

2008 Academic Showcase Project
ES407 Senior Seminar / ES473/573 Environmental Geology

Theme Session - “Earth Science in Context: Land Use and Watershed Function in the Willamette Basin”

Project Assignment

We will be participating as a group in the 2008 WOU Academic Showcase. The title of our theme session is “Earth Science in Context: Land Use and Watershed Function in the Willamette Basin”. Students from ES407 and ES473/573 have been divided into 7 topic areas, these include: (1) Regional Physiography, Geology and Geomorphology; (2) Regional Climate and Vegetation; (3) Geomorphic Hazards; (4) Geomorphology and Ecology; (5) Geomorphic Response to Forest Practice; (6) River Management and Restoration; (7) Water Resources and Environmental Quality.

Dozens of published papers on these topics are available for download at the ES473/573 class project web site. Most of these articles are in electronic format. In addition, a basic project bibliography is available at http://www.wou.edu/las/physci/taylor/g473/2008_showcase_ideas_references.pdf

Instructions for the class project are as follows:

- (1) Each student is assigned in teams of three to one of the seven topic areas in the theme session (see student topic-teams listed below).
- (2) Each student is assigned two initial journal articles or reports related to the topic. These articles will provide an overview of different aspects of the topics (see student article assignments listed below).
- (3) In addition to the two assigned articles, students are required to find a MINIMUM OF TWO ADDITIONAL references in support of their subtopic presentation.
- (4) Read, outline, and summarize the assigned articles. Students are to thoroughly familiarize themselves with their subtopic.
- (5) Each student will prepare a 100-word abstract that succinctly summarizes the main concepts in their subtopic, based on their journal / article readings. Guidelines for writing and preparing scientific abstracts are located at:

http://www.wou.edu/las/physci/taylor/g473/abstract_guidelines.pdf

Drafts of project abstracts are due Thurs. April 24; final abstracts are due Tuesday April 29.

NOTE: Not all of the reading and project research needs to be completed at the time you write your abstract. You will need enough understanding of your topic to write a succinct overview, but will not have to have all the details worked out. Use your two assigned articles to frame your abstract, you can fill in with you other references as the project progresses.

- (6) Once you’ve completed all of your project research, you will be ready to create your poster. We will be using MS Powerpoint to produce large-format 36 x 48 inch posters that will be displayed at the Academic Showcase. Students will use a combination of text, bullet summaries, figures and tables to tell their story. Guidelines for preparing scientific posters are available at:

http://www.wou.edu/las/physci/taylor/g473/poster_tips.pdf

We will go over the methods of poster preparation using powerpoint, poster templates are available on the class project web site. Remember: “pictures are worth a thousand words”. You will use web and published resources to provide graphics for your poster. Students will be graded on timeliness in project submissions, as well as both content and quality of presentation. The project schedule is as follows:

Thursday, April 24, Draft Poster Abstracts Due
Tuesday, April 29, Final Poster Abstracts Due
Tuesday, May 20, Draft Posters Due
Thursday, May 29, Final Poster / Showcase Presentations

WARNING: Start your reading and research now!!!! Waiting until the last minute will not give you enough time to thoroughly understand your topic and prepare your abstracts/posters.

TOPIC AREAS-ARTICLE ASSIGNMENTS-STUDENT TEAMS

1. Regional Physiography, Geology and Geomorphology (Ben Shivers, Josh Troyer, Ian Macnab)

Gannett M.W.; Caldwell R.R., 1998, Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington: US Geological Survey Professional Paper, n1424 A, pp A1 A32.

ON FILE Geobase NUMBER: 0428679 **(SHIVERS)**

Franklin J.F.; Dyrness C.T., 1988, Natural vegetation of Oregon and Washington. Reprinted with new bibliographic supplement, Oregon State University Press, 452p.

ON File **(SHIVERS)**

McDowell, P.F., 1991, Quaternary stratigraphic and geomorphic surfaces of the Willamette valley Oregon, in Quaternary non-glacial geology: coterminous U.S., Morrison, R.B., ed., p.156-164, The Geological Society of America. **(MACNAB)**

O'Connor, J.E., Sarna-Wojcicki, A., Wozniak, K., Polette, J., Fleck, R.J., in press (2000). Origin, extent, and thickness of Quaternary geologic units in the Willamette Valley, Oregon. U.S. Geological Survey Professional Paper, 1620, in press, U.S. Geological Survey, Portland, Oregon.

On File **(MACNAB)**

Priest G.R., 1990, Volcanic and tectonic evolution of the Cascade Volcanic Arc, central Oregon: Journal of Geophysical Research, v95 nB12, pp 19,583 19,599. **(TROYER)**

Yeats, R.S., Graven, E.P., Werner, K.S., Goldfinger, C., and Popowski, T., 1996, Tectonics of the Willamette Valley, Oregon, in Rogers, A.M., et al., eds., Assessing earthquake hazards and reducing risk in the Pacific Northwest: U.S. Geological Survey Professional Paper 1560, p. 183-222. **(TROYER)**

2. Regional Climate and Vegetation (past and present)

(Laura Stallard, Bobby Kelso)

Franklin J.F.; Dyrness C.T., 1988, Natural vegetation of Oregon and Washington. Reprinted with new bibliographic supplement, Oregon State University Press, 452p.

ON File **(STALLARD)**

Taylor, G.H., and Hannan, C., 1999, The climate of Oregon: from rain forest to desert: Oregon State University Press, Corvallis, 211 p.

ON FILE **(STALLARD)**

Grigg L.D.; Whitlock C., 1998, Late Glacial vegetation and climate change in western Oregon: Quaternary Research, v49 n3, pp 287-298.
On File grigg98.pdf (KELSO)

Whitlock C.; Bartlein P.J., 1997, Vegetation and climate change in northwest America during the past 125 kyr: Nature, v388 n6637, pp 57-61.
On File whit97.pdf(?? - check) (KELSO)

3. Geomorphic Hazards (Kristin Mooney, Matt Buche, Donnie Kasper)

Beaulieu, J.D. and Olmstead, D., 1999a, Mitigating geologic hazards in Oregon: A technical reference manual: Oregon Dept. of Geology and Mineral Industries, Special Paper 31, 64 p.
ON FILE (MOONEY)

Montgomery, D.R., Schmidt, K.M., Greenberg, H.M., Dietrich, W.E., 2000, Forest clearing and regional landsliding: Geology, v. 28, p. 311-314.
On File (MOONEY)

Robison, E. G., Mills, K., Paul, J., Dent, L., and Skaugset, A., 1999, Storm impacts and landslides of 1996: Oregon Department of Forestry Forest Practices Technical Report 4, 145 p.
On File (KASPER)

Swanson, F.J. and Swanson, D.N., 1977, Complex mass-movement terrains in the western Cascade Range, Oregon: Reviews of Engineering Geology, v. 3, p. 113-124.
On File (KASPER)

Roering, Joshua J., Kirchner, James W., Dietrich William E., 2005, Characterizing structural and lithologic controls on deep-seated landsliding: implications for topographic relief and landscape evolution in the Oregon coast range, USA: Geological Society of America, v. 117, p.1-15.
ON FILE (BUCHE)

Schmidt, K.M., Roering, J.J., Stock, J.D., Dietrich, W.E., Montgomery, D.R., and Schaub, T., 2001, The variability of root cohesion as an influence on shallow landslide susceptibility in the Oregon Coast Range: Canadian Geotechnical Journal, v. 38, p. 995-1024.
On File (BUCHE)

4. Geomorphology and Ecology (Emily Hardy, Shawn Coreson, Kevin Friscia) (abiotic factors influencing ecosystem; riparian zone, woody debris invasive plants)

Franklin, J.F., and Dyrness, C.T., 1988, Vegetation of Oregon and Washington, second edition: Oregon State University Press, Corvallis, 216 p.
On File (HARDY)

Pabst R.J.; Spies T.A., 1998, Distribution of herbs and shrubs in relation to landform and canopy cover in riparian forests of coastal Oregon: Canadian Journal of Botany, v76 n2, pp 298-315.
On File NO pdf(?? - check) (HARDY)

Swanson, F.J., Franklin, J.F., and Sedell, J.R., 1990, Landscape patterns, disturbance, and management in the Pacific Northwest, USA: in Zonneveld, T.S., and Forman, R.T.T., eds. Changing Landscapes: An Ecological Perspective: Springer Verlag, New York, p. 191-213.
On File (HARDY)

Hobbs, R.J., 1991, Disturbance a precursor to weed invasion in native vegetation: Plant Protection Quarterly, vol. 6(3), p.99-104. (CORESON)

Pabst, R.J., and Spies, T.A., 2001, 10 Years of Vegetation Succession on a Debris Flow Deposit in Oregon: Journal of the American Water Resources Association, v. 37, p. 1693-1708. **(CORESON)**

Swanson, F.J., 1980, Geomorphology and ecosystems, *in* Waring, R.H., ed., Forests: fresh perspectives from ecosystem analysis: Proceedings of the 40th annual biology colloquium, April 27-28, 1979, Oregon State University Press, Corvallis, OR, p. 259-170.

On File (FRISCIA)

Kovalchik B.L.; Chitwood L.A., 1990, Use of geomorphology in the classification of riparian plant associations in mountainous landscapes of central Oregon, USA: Forest Ecology & Management, v33 34 n1 4, pp 405 418.

On File koval90.pdf (FRISCIA)

5. Geomorphic Response to Forest Practice (Levi Hogan, RC Mock, Allison McGonagle)

Ambers, R.K., 2001, Using the sediment record in a western Oregon flood-control reservoir to assess the influence of storm history and logging on sediment yield: Journal of Hydrology, v. 244, p. 181-200.

On File (HOGAN)

Grant, G.E., and Wolff, A.L., 1991, Long-term patterns of sediment transport after timber harvest, western Cascades Mountains, Oregon, USA, *in* Peters, N.E., and Walling, D.E., eds., Sediment and stream water quality in a changing environment: Trends and explanation: Proceedings of the Vienna IAHS Symposium, Vienna, Austria, August, 1991, International Association of Hydrological Sciences Publication 203, p. 31-40.

On File (HOGAN)

Cromack, K., Jr., Swanson, F. J., and Grier, C. C., 1979, A comparison of harvesting methods and their impact on soils and environment in the Pacific Northwest: *in* C. T. Youngberg, ed., Forest soils and land use: Proceedings of the Fifth North American Forest Soils Conference, Fort Collins, CO, p. 449-476.

On File (MOCK)

Swanson, F.J., and Dyrness, C.T., 1975, Impact of clearcutting and road construction on soil erosion by landslides in the western Cascade Range, Oregon: Geology, v. 3, p. 393-396.

On File (MOCK)

Luce, C.H., and Black, T.A., 1999, Sediment production from forest roads in western Oregon: Water Resources Research, v. 35, p. 2561-2570.

On File (MCGONAGLE)

Wemple, B.C., Swanson, F.J., Jones, J.A., 2000. Forest roads and geomorphic process interactions, Cascade Range, Oregon. Earth Surface Processes and Landforms, v. 26, pp. 191-204.

On File (MCGONAGLE)

6. River Management and Restoration (Alicia Thompson, Patrick Stephenson, Heather Hintz) (dams, fisheries)

Benner, P.A. and Sedell, J.R., 1997, Upper Willamette River landscape; a historical perspective, in River quality: dynamics and restoration, Laane, A. and Dunnette, D.A., eds., p. 23-47, CRC Press, Boca Raton, Florida. **(HINTZ)**

Lyons, J.K., and Beschta, R.L., 1983, Land use, floods, and channel changes: Upper Middle Fork Willamette River, Oregon (1936-1980): Water Resources Research, v. 19, no. 2, p. 463-471.

On File (HINTZ)

Graf, William L, 1999, Dam nation: A geographic census of American dams and their large-scale hydrologic impacts: Water Resource Research, v. 35, No. 4, p. 1305-1311

ON FILE (THOMPSON)

Kondolf, Mathias G., 1997, Hungary water: effects of dams and gravel mining on river channels: Environmental Management, v. 21, No.4, p. 533-551.

ON FILE (THOMPSON)

Wohl, E., In Press, Human impacts to mountain streams: publication pending in Geomorphology, draft version available online at www.sciencedirect.com.

On File (STEPHENSON)

Wohl, E., Angermeier, P.L., Bledsoe, B., Kondolf, G.M., MacDonnel, L., Merritt, D.M., Palmer, M.A., Poff, N.L., and Tarboton, D., 2005, River restoration: Water Resources Research, v. 41, W10301.

On File (STEPHENSON)

7. Water Resources and Environmental Quality (Brittnie Andrews, Tanja Aas, Von Blanchard)

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrar, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-Water Hydrology of the Willamette Basin, Oregon Scientific Investigations Report 2005-5168 Prepared in cooperation with the Oregon Water Resources Department (ANDREWS)

Woodward D.G.; Gannett M.W.; Vaccaro J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: US Geological Survey Professional Paper, n1424 B, pp B1 B82.

On File (ANDREWS)

Anderson, C.W., Wood, T.M., and Morace, J.L., 1997, Distribution of Dissolved Pesticides and Other Water Quality Constituents in Small Streams, and their Relation to Land Use, in the Willamette River Basin, Oregon, 1996: Water Resources Institute Report 97-4268.

On File (AAS)

Uhrich, M. A., and Wentz, D. A., 1999, Environmental Setting of the Willamette Basin, Oregon: U.S. Geological Survey, Water-Resources Investigations Report 97-4082-A, 20 p.

On File (AAS)

Hicks, B.J., Beschta, R.L., and Harr, R.D., 1991, Long-term changes in streamflow following logging in western Oregon and associated fisheries implications: Water Resources Bulletin, v. 27, p. 217-226.

On File (BLANCHARD)

Jones, J.A., and Grant, G.E., 1996, Peak flow responses to clearcutting and roads in small and large basins, western Cascades, Oregon: Water Resources Research, v. 32, p. 959-974.

On File (BLANCHARD)