

ES473/573 Environmental Geology

Spring 2009 Academic Showcase and Class Project

Theme Session –

“Earthquake Hazards and Risk Mitigation in Western Washington and Oregon”

Reading Assignments for Posters – April 21, 2009

Reference Resources Shown in Italics and Listed by Links from ES473 AES Project Web Site

Topics

Name:

I. Overview of Earthquake Hazards and Risk Reduction in Western Washington and Oregon Taylor

- *Earthquake Hazards in the Pacific Northwest (Rogers and Priest, 19xx)*

II. Geologic Framework for Earthquake Hazards in the Pacific Northwest

A. Tectonic Setting

Ben Shivers

- *Cascadia Subduction Processes and Earthquake Hazards (Atwater, 19xx)*
- *Yeats et al., 1996, Tectonics of the Willamette Valley*
- *Cascadia Subduction Processes and Earthquake Hazards (Atwater, 19xx)*
- *Cenozoic Plate Motions and the Volcano-Tectonic Evolution of OR and WA (Wells et al., 1984)*
- *Recent Movements of the Juan de Fuca Plate (Riddihough, 1984)*

B. Surficial Geology and Earth Materials

Pat Stephenson

- *Gannett and Caldwell, 1998, Geologic Framework of the Willamette Basin*
- *Surficial Deposits of the Willamette Valley (O'Connor et al., 2001)*
- *Surficial Geology and Quaternary Deposits of Southern Puget Sound (Borden and Troost, 2001)*
- *Stratigraphy and chronology of Quaternary deposits of the Puget Lowland (Easterbrook, 1986)*

C. Seismic Sources and History

1. Cascadia Megathrust

Janelle Anzalone

- *Cascadia Subduction Processes and Earthquake Hazards (Atwater, 19xx)*
- *Summary of Cascadia Subduction Zone Earthquakes (from Geist, 1996)*
- *Cascadia Deep Earthquake Sources*
- *Cascadia Subduction Zone Earthquakes*
- *Figure Showing Earthquake Sources in Cascadia Subduction Zone (DOGAMI, IMS-7, *.jpg)*

2. Intraplate Crustal Faulting

Matt Moore

- *Earthquake Risks in Oregon (Wang, 1998)*
- *Earthquake Maps for Oregon (DOGAMI GMS100, 1996)*
- *Oregon Historic Epicenter Map (1881-2002)*
- *Explanation to Accompany Historic Epicenter Map (1881-2002)*
- *Structure and Seismicity of the Seattle Fault (Blakley et al., 2002)*

- *Holocene Faults Scarps and Active Faulting in Tacoma (Sherrod et al., 2004)*
- *Earthquake Hazard Map Associated with Portland Hills Fault, Portland (Wong et al., 2000)*
- *Overview of 1993 Scotts Mills Earthquake Event (Wong, 1993)*

3. History of Active Faulting and Seismicity

Ryan Stanley

- *Earthquake Risks in Oregon (Wang, 1998)*
- *Oregon Historic Earthquake Activity (Wong and Bott, 1995)*
- *Oregon Historic Epicenter Map (1881-2002)*
- *Measuring Earthquakes and Seismic Networks in Oregon (Wang et al., 1997)*
- *Earthquake Hazard Map Associated with Portland Hills Fault, Portland (Wong et al., 2000)*
- *Active Faulting in Central Oregon (Pezzopane, 1993)*
- *Structure and Seismicity of the Seattle Fault (Blakley et al., 2002)*
- *Earthquake Maps for Oregon (DOGAMI GMS100, 1996)*

III. Earthquake-Related Hazards

A. Ground Motion and Shaking

Thomas Van Nice

- *Earthquake Risks in Oregon (Wang, 1998)*
- *Seismic Engineering Characteristics of Earth Materials in the Pacific Northwest (Silva et al., 1996)*
- *Ground Shaking Hazards in Portland Area (Wong et al., 1993)*

B. Ground Failure

1. Co-seismic Landslides

James McLeod

- *Coseismic Ground-Failure Hazards in Western Washington (Shuster and Howard, 19xx)*
- *EQ-Ground Failure Hazards in the Puget Sound (Chleborad and Shuster, 1996)*
- *Earthquake-Related Slope Stability in South Salem-Salem Hills (Hoffmeister, 1999)*
- *Earthquake-Induced Landslide Potential in Polk Co., OR (Harvey and Peterson, 2000)*

2. Liquefaction

Amanda Tondreau

- *Liquefaction Potential of Alluvial Silts in Willamette Valley (Vessely et al., 1996)*
- *Liquefaction Hazards in Seattle (Grant et al., 1996)*

IV. Hazards Preparedness and Mitigation

A. Techniques for Reducing Earthquake Hazards

Keoni Wong

- *DOGAMI Special Paper 31 - Mitigating Geologic Hazards in Oregon*
- *DOGAMI Special Paper 32 - Reducing Losses to Geologic Hazards in Oregon*
- *Addressing Cascadia Earthquake Risks (May, 20xx)*
- *Overview of Reducing Earthquake Hazards (Kockelman, 1996)*

B. Loss Potential, Preparedness, Risk Reduction, and Recovery

Gerritt Vincent

- *Building Losses due to Earthquakes in Oregon (Whelan, 1996)*

- *Risk and Losses due to Earthquake Damage in Oregon (Wang, 1998)*
- *Potential for EQ damage in Oregon (Wang and Clark, 1999)*
- *Just-in-Time Inventory: Enhancing Earthquake Recovery*
- *Preparing for Earthquakes in Oregon (Wang, 1997)*

V. Site Case Studies

A. Seismic Hazards in the Seattle Area

Brad Adams

- *Earthquake Risk Reduction in Seattle (May, 1996)*
- *Seismic Intensity Distribution for the 2001 Nisqually Earthquake (Dewey et al., 2002)*
- *Structure and Seismicity of the Seattle Fault (Blakley et al., 2002)*
- *Geotechnical Aspects and Effects of the 2001 Nisqually Earthquake, Puget Sound (Bray et al., 2003)*

B. Seismic Hazards in the Tacoma Area

DJ Jaeger

- *Holocene Faults Scarps and Active Faulting in Tacoma (Sherrod et al., 2004)*
- *Effects of 2001 Nisqually Earthquake on Business in Puget Sound (WA Economic Development Council, 2002)*
- *Geotechnical Aspects and Effects of the 2001 Nisqually Earthquake, Puget Sound (Bray et al., 2003)*
- *Seismic Intensity Distribution for the 2001 Nisqually Earthquake (Dewey et al., 2002)*

B. Seismic Hazards in the Portland Area

Izzy Pratt

- *Report on Earthquake Hazards in Western Oregon (DOGAMI IMS-7, *.pdf)*
- *History and Seismic Analysis of the Portland Hills Fault (Wong et al., 2001)*
- *Earthquake Hazards in the Portland Area (Spangle and Assoc., 1998)*
- *Earthquake Hazards in Portland, Oregon (Madin, 1996)*
- *Historical Earthquakes in Portland (Bott and Wong, 1993)*
- *Earthquake Hazard Map Associated with Portland Hills Fault, Portland (Wong et al., 2000)*

C. Seismic Hazards in the Mid-Willamette Valley

Sarah Johnson

- *Report on Earthquake Hazards in Western Oregon (DOGAMI IMS-7, *.pdf)*
- *Report to EQ hazard maps of Salem East & Salem West quadrangles (Wang and Leonard, 1996)*
- *Report to EQ hazard maps of Springfield-Eugene Area (DOGAMI IMS-14)*
- *Seismic Hazards Mapping in Eugene-Springfield (Wang et al., 1997)*
- *Overview of 1993 Scotts Mills Earthquake Event (Wong, 1993)*
- *Causes and Effects of the 1993 Scotts Mills Earthquake (Thomas et al., 1996)*
- *Earthquake-Related Slope Stability in South Salem-Salem Hills (Hoffmeister, 1999)*
- *Earthquake-Induced Landslide Potential in Polk Co., OR (Harvey and Peterson, 2000)*

D. Seismic Hazards in the Klamath Falls Area

Gretchen Boyer

- *1993 Klamath Falls Earthquake (Wiley et al., 1993)*
- *Active Faulting in Central Oregon (Pezzopane, 1993)*
- *More on Klamath Falls Earthquakes (Bacon et al., 1999)*