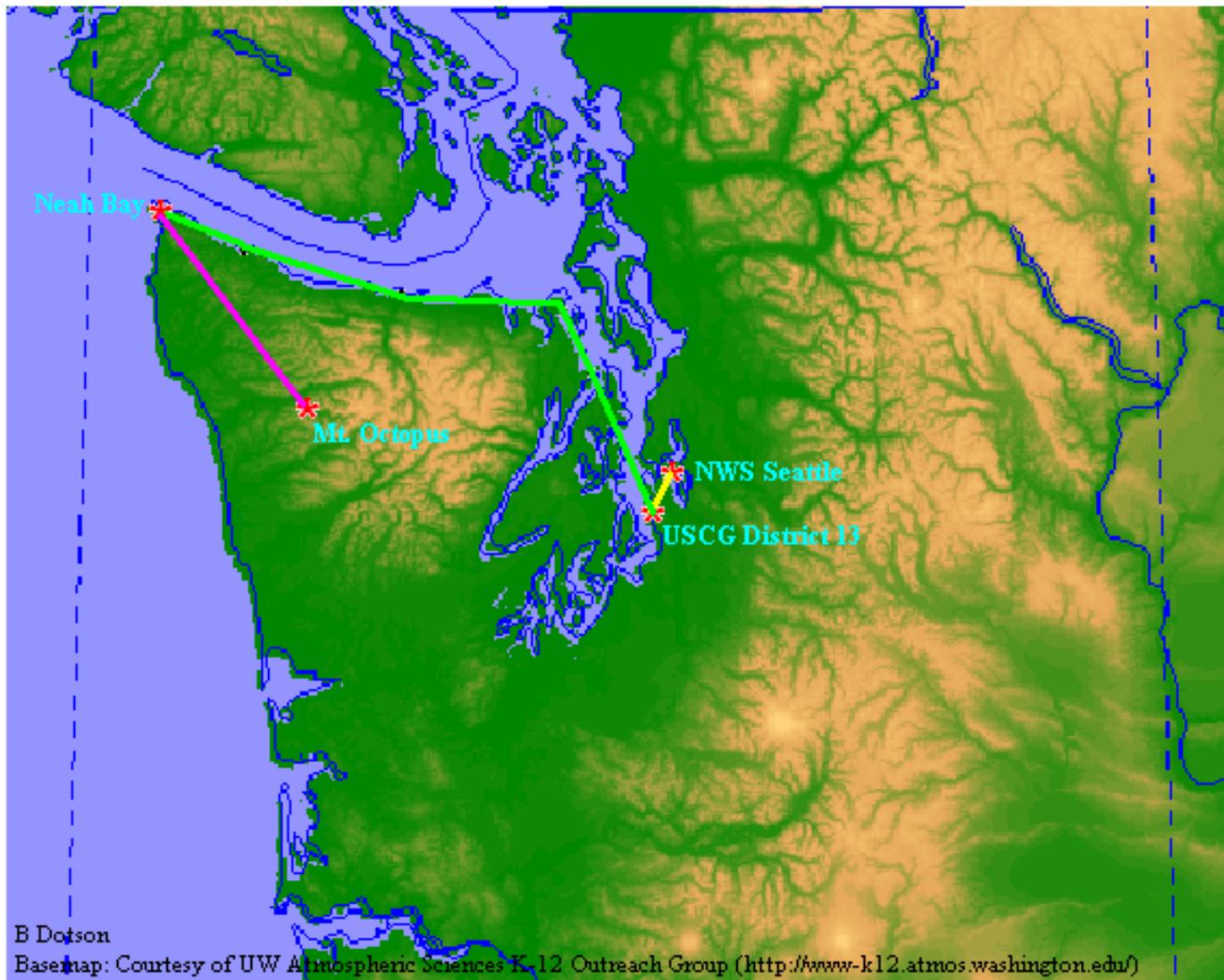


June 14, 2005

- **806 PM** – **NWS Seattle and Portland** activated the **Emergency Alert System (EAS)** via **NOAA Weather Radio** (four stations serve the coast)
 - Phone line to two stations on north coast failed
 - **EAS not activated on the north coast**
 - Astoria weather radio station signal quality poor
 - **EAS message reception was poor on south coast**
 - Not transmitted on western interior stations
 - **Seattle and Portland media did not get the EAS message**
 - **Coastal areas served by Seattle/Portland area TV stations**



Communication Lines in Western Washington



B Dotson

Basemap: Courtesy of UW Atmospheric Sciences K-12 Outreach Group (<http://www-k12.atmos.washington.edu/>)

June 14, 2005

- 811 PM – Clallam County activated its local Emergency Alert System (EAS) for evacuation of low-lying coastal areas via local radio broadcasters
 - Broadcasters relayed EAS message
 - Quileute and Makah Tribes evacuated
 - Many beach areas evacuated
- Rest of coastal counties chose to wait and see what happened further south in Oregon and California
 - EAS not activated for evacuation
 - Hoh and Quinault Tribes evacuated anyway
 - Many beach areas had self-evacuation



June 14, 2005

- 911 PM (1 hour 20 min after earthquake) -
Tsunami Warning cancelled by West Coast/Alaska Tsunami Warning Center for Washington, Oregon, California
 - Cancellation message disseminated to all mediums (media, emergency management, et al)
 - No tsunami was generated
 - Quake was horizontal – not vertical
 - Coastal tides gauges showed only a small tsunami

June 14, 2005 Issues

- **Confusion about the tsunami messages**
 - West Coast/Alaska Tsunami Warning Center
 - Tsunami Warning for Washington, Oregon, California
 - Within 2 hours tsunami travel time
 - Pacific Tsunami Warning Center
 - No Tsunami Expected for rest of Pacific Ocean Basin
 - Not Enough Updates – Only One Per Hour
 - Media
 - Emergency Management Community
 - General Public
 - Mixed Response to the Warning
 - Some Evacuated.....Some Did Not

June 14, 2005 Issues

- Confusion about whether to evacuate low-lying coastal areas
 - Incomplete Information
 - Tsunami Warning in Effect – Yes or No?
 - Wait for Tsunami Confirmation Elsewhere
 - Washington Emergency Management
 - Stood by to Send a Coastal EAS Evacuation Warning
 - None Received From Coastal Counties

June 14, 2005 Issues

- **Tsunami EAS Message Dissemination Problems**
 - Weather Radio Station Communications
 - Phone Line Link Serving Two North Coast Stations Went Down Earlier in the Day
 - Poor Signal Quality for the South Coast Station
 - EAS Message Effectively Aired by only One of Four Weather Radio Stations
 - Lack of EAS Message Sent to Western Interior Areas
 - Seattle/Portland Broadcasters did not Receive the Tsunami Warning EAS Message
 - Broadcasters did not Air the Tsunami Warning EAS Message
 - Many Coastal Areas get Seattle/Portland TV/Radio Media

June 14, 2005 Lessons Learned

- **Confusion about the tsunami messages**
 - West Coast/Alaska Tsunami Warning Center
 - Pacific Tsunami Warning Center
 - Adjusted their statement wording to make them more clear
 - Develop a New Public Warning Message to Reduce Confusion
 - Not Enough Updates – Only One Per Hour
 - Now have staff for 24/7 operations
 - Update statements every 30 minutes
 - More tsunami detection buoys
 - More coastal tide gauges

June 14, 2005 Lessons Learned

- Confusion about whether to evacuate low-lying coastal areas
 - More Tsunami Message Updates
 - More Positive Media and Public Response
 - Includes More Supportive Data
 - Washington Emergency Management
 - Now have an Agreement with Coastal Counties for One 'Move to Higher Ground' EAS Message
 - To Follow Initial Tsunami Warning EAS Message issued by the National Weather Service
 - Coastal Counties can Still Issue their Own Local EAS Evacuation Message
 - Install More All-Hazard Alert Broadcasting (AHAB) Sirens along Coastal Beaches

June 14, 2005 Lessons Learned

■ Media

– Created a Tsunami Media Kit

- Joint Effort Between Washington State Emergency Management, National Weather Service and Coastal Counties

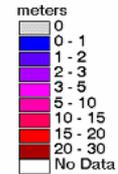
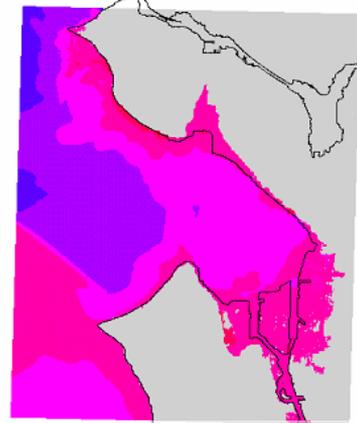
– Includes

- Tsunami Fact Sheets
 - Local Subject Matter Experts
 - Local Coastal Area Tsunami Inundation Zone/Evacuation Maps
 - Tsunami Warning System Flow Chart
 - Tsunami Interviews and More
- Distributed in Person to TV/Radio Broadcasters via a Tsunami Media Tour
 - Plan to Update Kit Each Year
 - Plan to Conduct Tsunami Media Tour Each Year

Washington Faces Many Non-Weather Hazards



Maximum Wave Heights (referred to Mean High Water)



Projection: State Plane Coordinate System
Zone: 5626 (Washington South)
XY Units: feet
Horizontal Datum: NAD27
Vertical Datum: Mean High Water



NOAA TIME Center
Pacific Marine Environmental Laboratory
Seattle, Washington

Tsunamis



Terrorism



Major Chemical Spills

The State of Washington



Proclamation

WHEREAS, the state of Washington has experienced natural and man-made disasters in the past, and scientific evidence indicates Washington remains vulnerable to natural and man-made disasters in the future; and

WHEREAS, the loss of life and property can be greatly reduced if citizens have available information provided over the National Oceanic and Atmospheric Association (NOAA) weather radio; and

WHEREAS, state agencies, schools, hospitals, businesses and the general public should have weather radios equipped with a special alarm tone feature that can sound an alert and give immediate information about a life threatening situation; and

WHEREAS, the importance of listening to the NOAA Weather Radio will be highlighted during the month of September by NOAA, the city, county and state emergency management agencies, and schools, hospitals and businesses throughout the state; and

WHEREAS, the citizens of Washington need to prepare themselves to be self-sufficient for at least three days following a natural or man-made disaster;

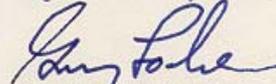
NOW, THEREFORE, I, Gary Locke, governor of the state of Washington, do hereby proclaim September, 2001, as

NOAA Weather Radio Month

in Washington State, and I encourage all citizens to increase their knowledge and awareness of the benefit and use of the NOAA weather radio before, during, and after a natural or man-made disaster.



Signed this 21st day of June, 2001

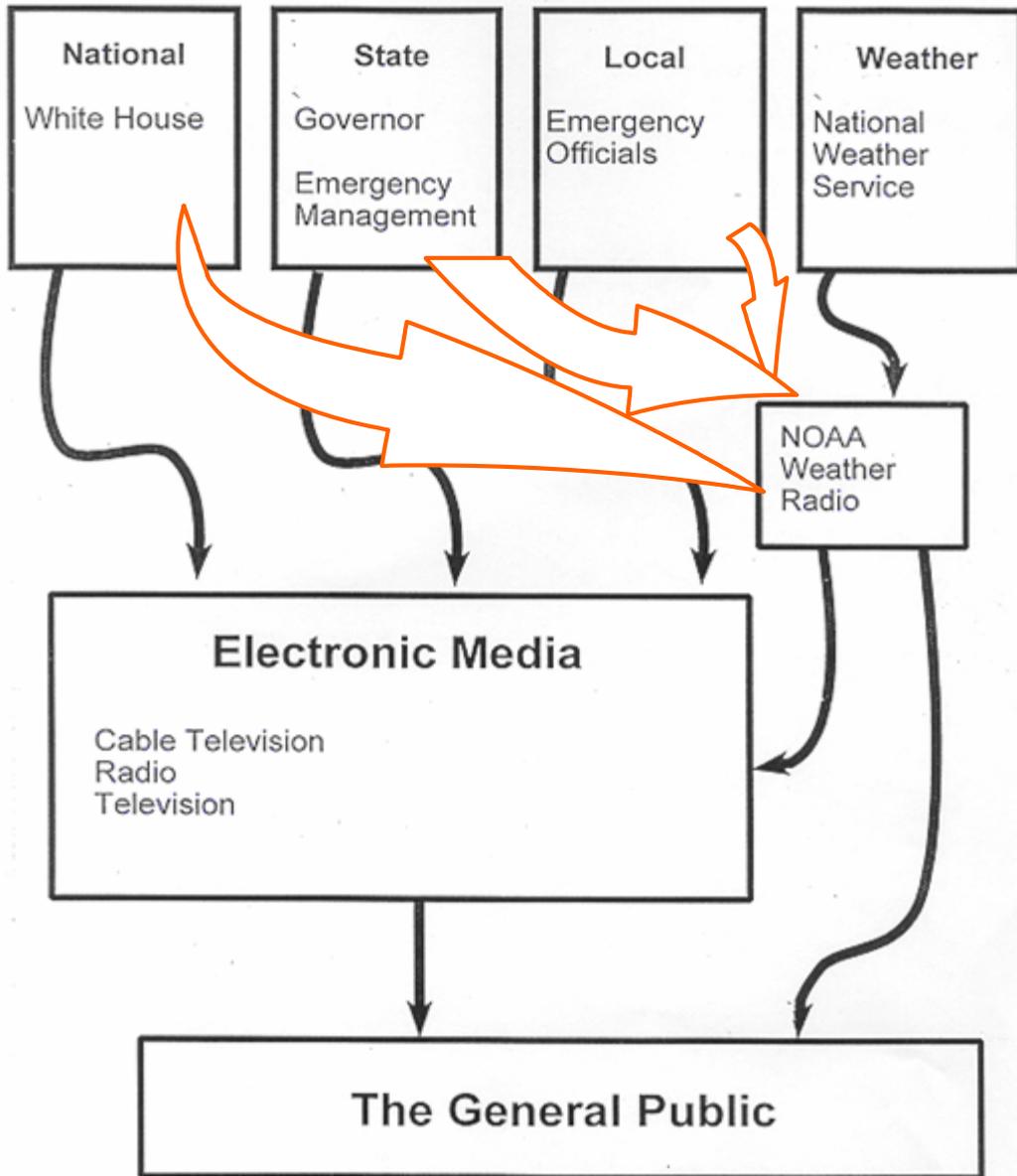

Governor Gary Locke

NOAA Weather Radio is Washington's "All-Hazards" Warning System



Ocean Shores "AHAB"

EAS Message Originating Sources

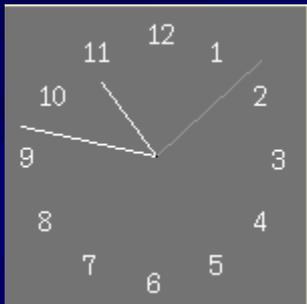


NOAA Weather Radio



A Life Saver for the Cost of a Pair of Shoes

Direct from the NWS 24 hours a day

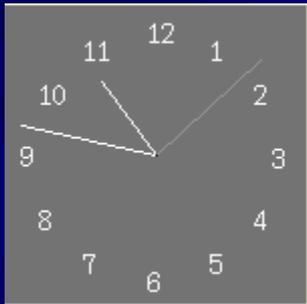


NOAA Weather Radio



A Life Saver for the Cost of a Pair of Shoes

Latest Area Forecasts and Conditions

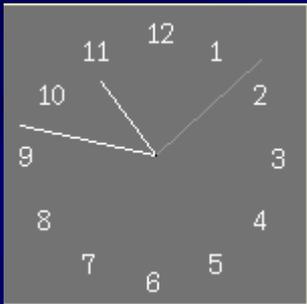


NOAA Weather Radio



A Life Saver for the Cost of a Pair of Shoes

Over 900 Stations Across the U.S.

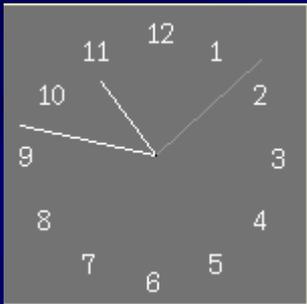


NOAA Weather Radio

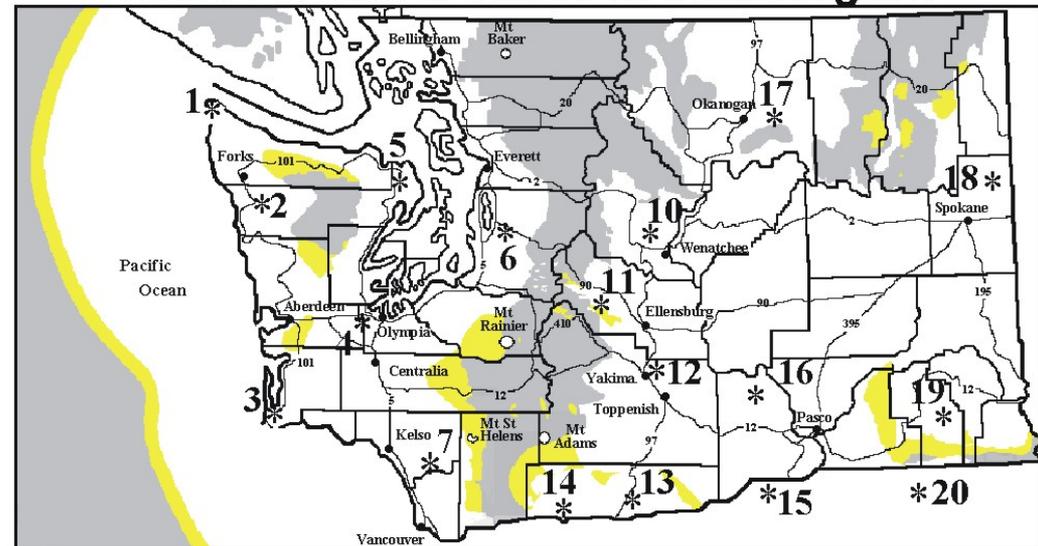
A Life Saver for the Cost of a Pair of Shoes



21 Stations Serve Washington



NOAA Weather Radio in Washington



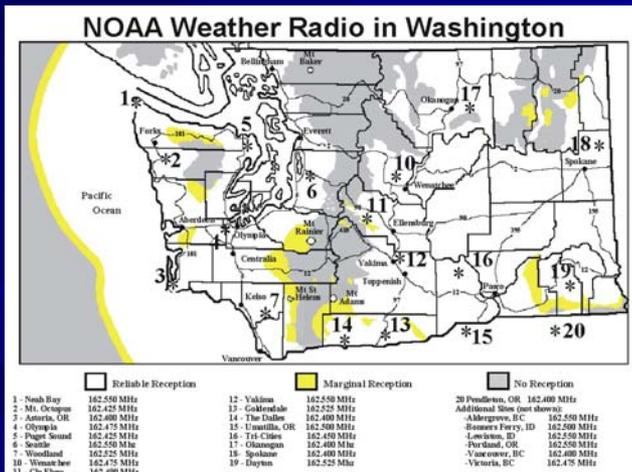
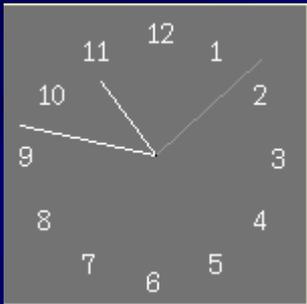
Reliable Reception	Marginal Reception	No Reception
1 - Neah Bay 162.550 MHz	12 - Yakima 162.550 MHz	20 Pendleton, OR 162.400 MHz
2 - Mt. Octopus 162.425 MHz	13 - Goldendale 162.525 MHz	Additional Sites (not shown):
3 - Astoria, OR 162.400 MHz	14 - The Dalles 162.400 MHz	- Aldergrove, BC 162.550 MHz
4 - Olympia 162.475 MHz	15 - Umatilla, OR 162.500 MHz	- Bonners Ferry, ID 162.500 MHz
5 - Puget Sound 162.425 MHz	16 - Tri-Cities 162.450 MHz	- Lewiston, ID 162.550 MHz
6 - Seattle 162.550 MHz	17 - Okanogan 162.400 MHz	- Portland, OR 162.550 MHz
7 - Woodland 162.525 MHz	18 - Spokane 162.400 MHz	- Vancouver, BC 162.400 MHz
10 - Wenatchee 162.475 MHz	19 - Dayton 162.525 MHz	- Victoria, BC 162.475 MHz
11 - Cle Elum 162.400 MHz		

NOAA Weather Radio

A Life Saver for the Cost of a Pair of Shoes



Has a **Warning Alarm Feature**

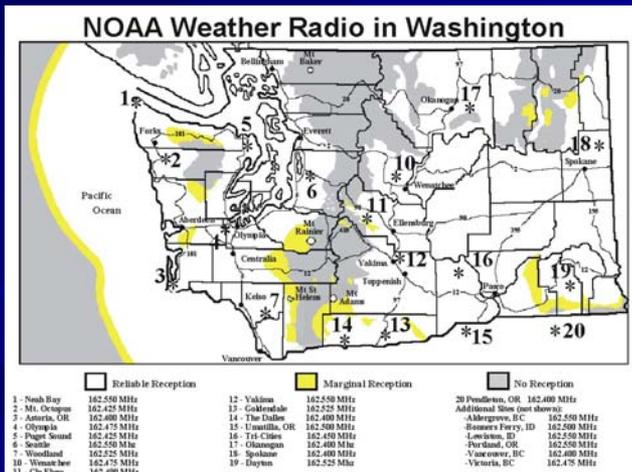
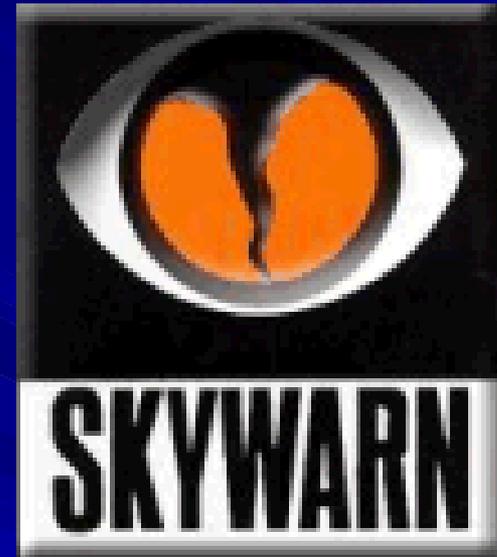
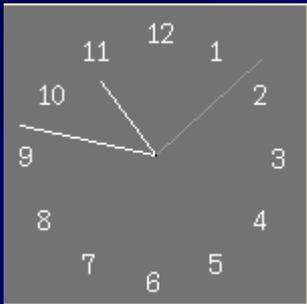


NOAA Weather Radio

A Life Saver for the Cost of a Pair of Shoes



Flood and Weather Warnings as Needed

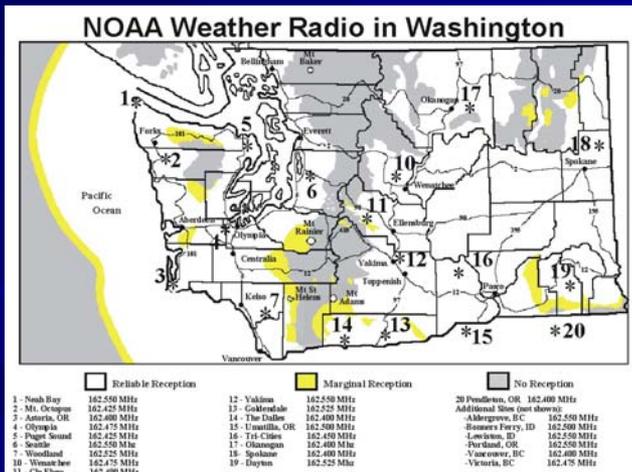
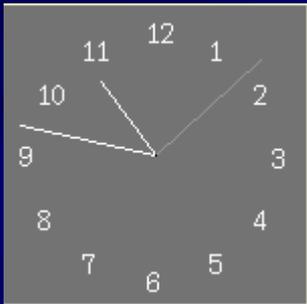


NOAA Weather Radio

A Life Saver for the Cost of a Pair of Shoes



Key Element in Emergency Alert System (EAS)

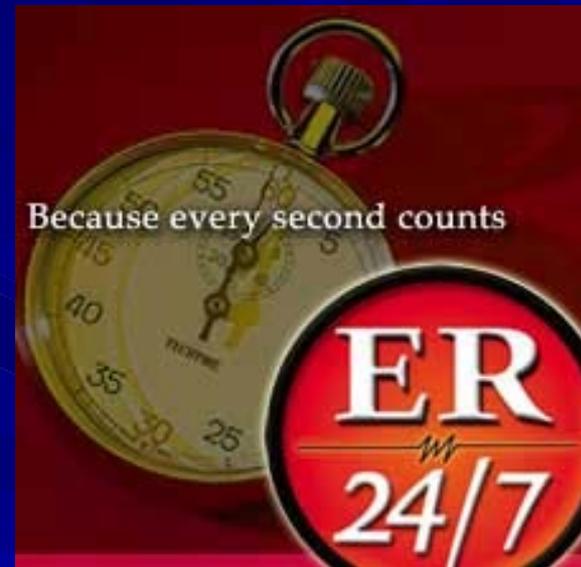
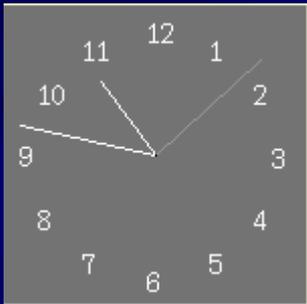


NOAA Weather Radio

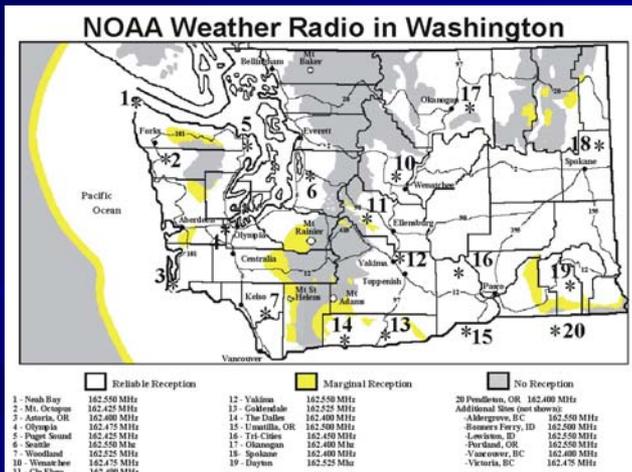
A Life Saver for the Cost of a Pair of Shoes



“All-Hazards” Warning System



Because every second counts

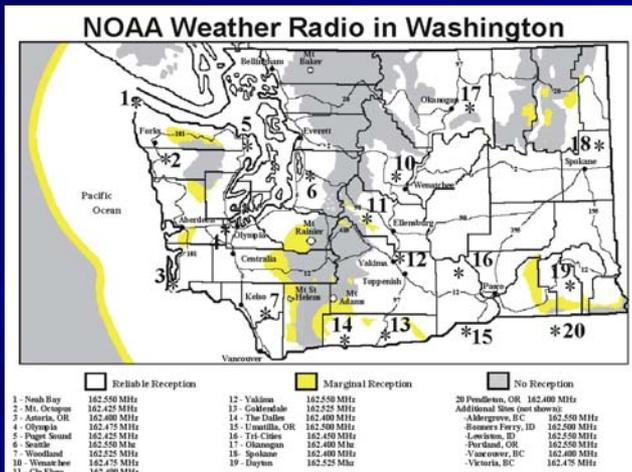
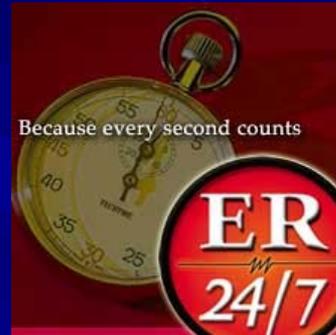
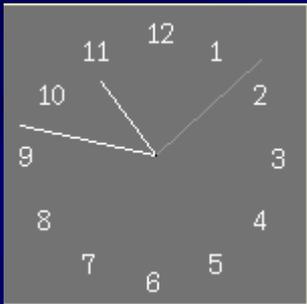


NOAA Weather Radio



A Life Saver for the Cost of a Pair of Shoes

Receivers Available at Most Radio Electronic Retailers and via the Internet



NWS Messages to EAS

- * **Tornado Watch or Warning**
- * **Severe Thunderstorm Watch or Warning**
- * **Flash Flood Watch or Warning**
- * **Flood Warning**
- * **High Wind Warning**
- * **Winter Storm / Heavy Snow / Blizzard Warning**
- * **Tsunami Watch or Warning**
- * **Civil Emergency Message**

Non -NWS Messages on NOAA Weather Radio

Examples include:

- * Civil Emergency Warning**
- * Evacuation Immediate**
- * Shelter in Place Warning**
- * Volcano Warning**
- * Child Abduction Emergency (AMBER)**

Not All Weather Radios Receivers Are Alike

■ Key Features To Have

- Warning Alarm
- SAME (Specific Area Message Encoding)
- Event Selection
- External Antenna Jack
- Others

■ Best Reception

■ Programming Capabilities and Ease

■ Terrain Challenges

StormReady / TsunamiReady

Working Together to Save
Lives



Ocean Shores



Long Beach

What is Storm/TsunamiReady?

- A voluntary community preparedness program that promotes weather and tsunami hazard readiness.
- Primary goal to improve public safety during emergencies.
- A collaborative effort between federal, state, and local agencies, and the public.



TsunamiReady Community Components

■ StormReady Elements

- Emergency Operations Center
- Multiple Ways to Receive NWS Warnings
- Multiple Ways to Disseminate Warnings
- Multiple Ways to Monitor Conditions
- Hazardous Weather Plan
- Community Preparedness Education



■ TsunamiReady Elements

- Identify Hazard Zones
- Map Evacuation Routes and Assembly Areas
- Install Evacuation and Assembly Signage
- Educate Community on Tsunami Hazard and Safety Plans



StormReady / TsunamiReady

■ Who

- Counties
- Communities
- Cities
- Indian Nations
- Supporters
 - Businesses
 - Schools

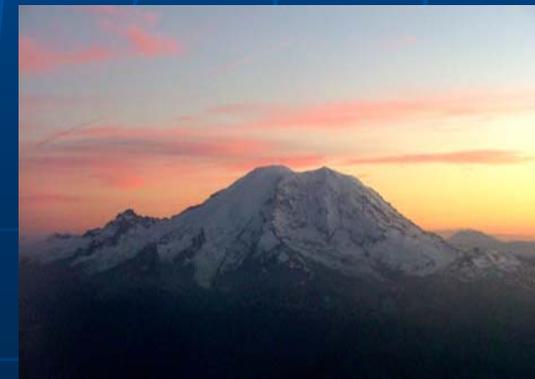
■ How To Apply

- Visit www.stormready.noaa.gov and Click on **how to apply**
 - Recommend Printing out the Word Document for a Worksheet
 - Work with Your Warning Coordination Meteorologist

U.S. Case Study - June 14, 2005 and Role of the Media



Ted Buehner,
Warning Coordination
Meteorologist
National Weather Service
Seattle, Washington, USA





Questions ??

