

HAZARDS

Since October 1956 Washington
has had 47 Disaster Declarations
and 65 Fire Management
Assistance Declarations

HEAT WAVES

FLOODS

MUD FLOWS

VOLCANOES

WILDFIRES

WIND STORMS

EARTHQUAKES

WINTER STORMS

TORNADOS

LANDSLIDES

SPACE WEATHER

TSUNAMIS

24 Declarations for Thurston County

Andrew J. Kinney
Emergency Management Coordinator
Worked 36 years as a Geographer

Geography – *“A science that deals with the earth and its life – the description of land, sea, air and the distribution of plant and animal life including man.”*

My job – What can go wrong? How bad is it and can it get worse? How do we respond? How do we recover?

Main Point I've learned –
MOTHER NATURE will always win!

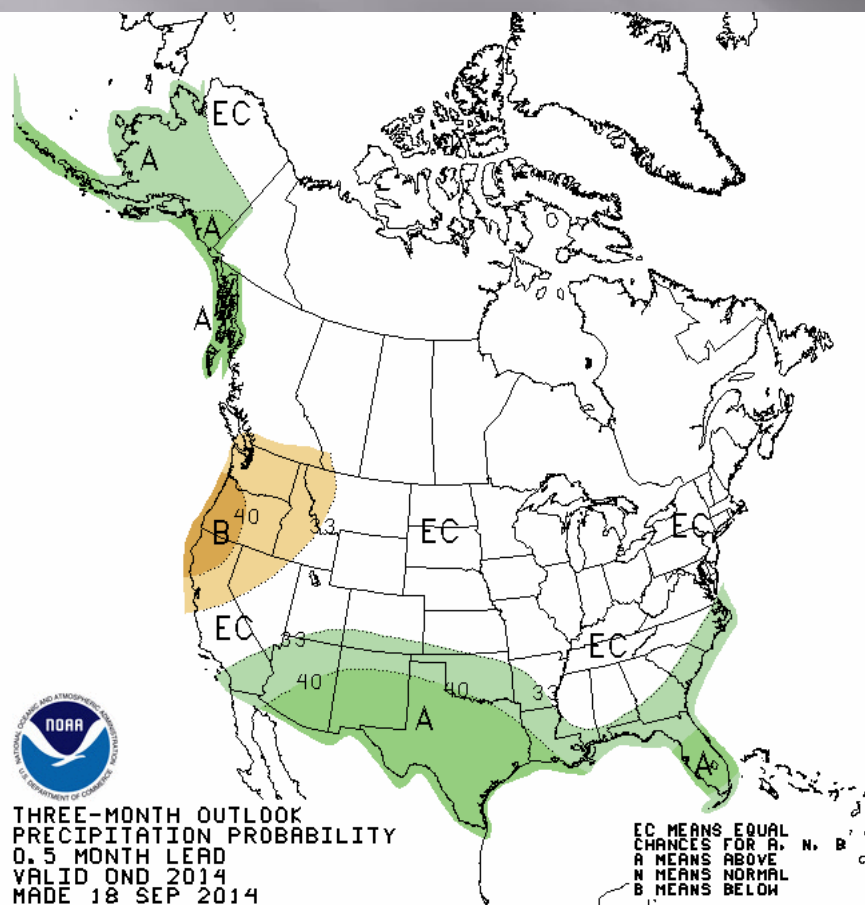
Her 4 main tools –
TIME
GRAVITY
WATER (The Universal Solvent)
ENERGY

National Weather Service – Seasonal Outlooks

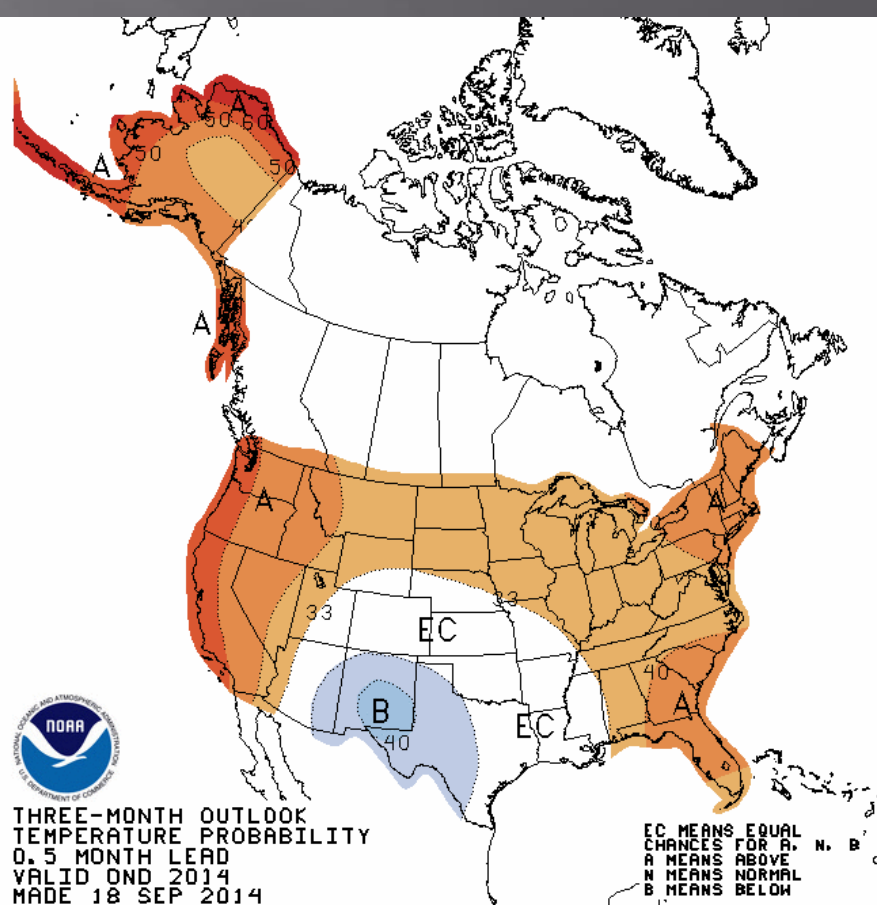
October – December 2014

The chance of El Nino is at 60-65% during the Northern Hemisphere fall and winter.

Precipitation



Temperature



But... We could get this – November 2006

Early November – Flooding

Mid November – 2 Tree Trimming Wind Events

Last Monday of November – Lowland Snow

Monday Night Football w/Packers on the frozen tundra of Qwest Field

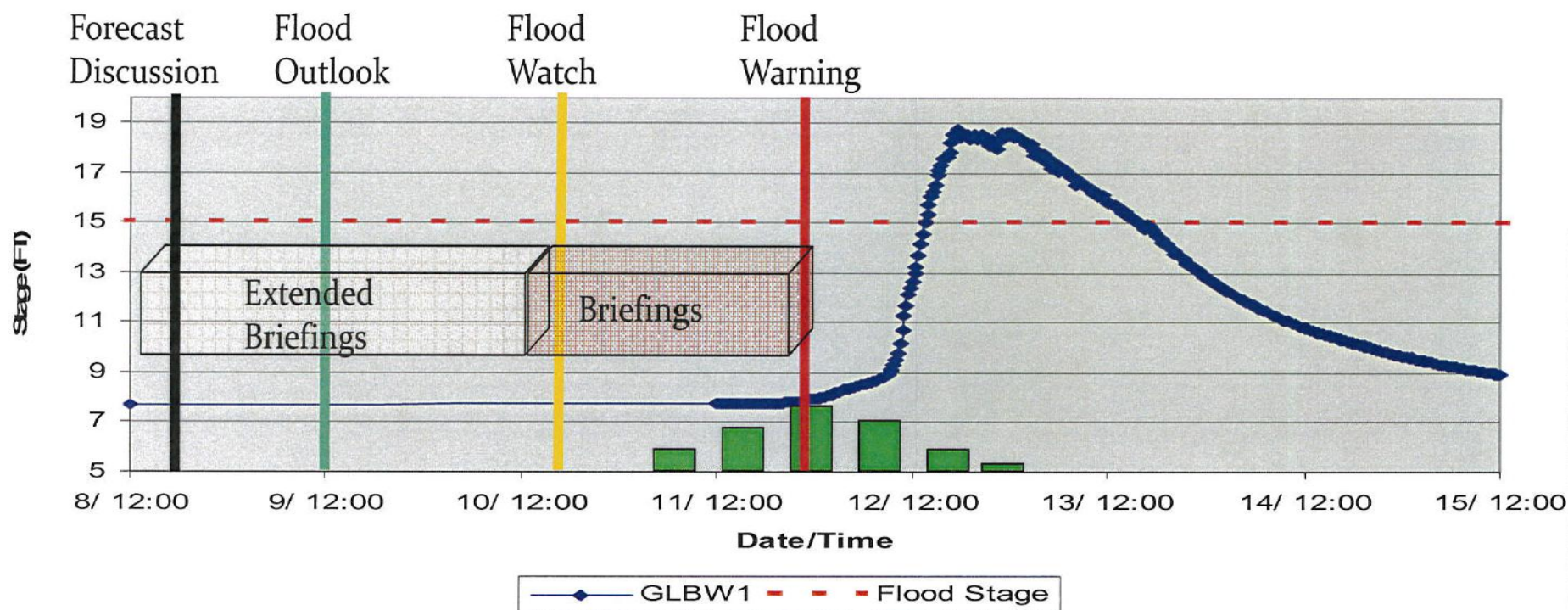
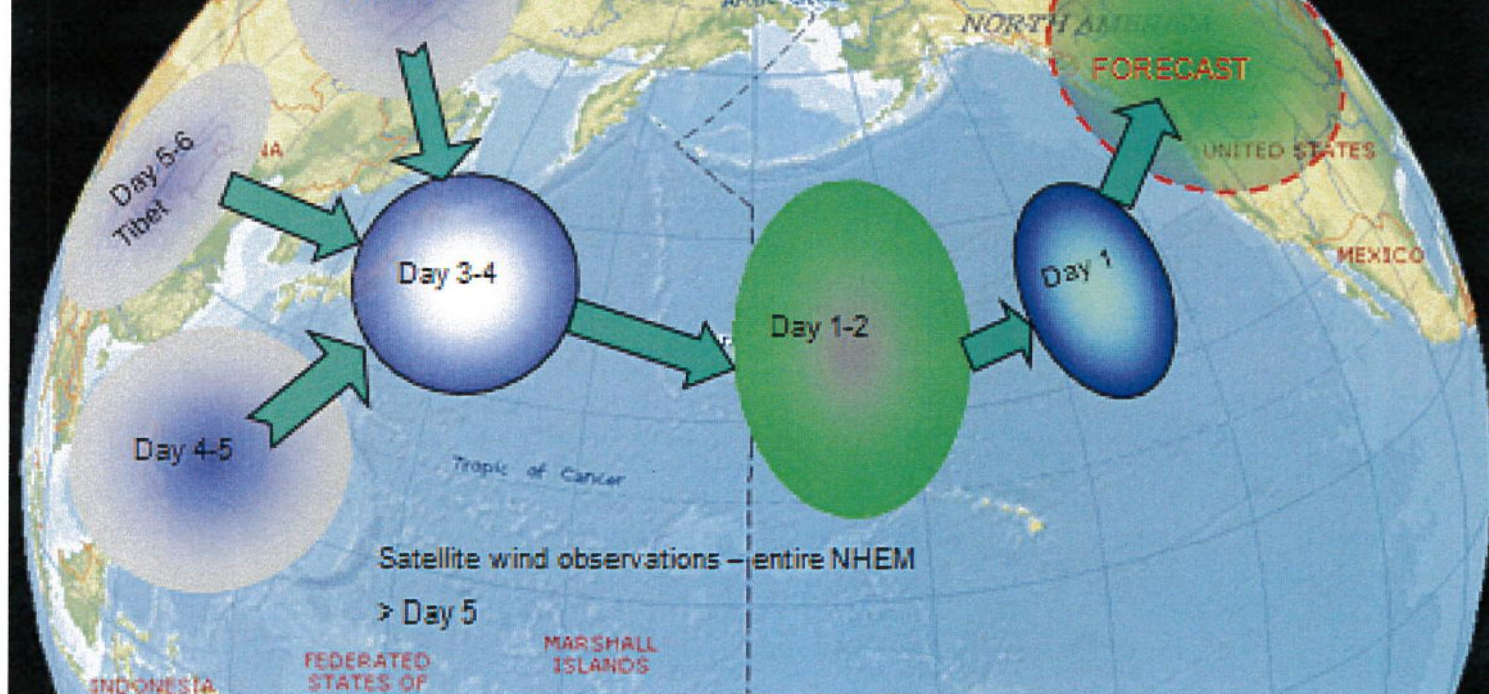
Mid December – Hanukkah Eve Wind Storm

Still – Be Prepared!

<http://www.weather.gov/briefing/>

FLOODS





FLOODS

Why not Drive through
Flood Water?



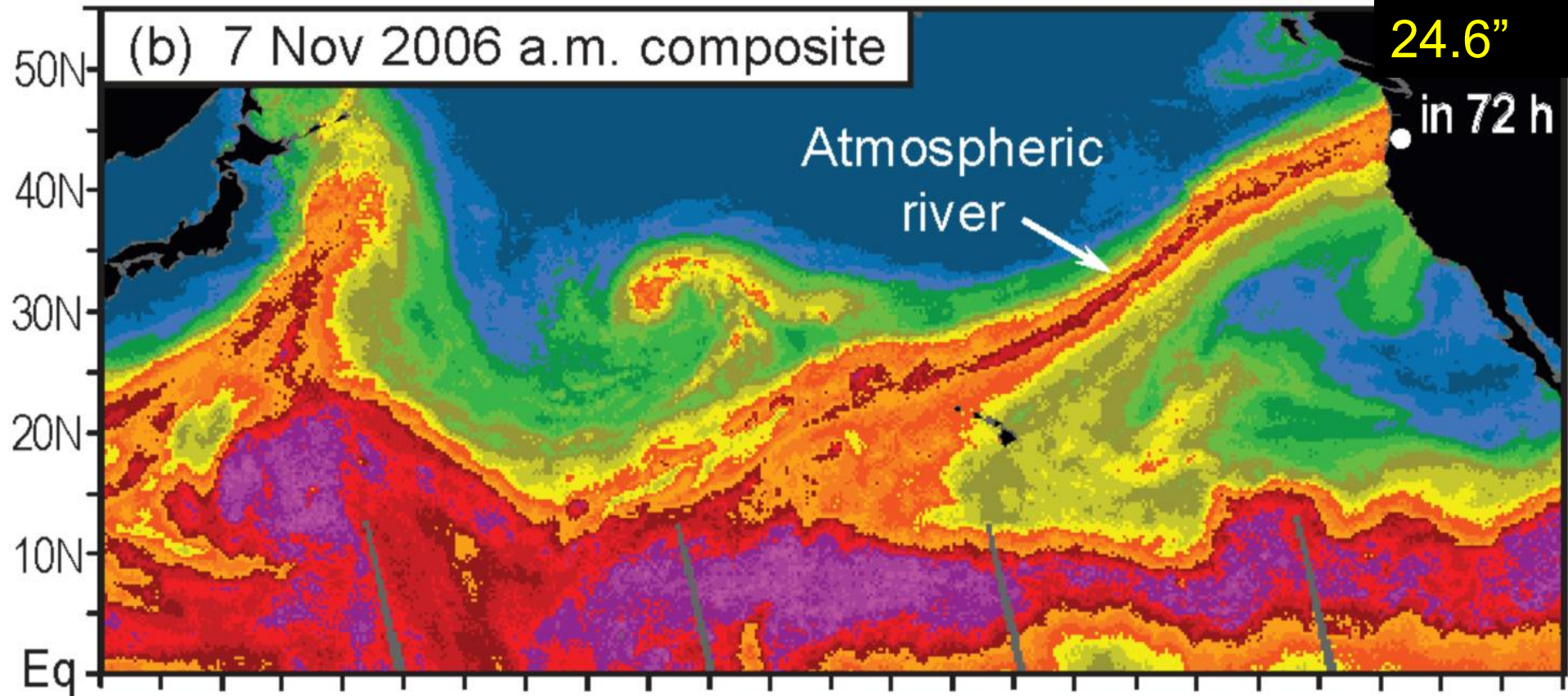
In Washington, HALF
of all FATALITIES are
driving in floods!

Cedar Flats Road Dec. 2007



<http://www.youtube.com/watch?v=NTbhyHNA1Vc>

Nisqually River Flooding-Remember '96



Remember Nov. 2006, Dec. 2007 or Jan. 2009?
All higher flood levels – except for Nisqually!

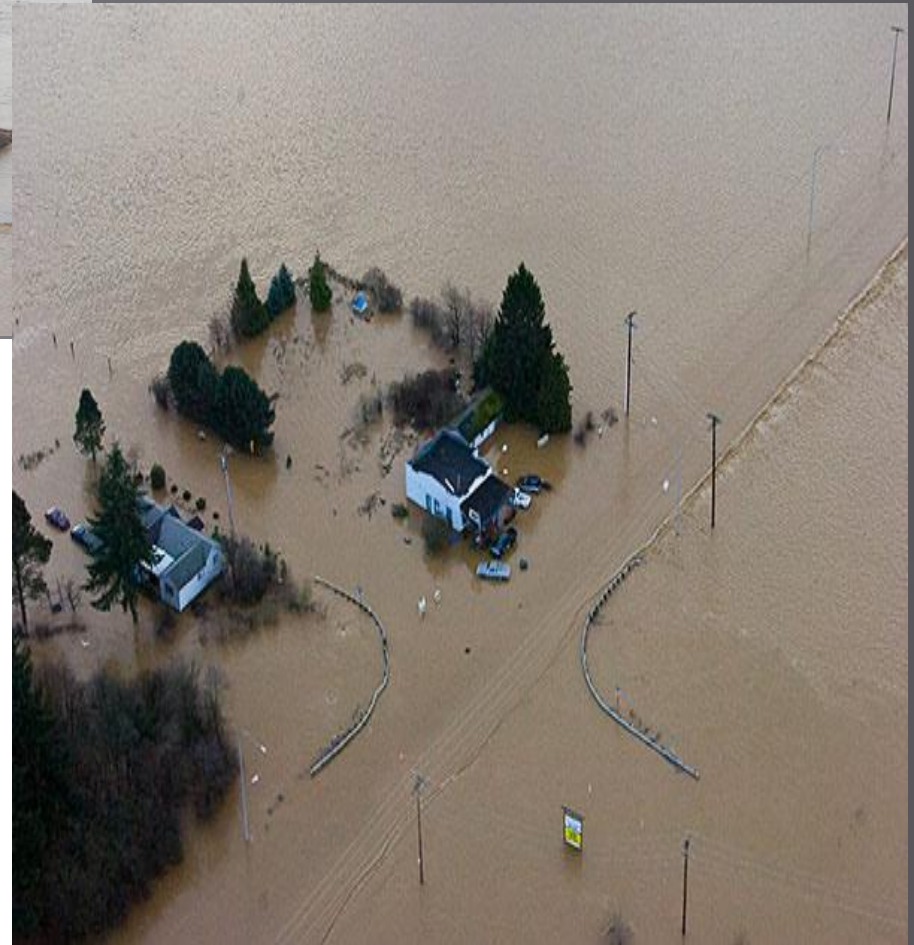
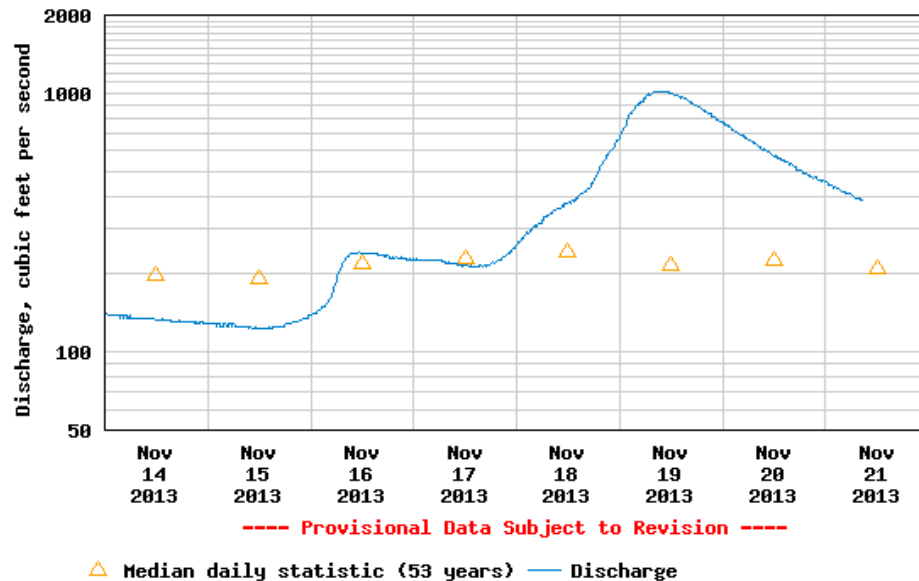
Yes – 24.6" in 72 hrs. Record 12.89' (yes feet) Feb. 24 – 26, 2007 La Réunion

FLOODS

USGS Water Watch



USGS 12079000 DESCHUTES RIVER NEAR RAINIER, WA



Flood Notification Resources

Thurston County Emergency Management - Website

<http://www.co.thurston.wa.us/em/index.htm>

From this website you can:

Register for Telephone Alerts from TCEM

Check River Levels and Forecasts

Get Sandbagging Information

Groundwater Flooding Information

Access the Fall 2014 Flood Bulletin

“Subscribe to WaterAlert”

Register for USGS River Gage Alerts

Nisqually at McKenna

<http://waterdata.usgs.gov/nwis/uv?12089500>

Deschutes near Rainier

<http://waterdata.usgs.gov/nwis/uv?12079000>

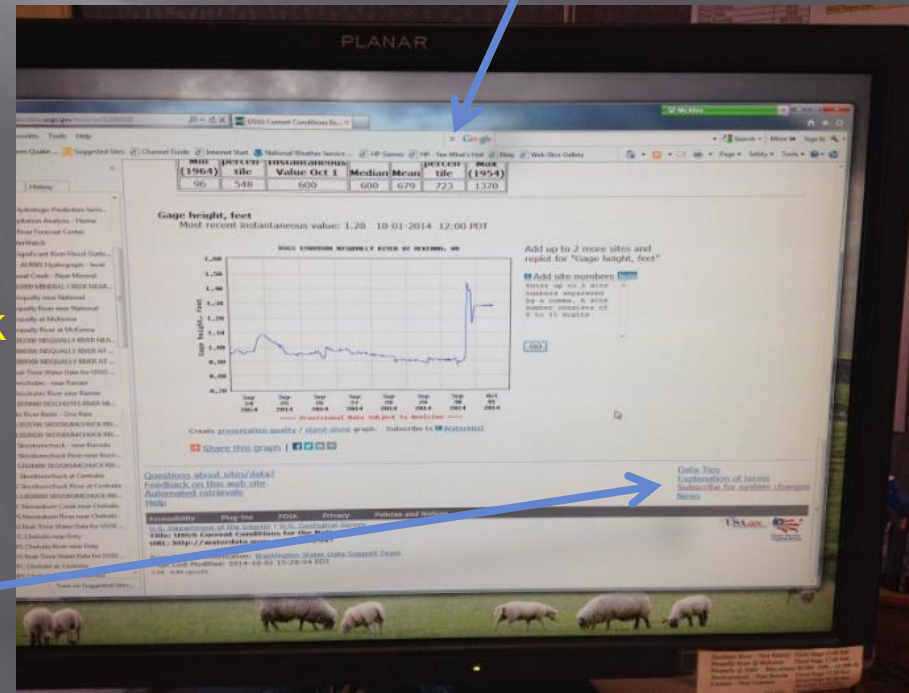
Skookumchuck at Below Bloody Run Creek

<http://waterdata.usgs.gov/nwis/uv?12026150>

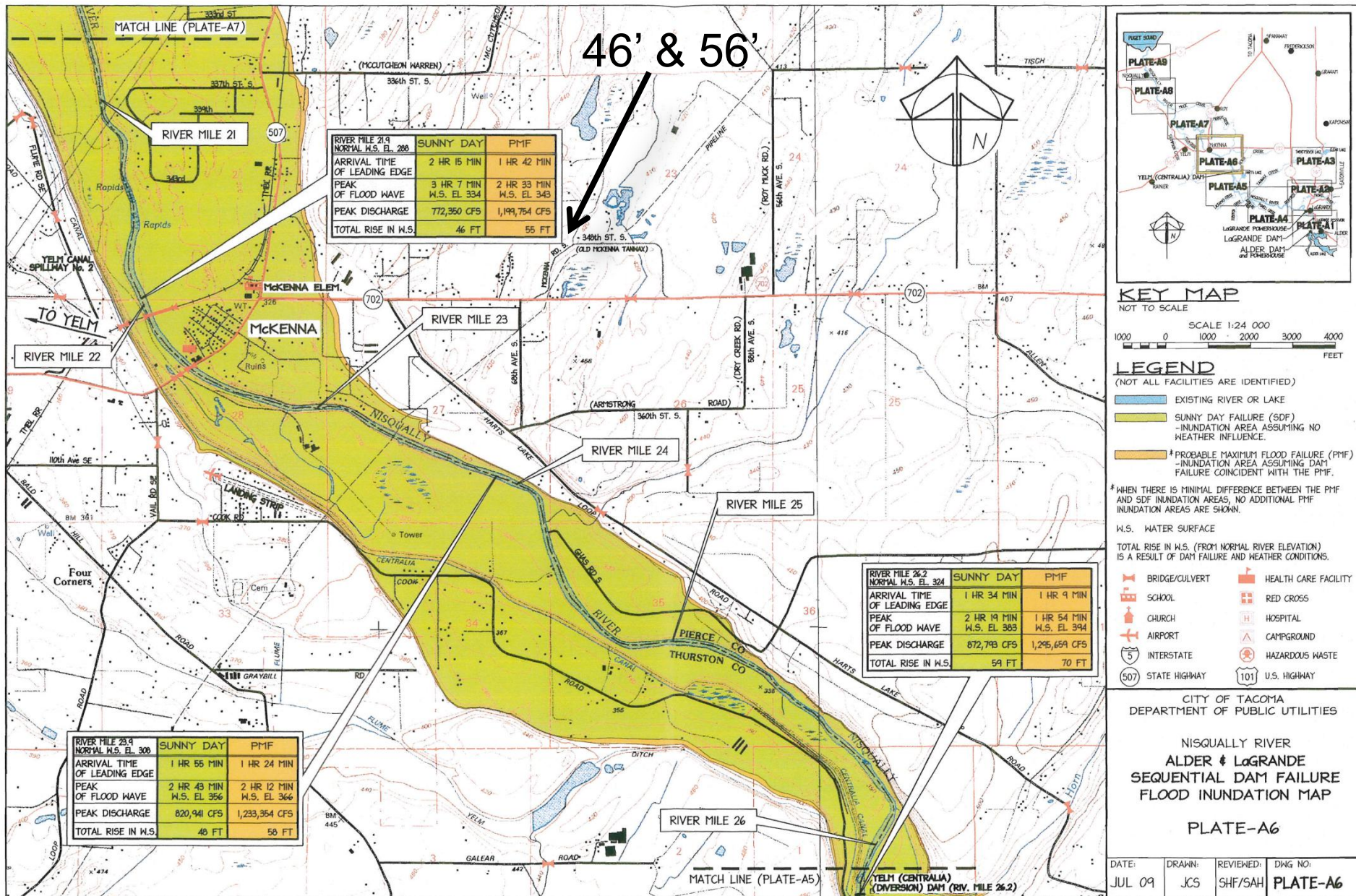
Chehalis near Grand Mound

<http://waterdata.usgs.gov/nwis/uv?12027500>

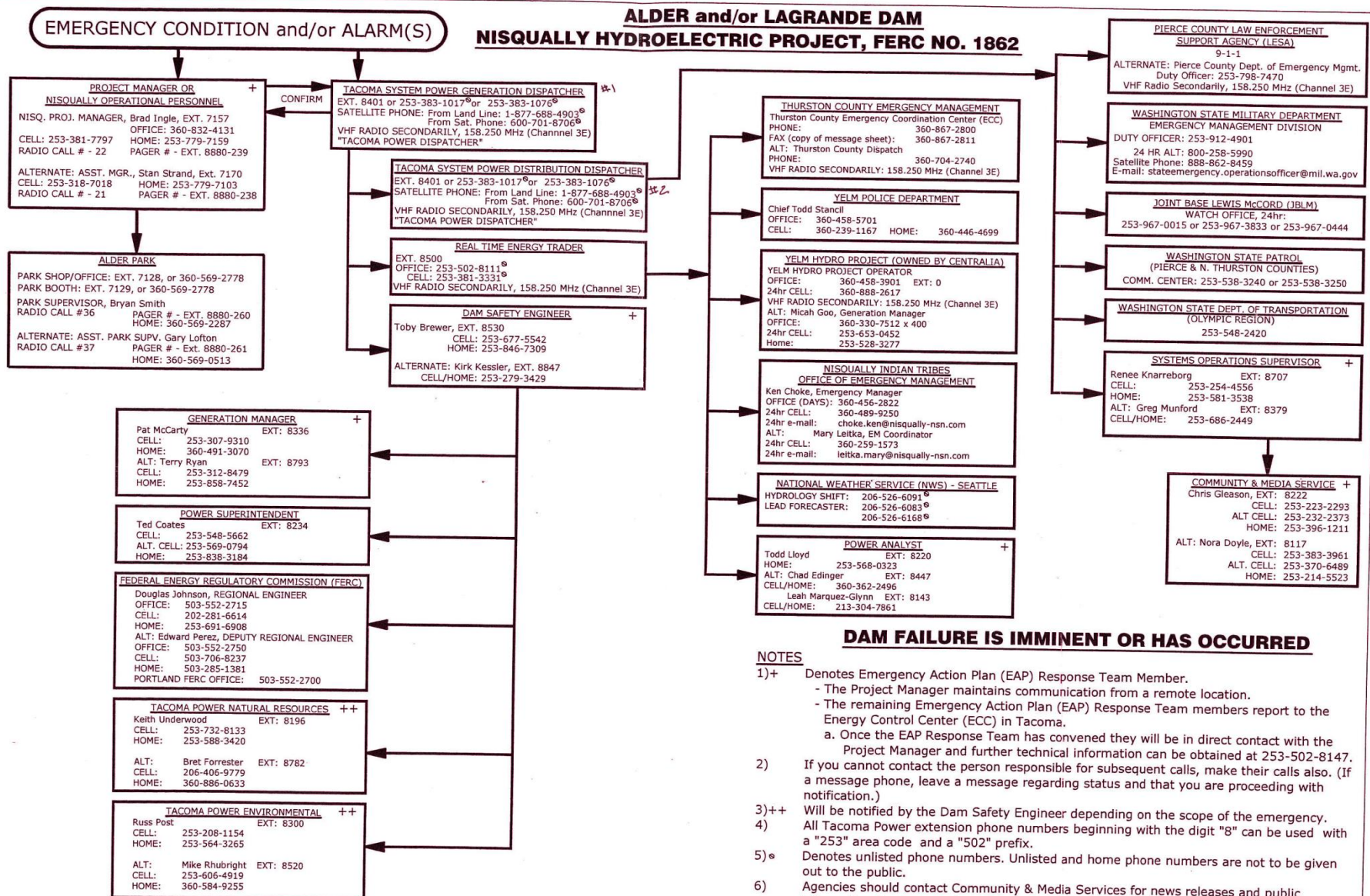
“Subscribe for system changes”



Alder and LaGrande Sequential Dam Failure Flood Inundation Maps (July 2009)

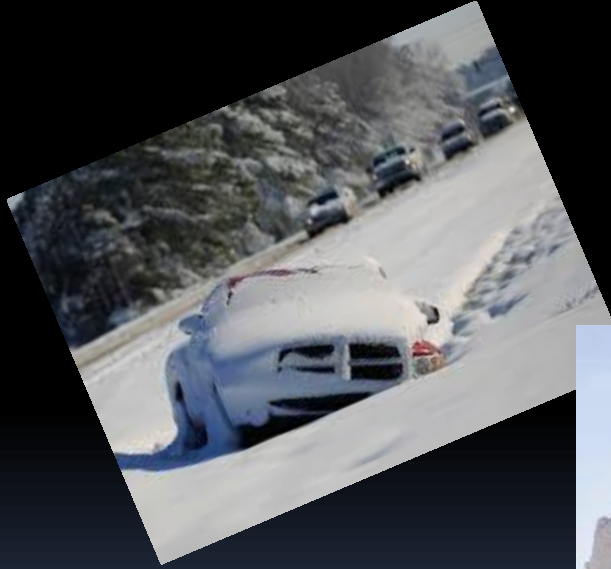


Nisqually Hydroelectric EMERGENCY ACTION PLAN



WINTER STORMS

Washington has had 7
Presidential Declarations for
Winter Storms since 1956.



3 for Thurston County

WINTER STORMS

NATIONAL
WEATHER
SERVICE



Generally about a 72 hour event.



Mount Baker



VOLCANOES

Mount Adams



Mount St. Helens



Glacier Peak



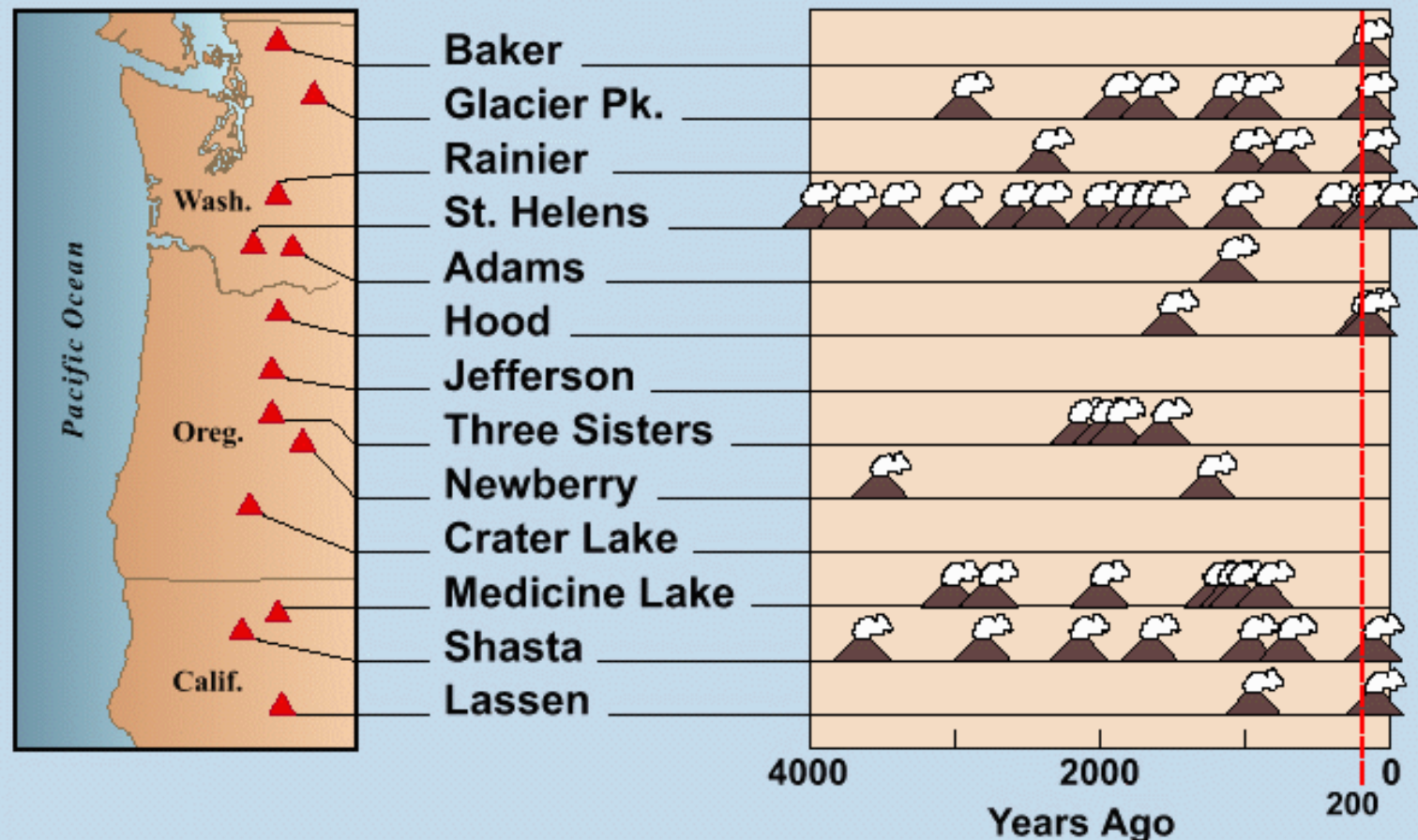
VOLCANOES

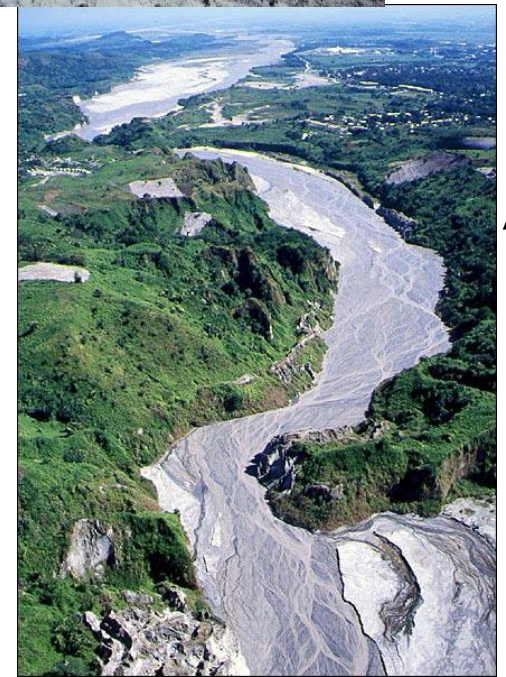
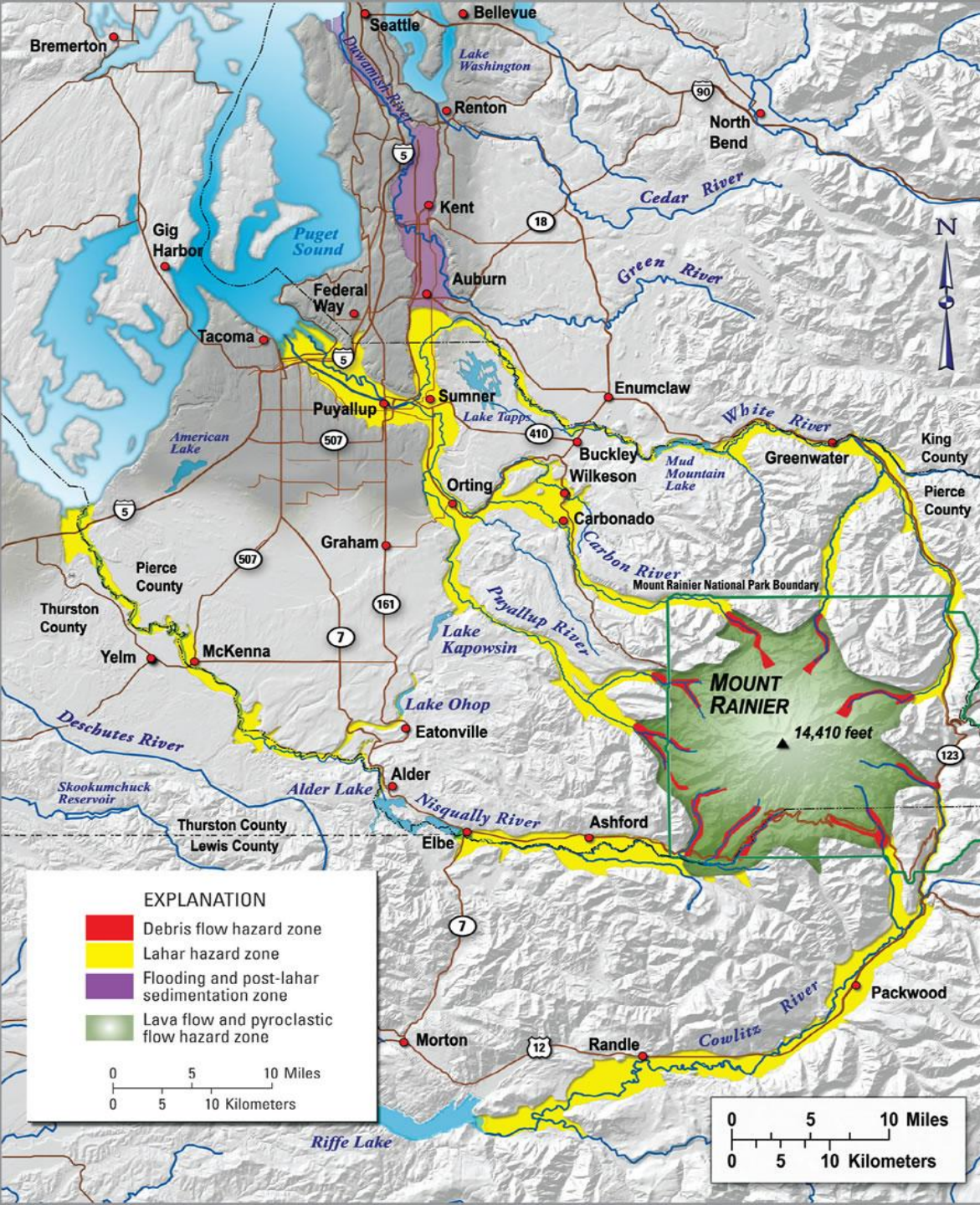


Mount Rainier

VOLCANOES

Cascade Eruptions During The Past 4,000 Years





<http://www.youtube.com/watch?v=7Ct7G5lEHpc&list=TL56Dyklkcbjy4Pe7CJzduPh72eXKVARh8>

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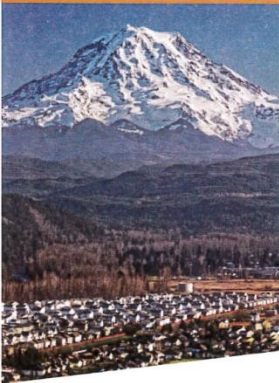
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MOUNT RAINIER IS AN ACTIVE VOLCANO

Are You Ready for An Eruption?

While an eruption or lahar might not happen in our lifetime, being prepared is our best defense.



Mount Rainier is much more than a mountain in the sky. Constructed of hundreds of lava flows, and capped by as much glacier ice as all other Cascade volcanoes combined, Rainier's steep rubbly slopes and abundant water make it prone to landslides and lahars (volcanic mudflows), especially during eruptions. Lahars are the biggest hazards to the area. Scientists and emergency officials watch and warn. Do your part by being prepared.

Ready.

LIVE SAFELY NEAR MOUNT RAINIER



- Look at the map. Assess the hazards where you live, work, and commute.
- Make a plan. Identify lahar evacuation routes and shelter above valley floors.
- Assemble emergency supplies and a plan to reunite.
- Share your plans with family, neighbors and friends.



Set.

STAY INFORMED: LISTEN TO OFFICIAL SOURCES



- Emergency broadcasts.
- Pierce County ALERT.
- All Hazards NOAA Weather Radio.
- 511 emergency travel information.
- USGS Volcano Notification Service lists alert levels.
- Outdoor sirens in some communities.

FIND THIS INFORMATION AT THE PIERCE COUNTY WEBSITE BELOW.

Go!

WHEN A LAHAR WARNING IS ISSUED, MOVE OFF THE VALLEY FLOOR



- Evacuate by vehicle or on foot to high ground 50 feet or more above the valley floor.
- If you are safe from lahars and ash is falling, seek shelter in a building or vehicle.



GET YOUR EVACUATION MAP



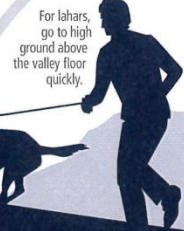
Get an evacuation map at the Pierce County website, below.

HAZARD ZONES

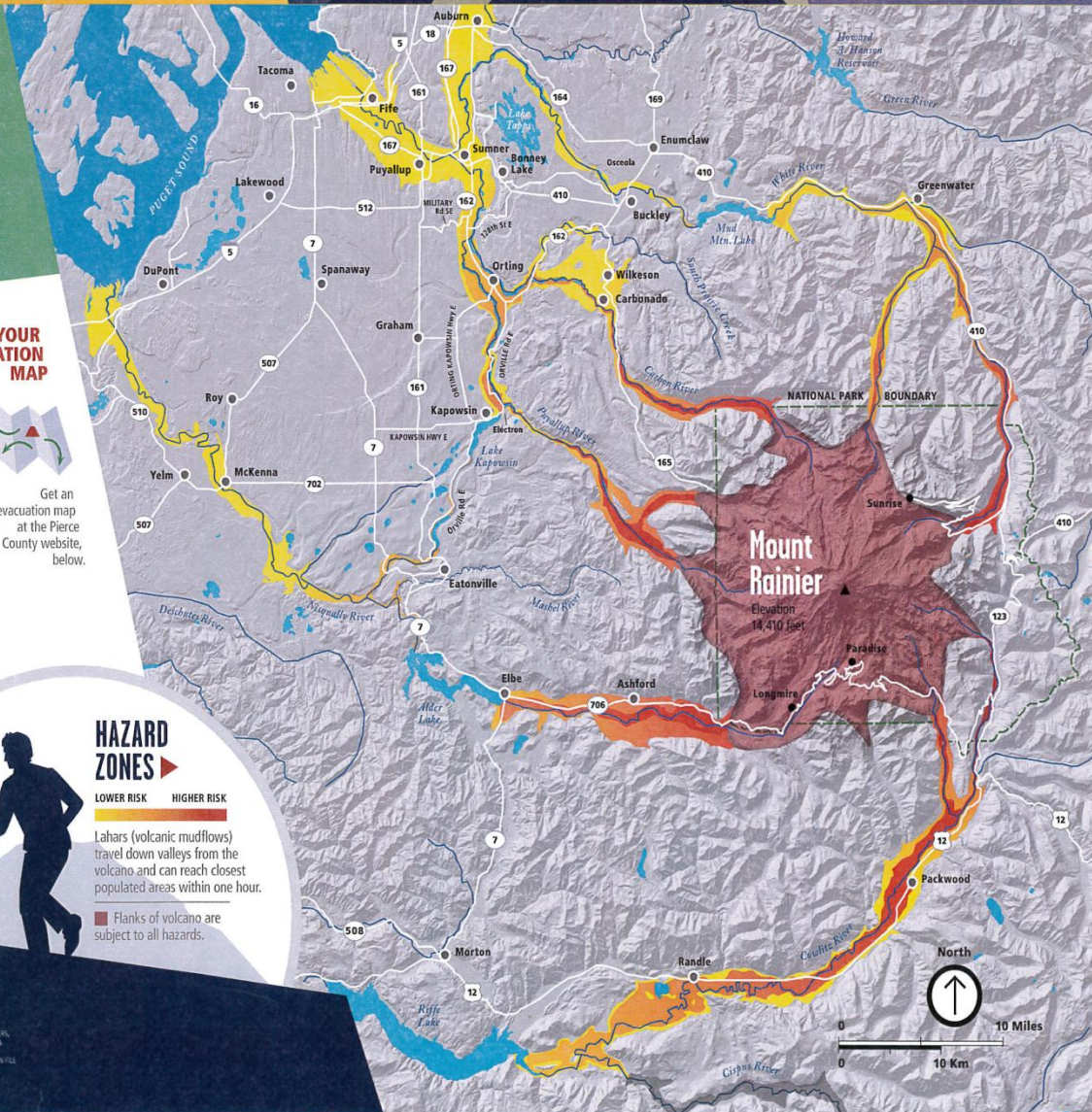
LOWER RISK **HIGHER RISK**

Lahars (volcanic mudflows) travel down valleys from the volcano and can reach closest populated areas within one hour.

Flanks of volcano are subject to all hazards.



For lahars, go to high ground above the valley floor quickly.



Get More Information

There are 5 active volcanoes in Washington State. Be prepared: Get more information and learn about volcano hazards that might affect your family.



piercecountywa.org/activevolcano

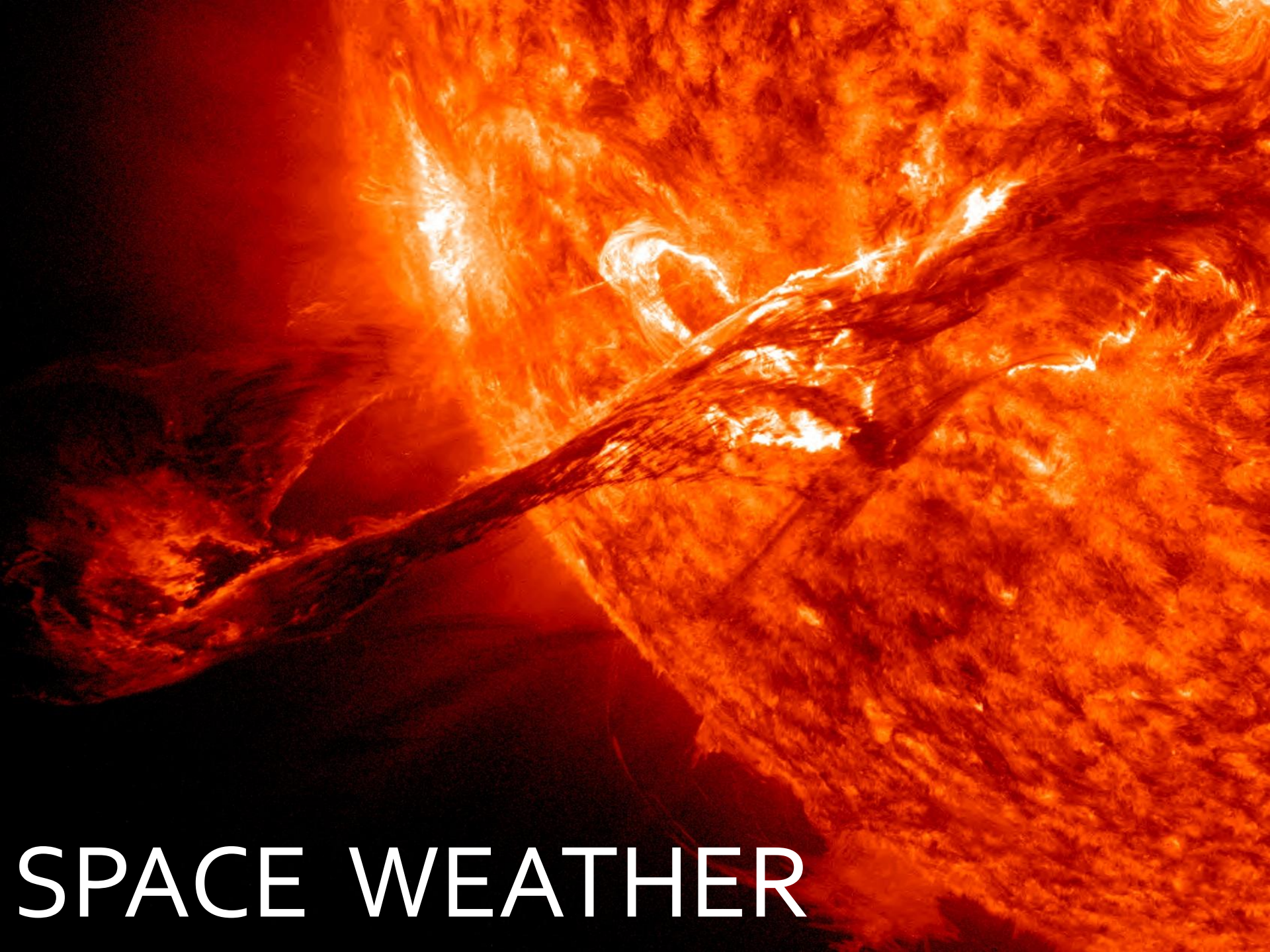


OTHER USEFUL LINKS

- emd.wa.gov
- volcanoes.usgs.gov
- dnr.wa.gov

MAPS MAP, PHOTO, VIDEO, AND OTHER INFORMATION, FROM PIERCE COUNTY AND OTHER SOURCES, ARE PROVIDED AS IS. PIERCE COUNTY AND OTHER SOURCES DO NOT WARRANT THE ACCURACY OF THE INFORMATION. PIERCE COUNTY AND OTHER SOURCES ARE NOT RESPONSIBLE FOR ANY DAMAGE, LOSS, OR INJURY, INCLUDING ECONOMIC LOSS, ARISING FROM THE USE OF THIS INFORMATION.





SPACE WEATHER

Sunspots

Sunspots are comparatively cool areas at up to 7,700° F and show the location of strong magnetic fields protruding through what we would see as the Sun's surface. Large, complex sunspot groups are generally the source of significant space weather.

Coronal Mass Ejections (CMEs)

Large portions of the corona, or outer atmosphere of the Sun, can be explosively blown into space, sending billions of tons of plasma, or superheated gas, Earth's direction. These CMEs have their own magnetic field and can slam into and interact with Earth's magnetic field, resulting in geomagnetic storms. The fastest of these CMEs can reach Earth in under a day, with the slowest taking 4 or 5 days to reach Earth.

Solar Wind

The solar wind is a constant outflow of electrons and protons from the Sun, always present and buffeting Earth's magnetic field. The background solar wind flows at approximately one million miles per hour!

Solar Flares

Reconnection of the magnetic fields on the surface of the Sun drive the biggest explosions in our solar system. These solar flares release immense amounts of energy and result in electromagnetic emissions spanning the spectrum from gamma rays to radio waves. Traveling at the speed of light, these emissions make the 93 million mile trip to Earth in just 8 minutes.

Earth's Magnetic Field

Earth's magnetic field, largely like that of a bar magnet, gives the Earth some protection from the effects of the Sun. Earth's magnetic field is constantly compressed on the day side and stretched on the night side by the ever-present solar wind. During geomagnetic storms, the disturbances to Earth's magnetic field can become extreme. In addition to some buffering by the atmosphere, this field also offers some shielding from the charged particles of a radiation storm.

Space Weather

Space weather refers to the variable conditions on the Sun and in the space environment that can influence the performance and reliability of space-based and ground-based technological systems, as well as endanger life or health. Just like weather on Earth, space weather has its seasons, with solar activity rising and falling over an approximate 11 year cycle.

Sun's Magnetic Field

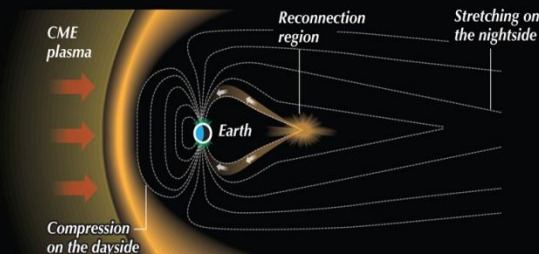
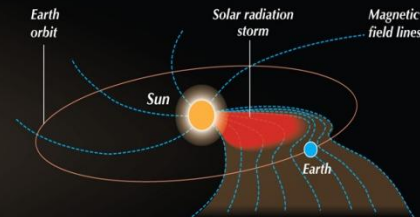
Strong and ever-changing magnetic fields drive the life of the Sun and underlie sunspots. These strong magnetic fields are the energy source for space weather and their twisting, shearing, and reconnection lead to solar flares.

Solar Radiation Storms

Charged particles, including electrons and protons, can be accelerated by coronal mass ejections and solar flares. These particles bounce and gyrate their way through space, roughly following the magnetic field lines and ultimately bombarding Earth from every direction. The fastest of these particles can affect Earth tens of minutes after a solar flare.

Geomagnetic Storms

A geomagnetic storm is a temporary disturbance of Earth's magnetic field typically associated with enhancements in the solar wind. These storms are created when the solar wind and its magnetic field interacts with Earth's magnetic field. The primary source of geomagnetic storms is CMEs which stretch the magnetosphere on the nightside causing it to release energy through magnetic reconnection. Disturbances in the ionosphere (a region of Earth's upper atmosphere) are usually associated with geomagnetic storms.



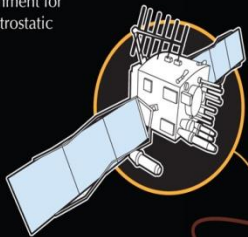
Global Positioning System (GPS)

Geomagnetic storms can impact the accuracy and availability of GPS by changing the ionosphere, the electrically charged layer of the atmosphere a GPS signal must pass through from satellite to ground receiver. The ionosphere is the largest source of error in GPS positioning and navigation. These ionospheric disturbances are ever-present but can become severe during geomagnetic storms, resulting in range errors in excess of 100 feet, or even resulting in loss of lock on the GPS signal entirely. These errors can have significant impacts on precision uses of GPS such as navigation, agriculture, oil drilling, surveying, and timing.



Satellite Operations

There are thousands of satellites in orbit around Earth with applications in television and radio, communications, meteorology, national defense, and much more. Space weather can affect these satellites in many ways. Solar radiation storms can cause spacecraft orientation problems by interfering with star trackers and by causing errors or damage in electronic devices. Geomagnetic storms can create a hazardous charging environment for satellites resulting in damaging electrostatic discharge, much like touching a door knob and getting that spark on a dry winter day. Geomagnetic storms also cause heating of the atmosphere, essentially causing it to expand, which results in more drag or slowing down of an orbiting satellite. In a worst case, space weather can cause the satellite to fail.



Space Operations

Astronauts and their equipment in space are bombarded with charged particle radiation. This radiation causes tissue or cell damage in humans. Space weather and solar radiation storms are of particular concern for activities outside the protection of Earth's atmosphere and magnetic field.

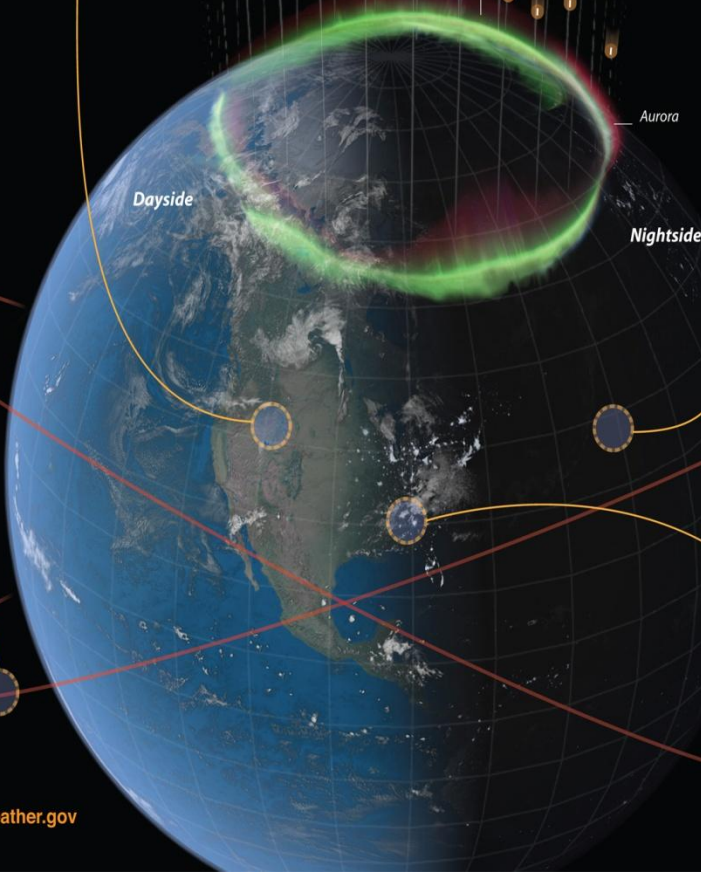


Space Weather Impacts on Earth

Electrons accelerated in the tail of the magnetosphere travel down the magnetic field lines.

Electrons collide with the upper atmosphere 50 to 300 miles above Earth.

Electrons exchange energy with the atmosphere exciting the atmospheric atoms and molecules to higher energy levels. When the atoms and molecules relax back to lower energy levels, they release their energy in the form of light.



Aurora

The Aurora Borealis (Northern Lights) and Aurora Australis (Southern Lights) are the result of electrons colliding with Earth's upper atmosphere. The electrons are energized through acceleration processes in the downwind tail (nightside) of the magnetosphere. The accelerated electrons follow the magnetic field of Earth down to the polar regions where they collide with oxygen and nitrogen atoms and molecules in Earth's upper atmosphere. In these collisions, the electrons transfer their energy to the atmosphere, thus exciting the atoms and molecules to higher energy states. When they relax back to lower energy states, they release their energy in the form of light. The aurora typically forms 50 to 300 miles above the ground. Earth's magnetic field guides the electrons such that the aurora forms two ovals approximately centered at each magnetic pole.

THE COLORS OF THE AURORA



Deep red from high altitude atomic nitrogen

Magenta from high altitude molecular nitrogen in sunlight

Greenish yellow from lower altitude atomic oxygen

Magenta from low altitude molecular nitrogen (not shown in the picture)

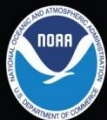
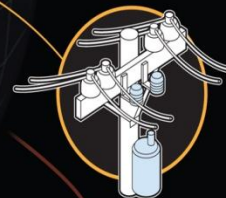
Aviation

Aircraft use High Frequency (HF) radio communication to stay in touch with ground controllers in remote areas such as over the oceans or over the poles. Solar flares can "black out" the use of HF on the dayside of Earth and solar radiation storms can "black out" use of HF near the poles, impacting the aircraft's ability to stay in touch with the ground. Impacts to GPS systems can also significantly affect airline operations.



Power Grids

Geomagnetic storms result in electric currents in the magnetosphere and ionosphere as the area shaped by Earth's magnetic field is compressed and disturbed. The disturbed conditions create additional currents in long conductors on the ground such as overhead transmission lines or long pipelines. In the most extreme cases, these currents can cause voltage instability or damage to power system components, potentially resulting in temporary service disruptions, or even a widespread power outage.

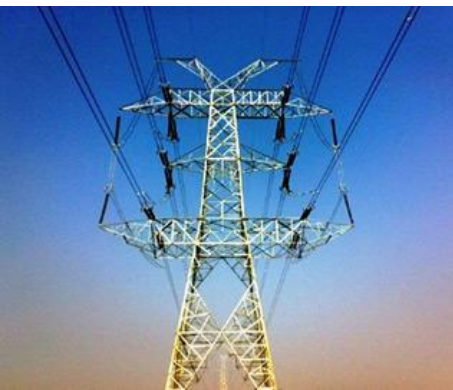
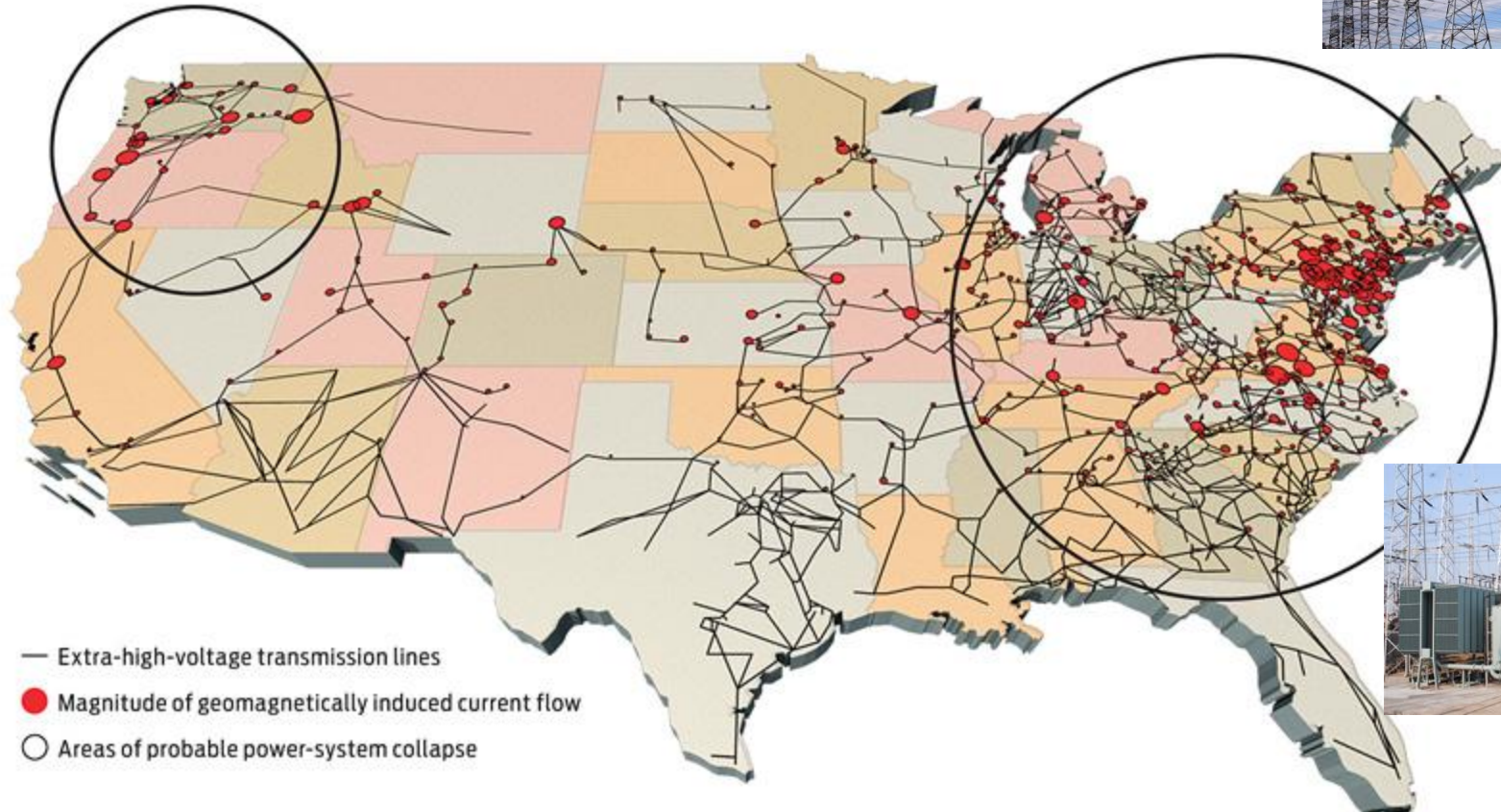


NOAA Education www.education.noaa.gov

NOAA Space Weather Prediction Center www.spaceweather.gov

*Image source: Aurora Borealis taken from the International Space Station in April of 2012.

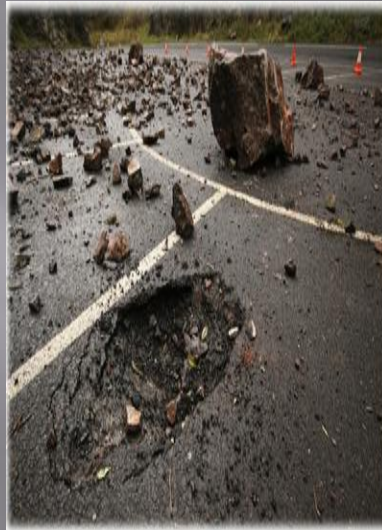
SPACE WEATHER



LANDSLIDES/MUD FLOWS

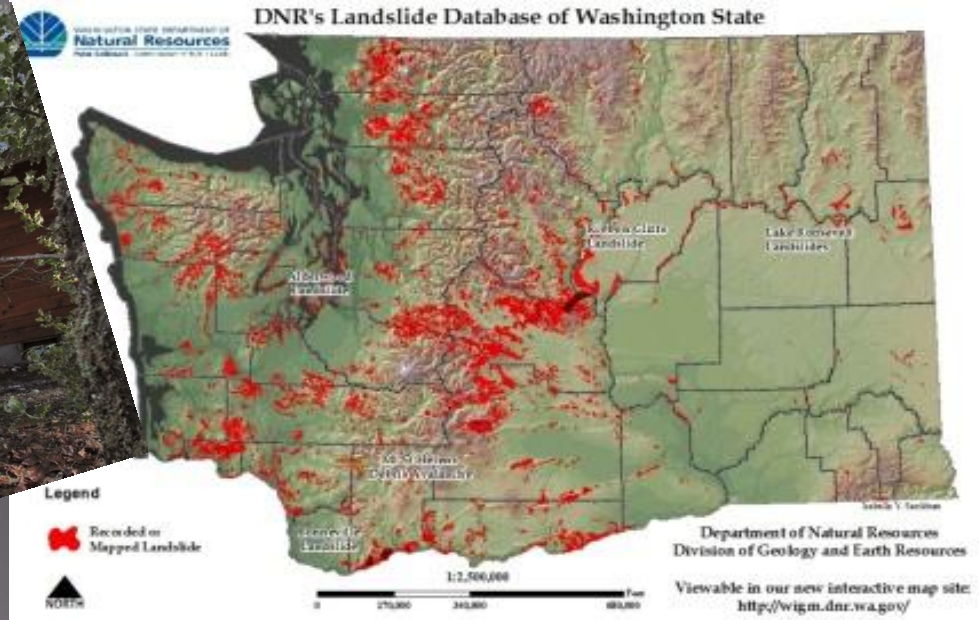


<http://www.youtube.com/watch?v=JrV4uCVwmfk>



<http://www.youtube.com/watch?v=0Vf7P-hKDpM>

SR530



SR530 Landslide near Oso, can this happen here?



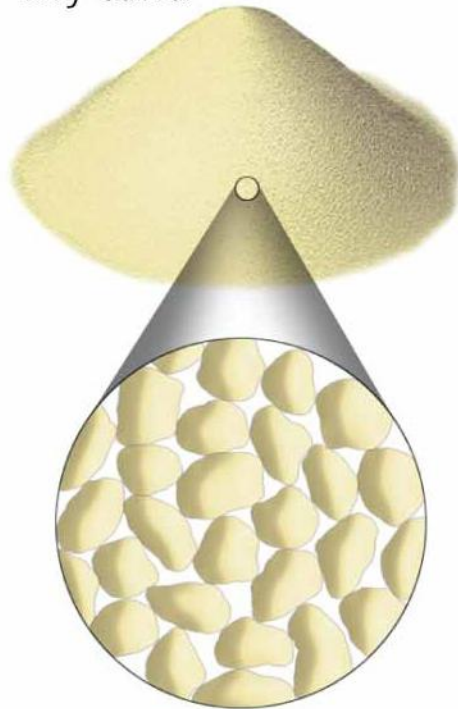
Glacial Deposits

Steep Slopes

Lots of Rain –
Saturated soils

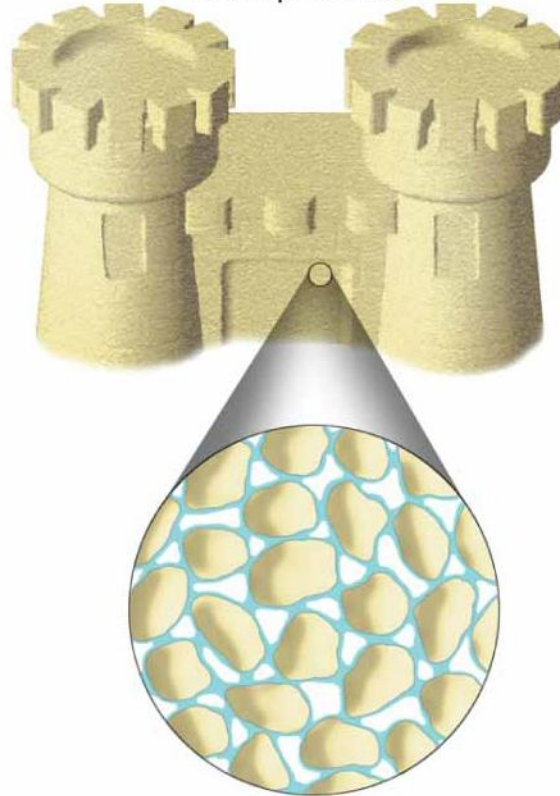
River or water
body to weaken
slope toe

Dry sand



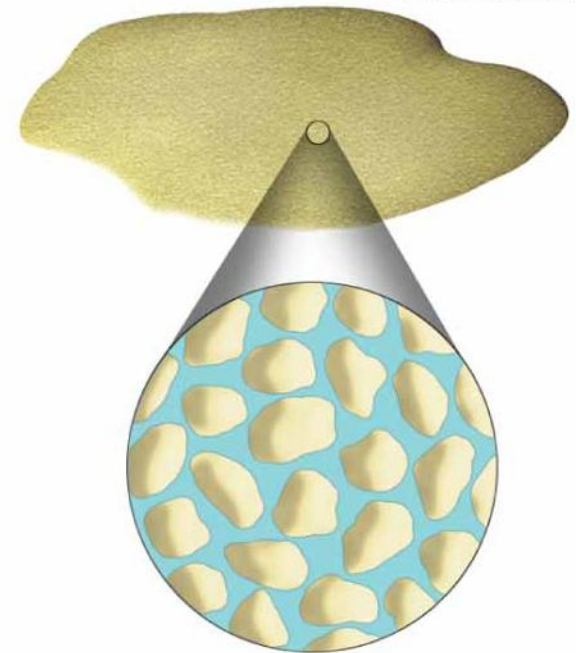
Dry sand grains are bound mainly by friction with one another

Damp sand

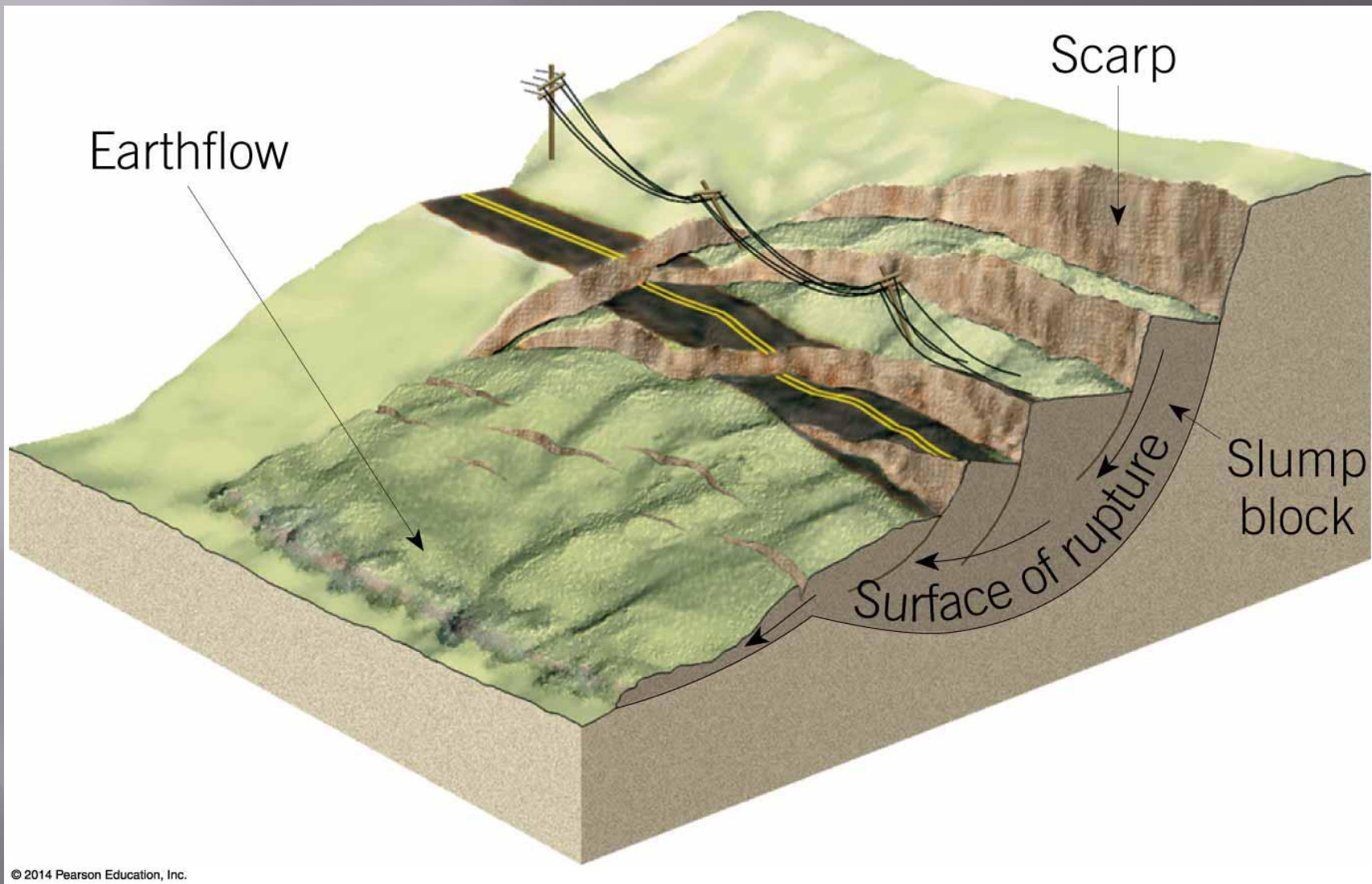


Small amounts of water increase the cohesion among sand grains

Wet sand



Saturation reduces friction and causes the sand to flow



Landslide Risks for Thurston County

Types of Landslides and Secondary Hazards

1. Deep Seated Slow Moving – Carlyon Beach
Large area slow moving (feet/year)
2. Shallow Fast Moving – Coastal Bluffs and Rock
Candy Mountain - smaller area fast moving, >50 mph
3. Hybrid Landslides – Oso - large and fast moving

Secondary Hazards –

- Landslide generated Tsunamis
- Backwater Flooding caused by debris blocking a waterway

7 Key Physiographic Areas:

- Summit Lake Area
- Black Hills Range (Rock Candy Mt.)
- Tenino Mountain Range
- North Side of Tenino (Old Hwy 99)
- Nisqually River Bank
- Deschutes River Bank
- Marine Coastal Areas



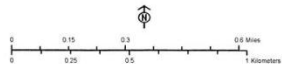
Shallow Landslide Susceptibility for Summit Lake

SUMMIT LAKE

Thurston County is
working in cooperation
with WA Dept. of Natural
Resources to assess
Shallow Landslide
Potentials

Contour interval 20-feet

- County border
- Study area
- DNR - di_channel
- DNR - High susceptibility to shallow landslides: FOS less than 1.25
- DNR - Moderate susceptibility to shallow landslides: FOS 1.25 - 1.50



Data source: Westington
State of Department of Natural
Resources 7/29/2014

Thurston County residents are aware that this map is a static and accurate representation of the state of County jurisdiction. However, the County and its personnel may not be aware, or even be alerted, regarding the accuracy, completeness or timeliness of any information displayed on this map. The County does not warrant, for any reason, the accuracy or timeliness of the data it displays.

The values shown on this map are subject to significant error. Thurston County does not warrant, for any reason, including but not limited to, negligent, active or passive, that the data is for a particular purpose, and that it is representative of the entire region.

Users are encouraged, including but not limited to, to compare what Thurston County displays for any data, with other available, spatial or non-spatial data, to ensure the data is of the quality that the Thurston County requires.

John@dnr.wa.gov 206.868.0000 206.868.0000



HEAT WAVES



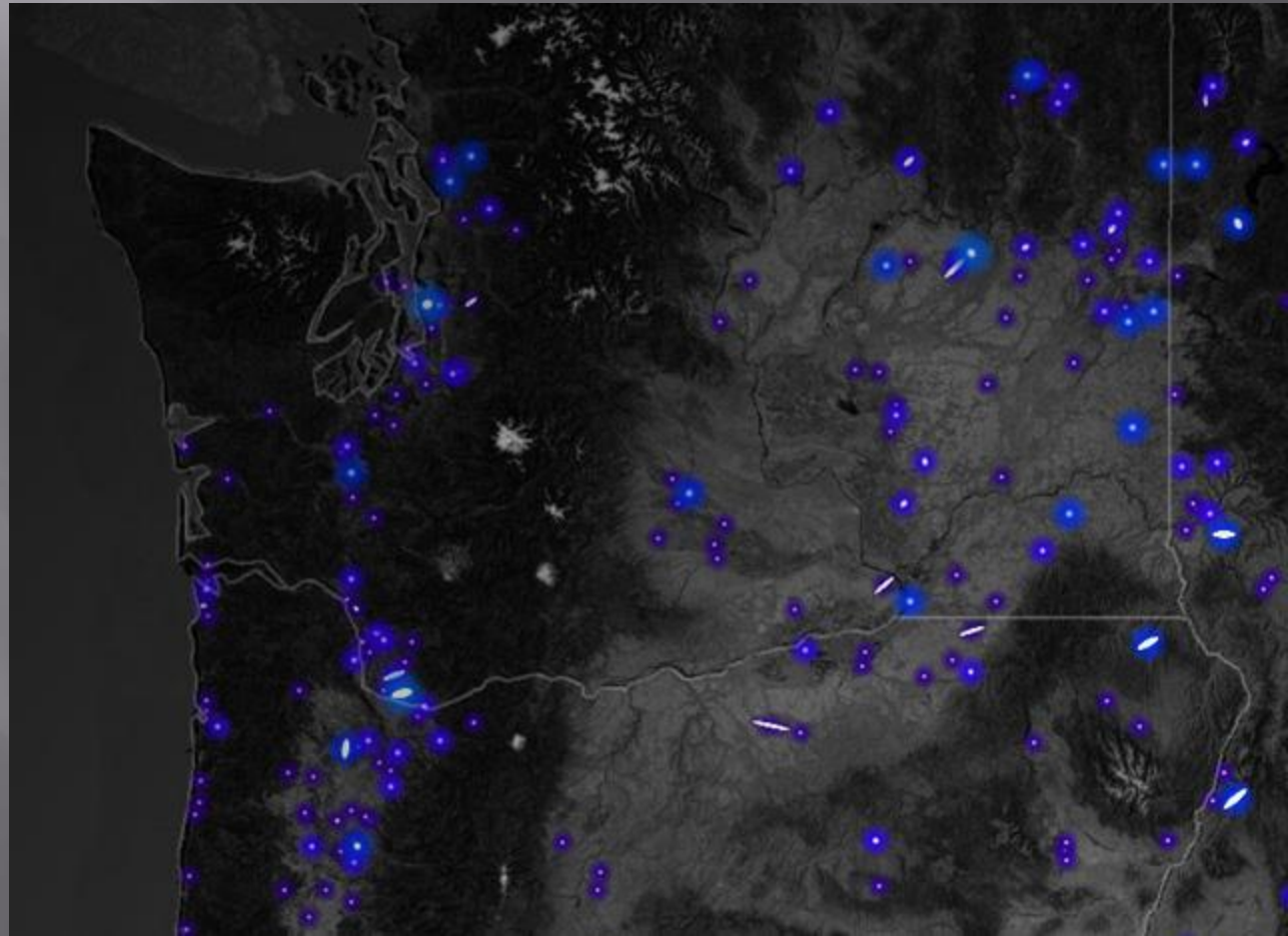
104 °F 7/29/2009
90 °F May – Oct.



TORNADOS

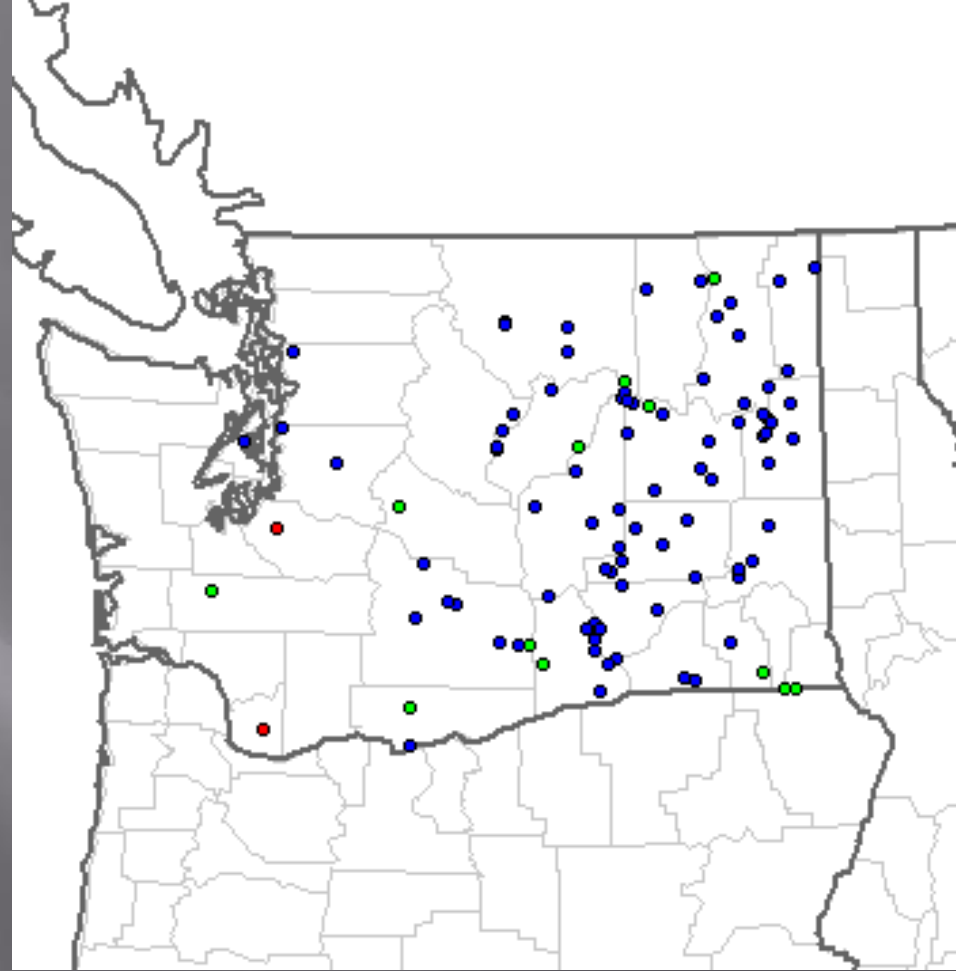


Tornados
that
touched
down from
1950
through
2011.



TORNADOS

1972 Vancouver F3
Tornado – 6 fatalities,
301 injured and \$3 –
\$5,000,000 in damages



Washington generally
experiences 1 to
3 TORNADOS per year.

WILDFIRES



WILDFIRES



WILDFIRES



<http://www.wrh.noaa.gov/sew/>



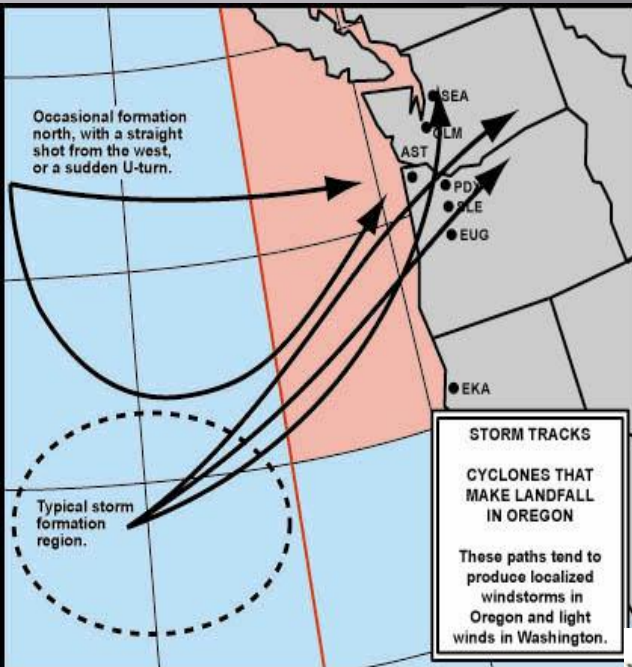
<http://www.nwccweb.us/information/firemap.aspx>



Washington – 1,342 Fires 259,526
2014 estimate is over 350,000 acres

WIND STORMS

October 12, 1962 Columbus



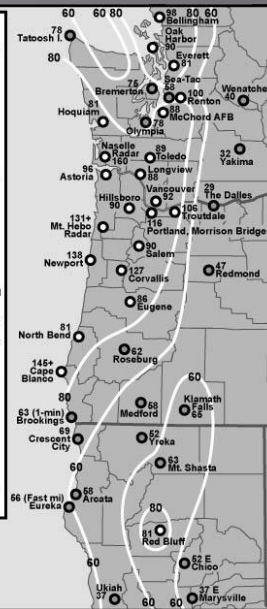
October 12, 1962: Peak Gusts, mph

The 60 and 80-mph isolaths delineate a broad area of damaging winds that struck the Pacific Northwest in this "mother of all windstorms." Stations with 80+ peaks are the majority on this map.

Sources: National Climatic Data Center Climate Visualization Database and Unaffiliated Surface Observation Forms, and National Weather Service, Portland and Seattle. Harper, Byron P., "Report on October 12 Wind Storm," Coparini, D. John, "Meteorological Bombs as they Affect Oregon," Rue, Walter, "Weather of the Pacific Coast," Franklin, Dorothy, "West Coast Disaster," Curry County Reporter. Some readings are unofficial.

Some readings left off the map due to space constraints include a gust to 63 mph at San Francisco, CA, 63 mph at Santa Rosa, 40 mph at Oakland, and 66 mph at Sacramento. Also, a fastest mile of 88 mph at the Portland International Airport, OR, with estimated gusts to 104 by weather bureau personnel. Studio personnel at KGW radio in downtown Portland witnessed a gust to 93 mph before the anemometer was destroyed. Also, the Weather Bureau Office in downtown Seattle, WA, had a peak fastest mile of 66 mph, both the Seattle Naval Air Station and Boeing Field had peak gusts of 66, and West Point had a gust to 83. Winds of 75 mph were reported at Anacortes, and 87 mph at Vancouver, BC. The Cape Blanco reading listed on the map was achieved with a damaged anemometer, and was probably higher! According to Dave Willson and Ira Kosovitz of the NWS, Portland, in a web article on the storm, winds at Cape Blanco reached 150 mph with gusts to 173.

Finally, according to the study by Lynott, Robert E. and Gramer, Owen P., "Detailed Analysis of the 1962 Columbus Day Windstorm in Oregon and Washington," Monthly Weather Review, Feb 1965, many of these measurements were probably low.



<http://www.climate.washington.edu/stormking/Oct1962PeakGustsWAORCA.jpg>

December 11-12, 1995

December 11-12, 1995: Peak Gusts, mph

Strongest windstorms since November 1981, this midlatitude cyclone struck the Pacific coastal strip with the greatest fury, producing sustained winds of 75 mph at many places along the Oregon shoreline. Interior sections were spared major damage, but wind gusts in the 80-75 mph range caused widespread disruption.

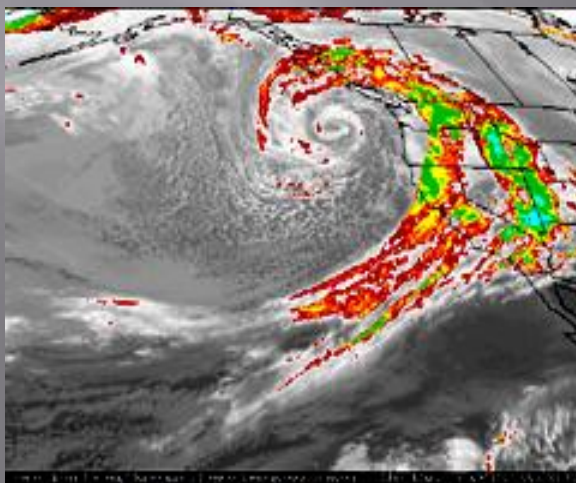
Note that, for some places in Oregon and Washington, the lesser storms on December 10 and 11 produced higher gusts. The low center of December 12 tracked right over the Olympic Mountains, and this probably contributed to lower winds on parts of the Washington coast.

Sources: National Climatic Data Center Climate Visualization Database, unaffiliated surface observation forms, and Storm Data December 1995, National Weather Service, Portland and Seattle. National Data Buoy Center historical meteorological data, and the Seattle Times (for some Puget Sound readings). Many numbers on this map are from Skywarn spotters.

Some readings left off this map due to space constraints include 101 mph unofficially at Astoria, Oregon, 104 mph at Barview, 70 mph at the Newport-CMAN station, 52 mph officially at Newport, 75 mph at Cape Arago, 69 mph in north Beaverton, 65 mph at Canby, and 60 at Dallas; sustained winds of 70-75 mph with gusts to 80 in Elliott Bay, Washington, 75 mph at Harbor Island in Seattle, 64 mph at West Point in Seattle, 70 mph at Auburn, 56 mph at Tacoma, 81 at Marysville, and 80 mph at Buoy 46041 Cape Elizabeth.



<http://www.climate.washington.edu/stormking/December1995.html>



<http://www.climate.washington.edu/stormking/Oct1962PeakGustsWAORCA.jpg>

<http://www.climate.washington.edu/stormking/Nov141981PeakGustMapWAORCA.jpg>

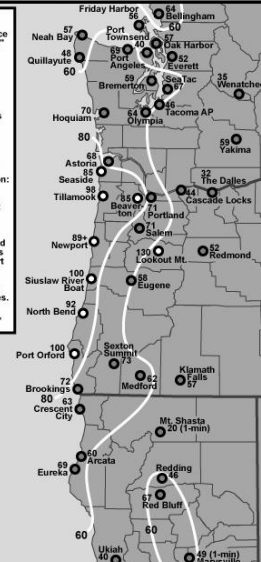
November 14, 1981: Peak Gusts, mph

One of the most powerful windstorms since Columbus Day 1962. This was "round one" of a double windstorm strike in a 24-hour period, and was the strongest of the two.

Sources: National Climatic Data Center unaffiliated surface observation forms and Climate Visualization Database, and National Weather Service, Portland and Seattle. Coparini, D. John, "Cyclogenetic Bombs As They Affect Oregon," NOAA paper, January 1985.

Some readings left off this map due to space constraints include: Oregon: Hillsboro 63 mph, Portland, Morrison St. Bridge 85, Wilsonville 75, Grants Pass 50. Washington: 70 mph at the Evergreen Point Floating Bridge in Seattle, 61 at the NWS Office in Seattle, 46 at Boeing Field in Seattle, 52 at West Point in Seattle, 59 at Renton, 44 at Stampede Pass.

Brookings reported at 3-hour intervals, and winds between the 21:00 and 00:00 reports may have been higher. Bremerton's airport station was closed during the peak wind times in the Puget Sound, and may also have had a higher gust. Tacoma, Cascade Locks and Crescent City had similar issues. Redding's wind gauge was rendered inoperative during the height of the storm, so reported peak gust is likely low.





<http://www.komonews.com/weather/faq/4306592.html>

Lowland Fall and Winter Winds.



Cascade Winds

WIND STORMS

EARTHQUAKES

Chile 1960 9.5

Alaska 1964 9.2

Sumatra 2004 9.1

Japan 2011 9.0

Kamchatka 1952 9.0

Alaska 1965 8.7

Chile 2010 8.8

Ecuador 1906 8.8

Tibet 1950 8.6

Sumatra 2005 8.6

Haiti 2010 - 316,000
7.0

China 1920 - 200,000
7.8

China 1976 - 242,769
7.5

Sumatra 2004 - 227,898
9.1

USSR 1948 110,000
7.3

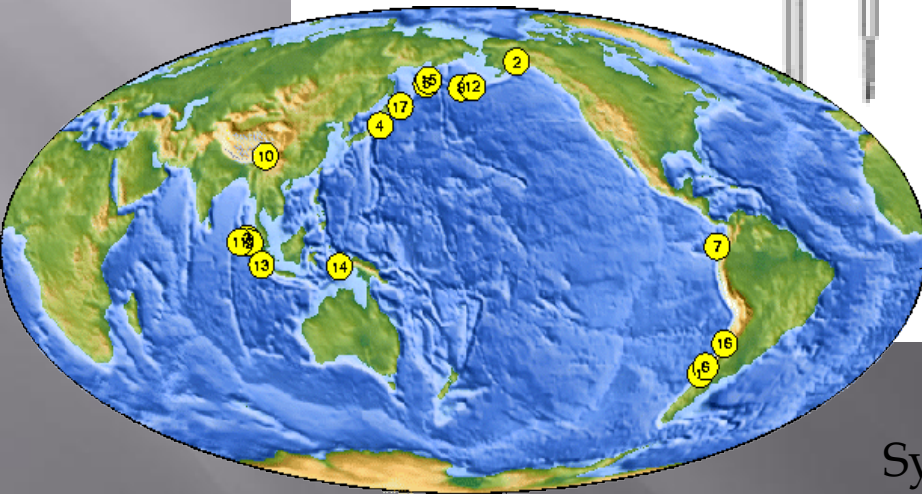
Japan 1923 - 142,800
7.9

Syria 1138 - 230,000

China 1556 - 830,000
est. 8.0

Iran 856 200,000

Iran 893 150,000

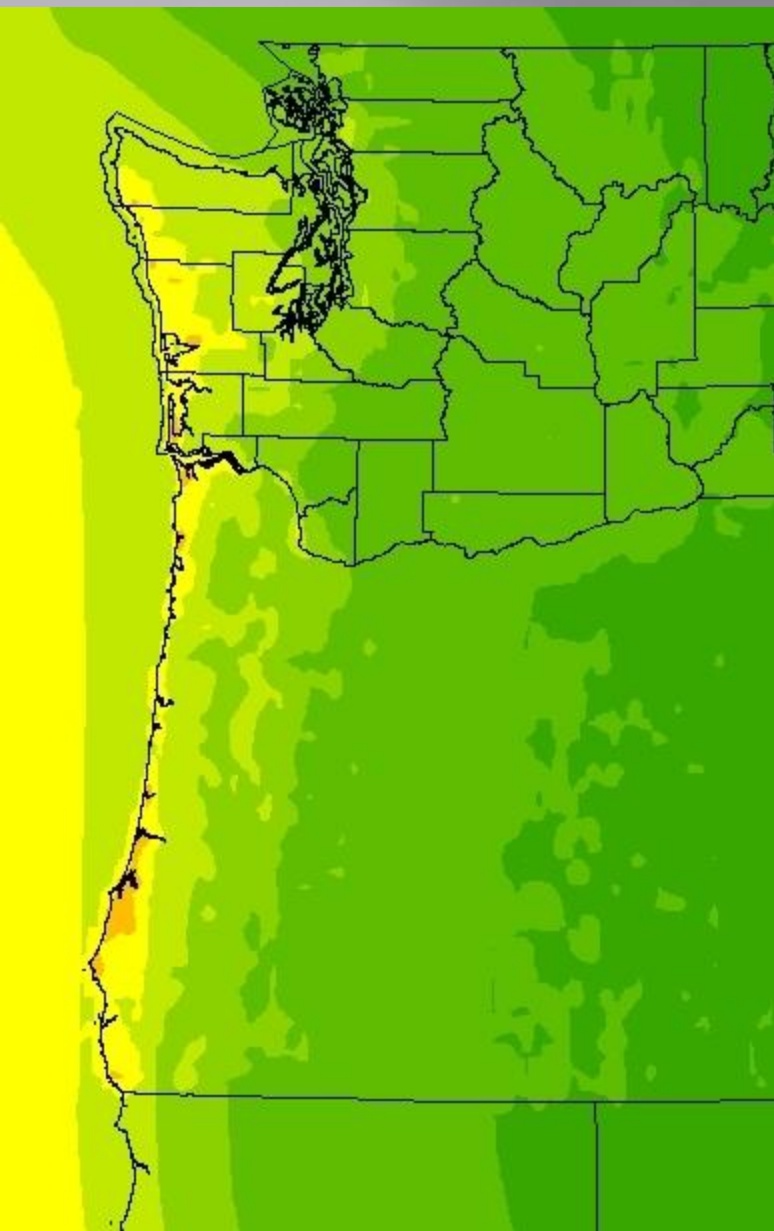


USGS National Earthquake Information Center

http://earthquake.usgs.gov/earthquakes/world/10_largest_world.php

SCALE

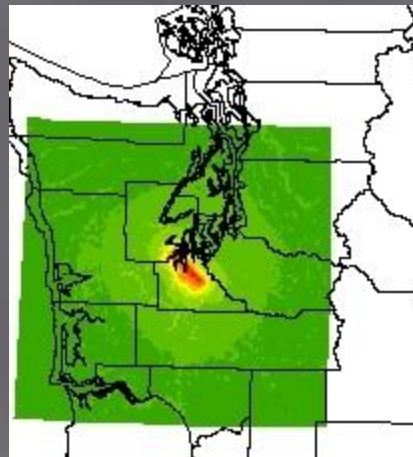
Cascadia 9.0



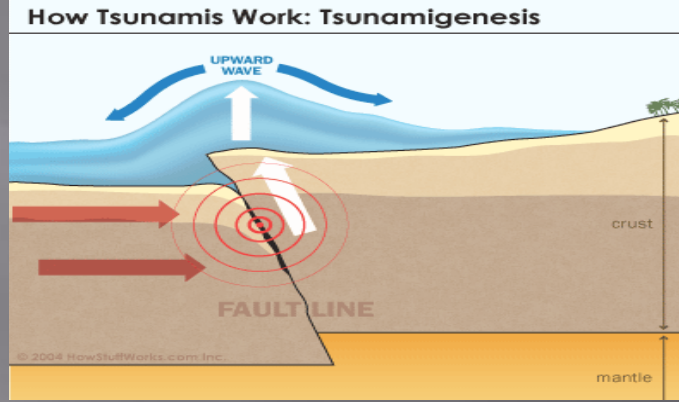
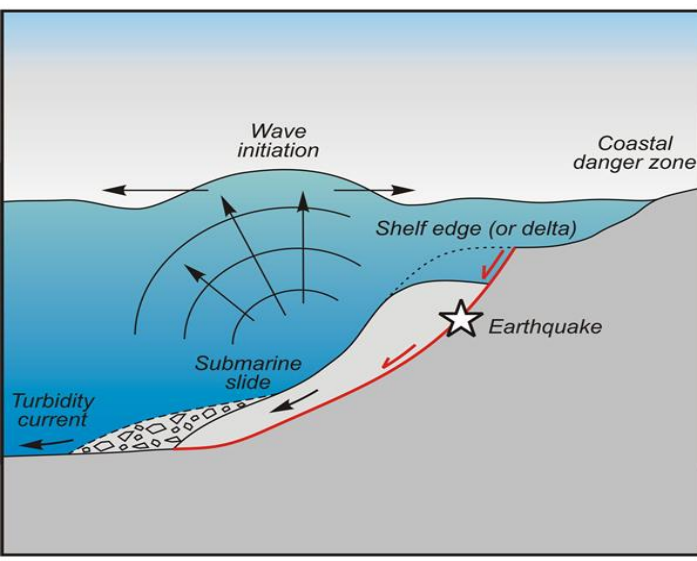
Nisqually 7.2



Olympia 6.8



TSUNAMIS

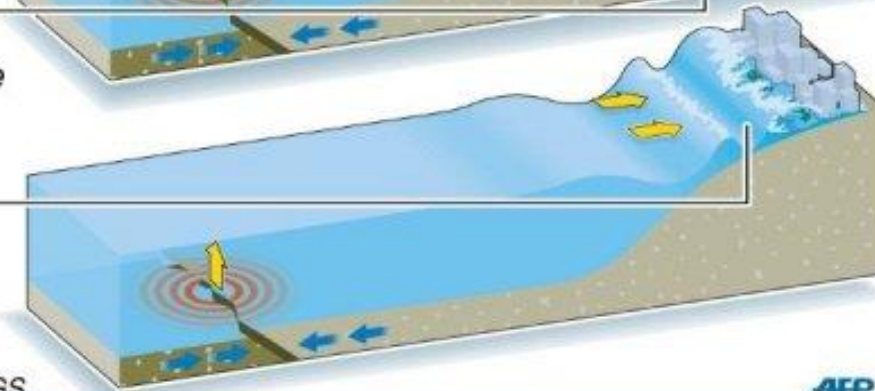
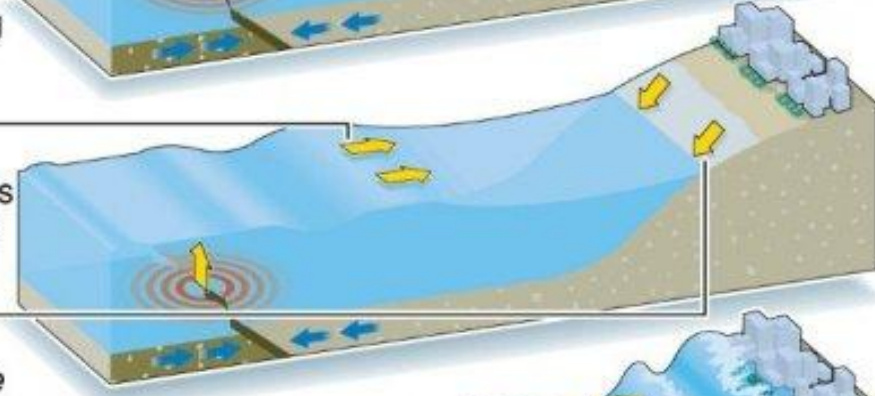
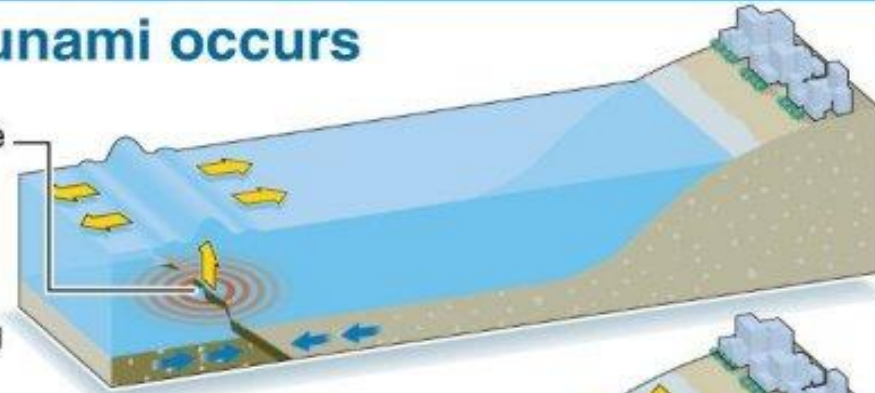


What's Your
Tsunami
Preparedness?



How a tsunami occurs

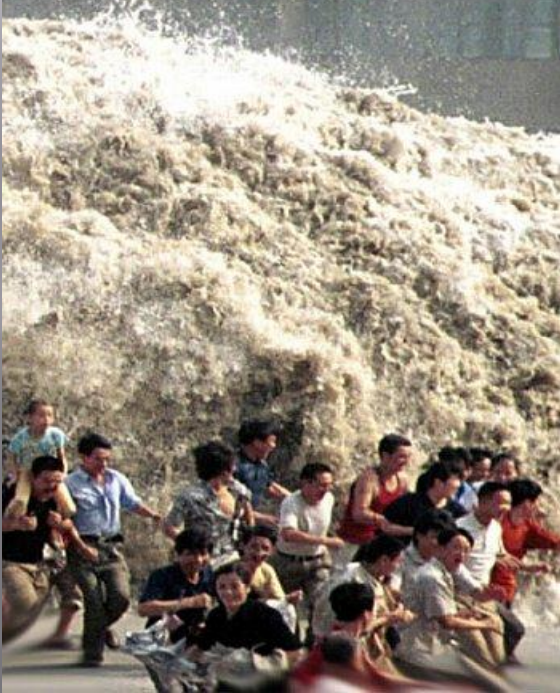
- 1 An earthquake rocks the ocean floor
- 2 Displaces volume of water, pushing it up
- 3 Sets off an oscillation, which develops underwater at great speed
- 4 Sea water is sucked back from the shore



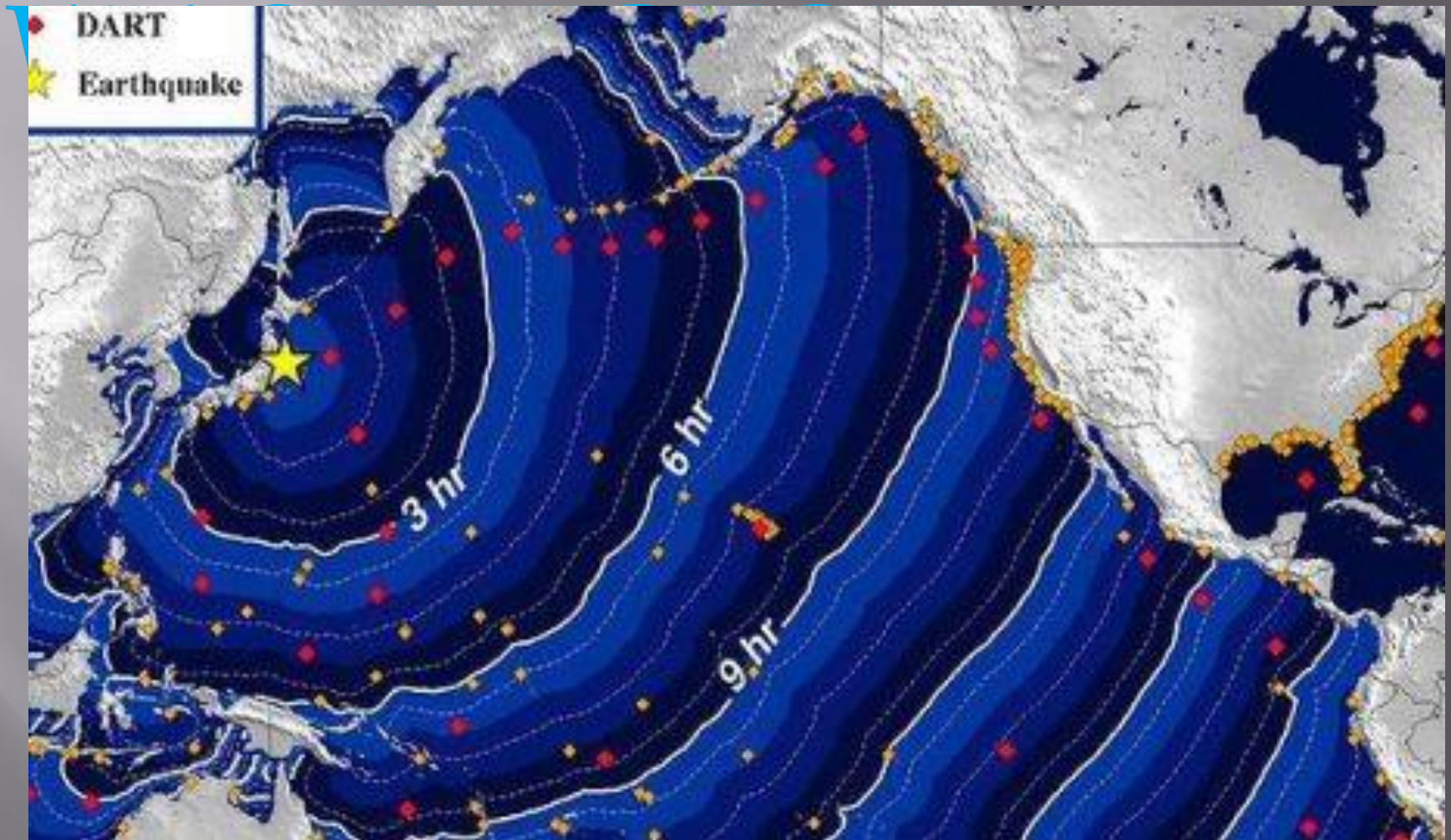
Waves get bigger as water gets shallower

Sources: Nature/USGS

AFP



TSUNAMIS –



Cascadia Quake generated – 20 to 40 minutes!

TSUNAMIS

What will it look like on the
Washington Coast?



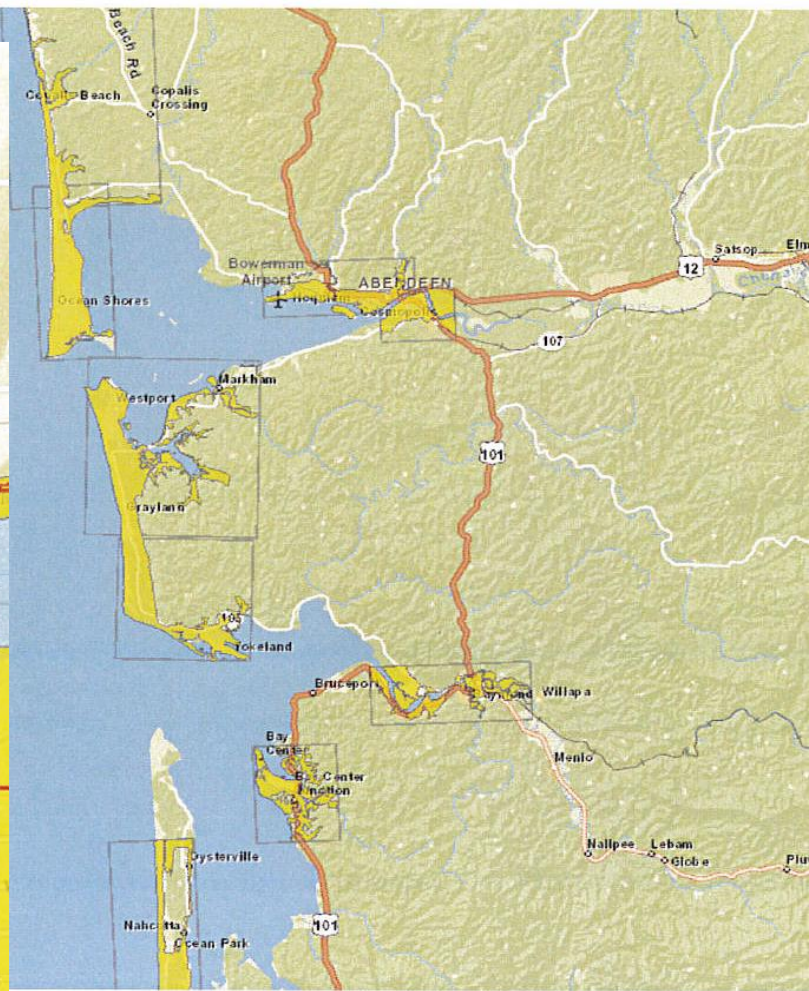
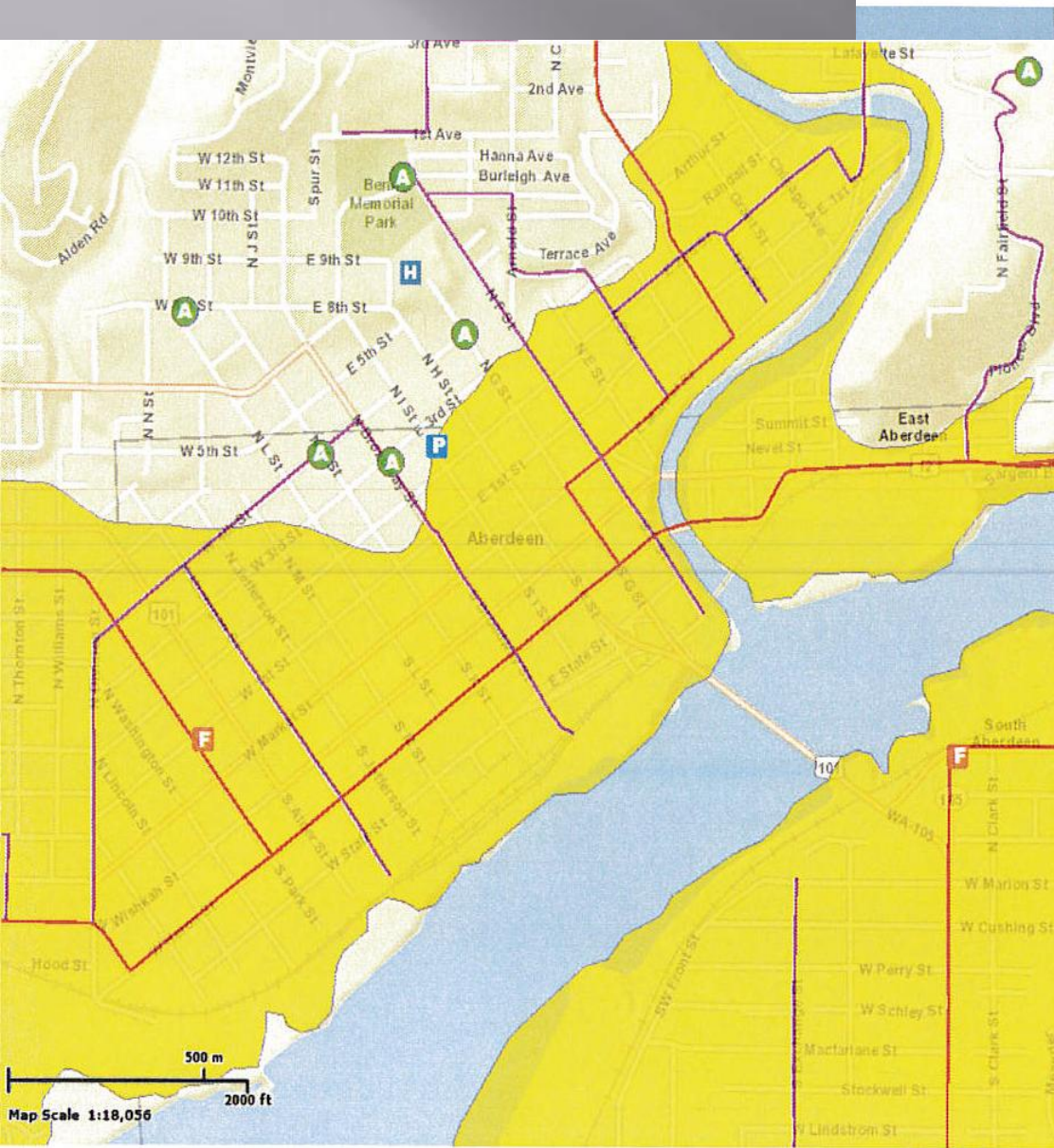
Look like this:
Probably Not.



More like this!

TSUNAMIS

Yes, I still visit the Coast – but
know the area and have a plan!



<https://fortress.wa.gov/dnr/geology/?site=wigm>

Should we be worried?



NO - Learn what the HAZARDS
are in your area!



HAVE A PLAN: PERSONAL – Know what to do!



Be Prepared!



Under the Bed -

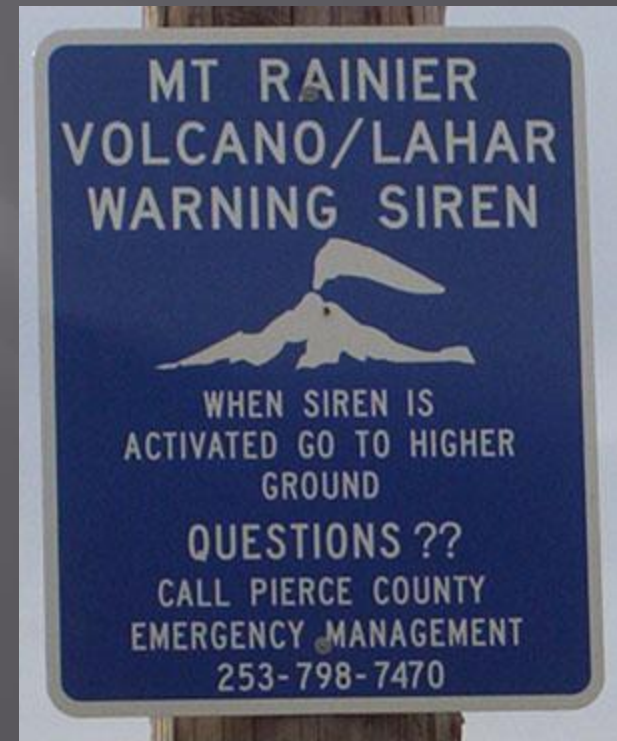
★ Shoes ★

Gloves

Hardhat

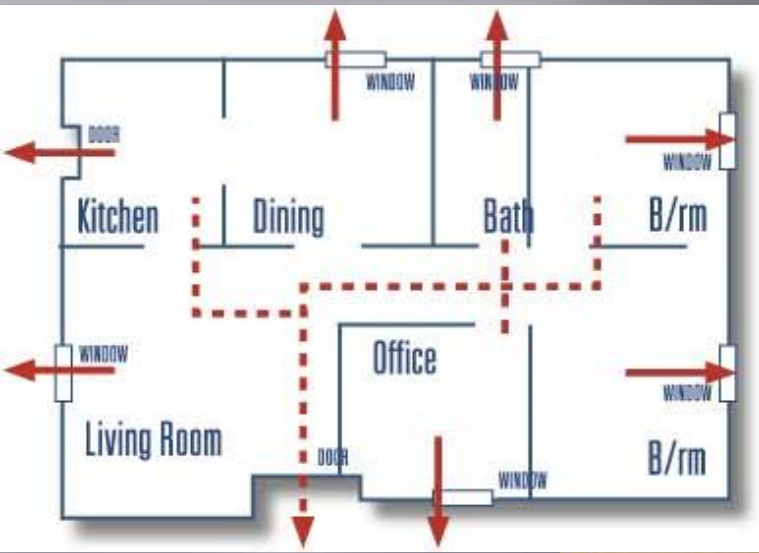
Flashlight

Medications



HAVE A PLAN For FAMILY

Evacuation Plan – Assembly



OUT OF AREA CONTACT PLAN FOR STATUS CHECK and UNIFICATION



OUT OF AREA CONTACT PERSON

WHY? Local phone systems may be shut down in a disaster. However, you frequently can place a long-distance call.

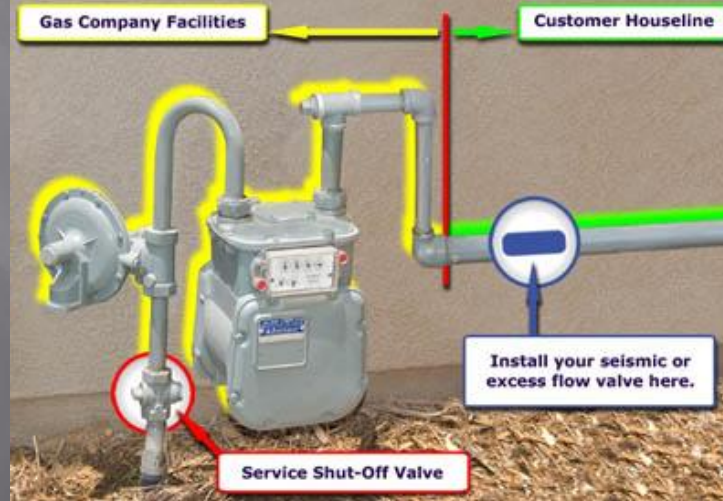
Name (print): _____

Phone number (with area code): _____

Cell phone number (with area code): _____

TIP: You may be able to text message all your loved ones on your cell phone. Keep these messages short.

NATURAL GAS ELECTRIC WATER SHUTOFF PLAN



Emergency Resource Guide

Information to help you plan and prepare

Personal Preparedness

Prevention

Terrorism

Biological Agents

To the Community

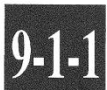
To the World

Emergency Response

This publication
prepared jointly by



Revised: March 2008



PLANNING RESOURCES

www.ready.gov - Has personal, family and business planning guides and games for kids.

Washington Military Department –
Emergency Management Division – Preparedness
http://www.emd.wa.gov/preparedness/prep_index.shtml

ALERTS/WARNINGS and planning information –
Local government websites. Example

<http://www.co.thurston.wa.us/em/Flood/TeleAlert.htm>

<http://www.kingcounty.gov/safety/prepare.aspx>

QUESTIONS?



EMERGENCY SERVICES

Emergency Management

9521 Tilley Rd SW

Olympia, WA 98512

(360) 867-2800 Fax: (360) 867-2811

www.co.thurston.wa.us/em

[Facebook.com/ThurstonEM](https://www.facebook.com/ThurstonEM)

[Twitter.com/ThurstonEM](https://twitter.com/ThurstonEM)

ANDREW KINNEY

Emergency Management Coordinator

(360) 867-2827 • Fax (360) 867-2811

kinneya@co.thurston.wa.us