

## **Robert C. Witter**

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### **EDUCATION**

PhD, Geological Sciences, University of Oregon, Eugene, Oregon, April 1999  
BA, Biology, Whitman College, Walla Walla, Washington, May 1991

### **SPECIALTIES**

Paleoseismology and active faulting  
Quaternary geology and stratigraphy  
Earthquake and tsunami hazards  
Tectonic geomorphology  
Neotectonics

### **PROFESSIONAL EXPERIENCE**

2011-present, Research Geologist, U.S. Geological Survey, Alaska Science Center, Anchorage, Alaska  
2006-2011, Regional Coastal Geologist, Oregon Department of Geology and Mineral Industries, Newport, Oregon  
1999-2006, Senior Project Geologist, William Lettis & Associates, Inc., Walnut Creek, California  
1994-1999, Graduate Teaching Fellow, Research Fellow, University of Oregon, Dept of Geological Sciences, Eugene, Oregon

### **POST EARTHQUAKE INVESTIGATIONS**

April 2011, International Tsunami Survey Team, Characterized tsunami sediments deposited in Sendai, Japan after the March 2011 M9 Tohoku-Oki earthquake, supported by the USGS.  
March 2010, Documented impacts of the 27 February 2010 M<sub>w</sub> 8.8 Chile earthquake and tsunami, National Science Foundation-Sponsored Geoengineering Extreme Events Reconnaissance (GEER) Team  
June 2005, Reconnaissance investigation of tsunami deposits near Padang, Sumatra, Indonesia, supported by Caltech Tectonics Observatory.  
September 1999, Reconnaissance investigation of the Yalova Segment of the North Anatolian Fault, Hersek Peninsula, Turkey, supported by Pacific Gas & Electric.

### **PROFESSIONAL ACTIVITIES**

GeoPRISMS Planning Workshop for the Alaska Primary Site, Portland, Oregon, September 2011.

USGS Workshop: Implications of Cascadia Turbidite Record on U.S. National Seismic Hazard Maps, Oregon State University, Corvallis, Oregon, November 2010.

Co-chair, National Tsunami Hazard Mitigation Program, Mapping and Modeling Subcommittee, 2009 to 2011.

USGS NEHRP External Grants Program, Northwest section review panel, August 2008.

State of Oregon Representative, National Tsunami Hazard Mitigation Program Coordination Committee, 2007 to 2011.

Workshop participant: U.S. Geological Survey (USGS) Northern California National Earthquake Hazards Reduction Program (NEHRP) Annual Workshop, January 2003, 2004

USGS Pacific Northwest Workshop for the Update of the National Seismic Hazard Maps, March 2006;

USGS Workshop: Great Earthquake Tsunami Sources: Empiricism and Beyond Empiricism, April 2006.

USGS NEHRP External Grants Program, Northwest section review panel, August 2004.

## **REGISTRATION AND AFFILIATIONS**

Professional Geologist, California, P.G. #7565

Member, American Geophysical Union

Member, Geological Society of America

Member, Seismological Society of America

## **HONORS AND AWARDS**

September 1992, Thomas Condon Fellowship, University of Oregon, Eugene, OR

1986 to 1990, Paul Garrett Scholarship, Whitman College, Walla Walla, WA

August 1986, Honors at entrance, Whitman College, Walla Walla, WA

## **PUBLICATIONS**

### ***Peer Reviewed***

Allan, J., P. Komar, and **R. C. Witter**, 2011, The March 2011 Tohoku tsunami and its impacts along the U.S. West Coast, *Journal of Coastal Research*, *Journal of Coastal Research*, in press.

Goto, K., C. Chague-Goff, S. Fujino, J. Goff, B. Jaffe, Y. Nishimura, B. Richmond, D. Suguwara, W. Szczucinski, D.R. Tappin, **R. Witter**, and E. Yulianto, 2011, New insights of tsunami hazard from the 2011 Tohoku-oki event, *Marine Geology*, 290, 46-50.

**Witter, R.C.**, Y.J. Zhang, K. Wang, C. Goldfinger, and G.R. Priest, 2011, in review, Coseismic slip on the southern Cascadia megathrust implied by tsunami deposits in an Oregon lake, submitted to *Journal of Geophysical Research*.

Horton, B.P., Sawai, Y., Hawkes, A.D., and **Witter, R.C.**, 2011, Sedimentology and paleontology of a tsunami deposit accompanying the great Chilean earthquake of February 2010: *Marine Micropaleontology*, v. 79, no. 3-4, p. 132-138.

Zhang, Y.J., **R.C. Witter**, and G.R. Priest, 2011, Tsunami-tide interaction in 1964 Prince William Sound tsunami, *Ocean Modelling*, v. 40, p. 246–259.

**Witter, R.C.**, B. Jaffe, Y. Zhang, and G.R. Priest, 2011, Reconstructing Hydrodynamic Flow Parameters of the 1700 Tsunami at Cannon Beach, Oregon, USA, *Natural Hazards*, DOI 10.1007/s11069-011-9912-7.

Priest, G.R., C. Goldfinger, K. Wang, **R.C. Witter**, Y. Zhang, and A.M. Baptista, 2009, Confidence levels for tsunami-inundation limits in northern Oregon inferred from a 10,000-year history of great earthquakes at the Cascadia subduction zone, *Natural Hazards*, DOI 10.1007/s11069-009-9453-5.

Carver, G., J. Sauber, W. Lettis, **R. Witter**, and B. Whitney, 2008, Active Faults on Northeastern Kodiak Island; *in* J. T. Freymueller, P.J. Haeussler, R.L. Wesson, and G. Ekstrom, eds., *Active Tectonics and Seismic Potential of Alaska*, *Geophysical Monograph Series* 179, p 167-184.

**Witter, R.C.**, R.W. Givler, and R.J. Carson, 2008, Two post-glacial earthquakes on the Saddle Mountain West fault, southeastern Olympic Peninsula, Washington, *Bulletin of the Seismological Society of America*, v. 98, n. 6, p. 2894-2917.

**Witter, R.C.**, Knudsen, K.L, Sowers, J.M., Wentworth, C.M., Koehler, R.D., Randolph, C.E., Brooks, S.K., Gans, K.D., 2006, Maps of Quaternary deposits and liquefaction susceptibility in the central San Francisco Bay region, California: U.S. Geological Survey Open-File Report 2006-1037 [available on the World Wide Web at URL <http://pubs.usgs.gov/of/2006/1037/>].

Nelson, A.R., H.M. Kelsey, and **R.C. Witter**, 2006, Great earthquakes of variable magnitude at the Cascadia subduction zone, *Quaternary Research*, 65, 354-365.

Baldwin, J., **R.C. Witter**, J.D. Vaughn, J.B. Harris, J.L. Sexton, M. Lake, S.L. Forman, and A.D. Barron, 2006, Geological Characterization of the Idalia Hill Fault Zone and Its Structural Association with the Commerce Geophysical Lineament, Idalia, Missouri: *Bulletin of the Seismological Society of America*, v. 96, n. 6, p. 2281–2303.

Kelsey, H.M., Nelson, A.R., Hemphill-Haley, E., and **Witter, R.C.**, 2005, Tsunami history of an Oregon coastal lake reveals a 4600 yr record of great earthquakes on the Cascadia subduction zone: *Geological Society of America Bulletin*, v. 117, n.7/8, p. 1009-1032.

**Witter, R.C.**, H.M. Kelsey, and E. Hemphill-Haley, 2003, Great Cascadia earthquakes and tsunamis of the past 6,700 years, Coquille River estuary, southern coastal Oregon, *Geological Society of America Bulletin*, 115, 10, 1289-1306.

Johnson, S.Y., Nelson, A.R., Personius, S.F., Wells, R.E., Kelsey, H.M., Sherrod, B.L., Okumura, K., Koehler, III., R., **Witter, R.C.**, Bradley, L., and Harding, D.J., 2003, Maps and data from a trench investigation of the Utsalady Point fault, Whidbey Island, Washington, *U.S. Geol. Surv. Misc. Invest. Map 2420*, 1 plate.

Johnson, S.Y., Nelson, A.R., Personius, S.F., Wells, R.E., Kelsey, H.M., Sherrod, B.L., Okumura, K., Koehler, III, R., **Witter, R.C.**, Bradley, L., and Harding, D.J., 2004, Evidence for Late Holocene Earthquakes on the Utsalady Point Fault, Northern Puget Lowland, Washington: *Bulletin of the Seismological Society of America*, v. 94, n. 6, p. 2299-2316.

Kelsey, H.M., **R.C. Witter**, and E. Hemphill-Haley, 2002, Plate-boundary earthquakes and tsunamis of the past 5500 yr, Sixes River estuary, southern Oregon, *Geological Society of America Bulletin*, 114, 3, 298-314.

Knudsen, K.L., **R.C. Witter**, C.E. Garrison-Laney, J.N. Baldwin, and G.A. Carver, 2002, Past Earthquake-Induced Rapid Subsidence along the Northern San Andreas Fault: A New Paleoseismological Method for Investigating Strike-Slip Faults, *Bulletin of the Seismological Society of America*, v. 92, n. 7, p. 2612-2636.

Lettis, W., J. Bachhuber, **R. Witter**, C. Brankman, C.E. Randolph, A. Barka, W.D. Page, and A. Kaya, 2002, Influence of releasing step-overs on surface fault rupture and fault segmentation: Examples from the 17 August 1999 Izmit earthquake on the north Anatolian fault, Turkey, *Bulletin of the Seismological Society of America*, 92, 1, 19-42.

Lettis, W.R., Bachhuber, J., Barka, A., Brankman, C., Somerville, P., and **Witter, R.**, 2000, Seismicity, Fault Rupture, and Tsunami – Geology and Seismicity, *in* Youd, L.T., Bardet, J.-P., and Bray, J.D., 1999 Kocaeli, Turkey, Earthquake Reconnaissance Report: Earthquake Spectra, Supplement A to v. 16, p. 1-9.

Lettis, W.R., Bachhuber, J., Barka, A., **Witter, R.**, and Brankman, C., 2000, Surface fault rupture and segmentation during the Kocaeli earthquake, *in* A. Barka, O. Kozaci, S. Akyüz, and E. Altunel, eds., *The 1999 Izmit and Düzce Earthquakes: preliminary results*, Istanbul Technical University, p. 31-54.

Lettis, W.R., Bachhuber, J., **Witter, R.**, Barka, A., Bray, J., Page, W., Swan, F., and others, 2000, Seismicity, Fault Rupture, and Tsunami – Surface Fault Rupture, *in* Youd, L.T., Bardet, J.-P., and Bray, J.D., 1999 Kocaeli, Turkey, Earthquake Reconnaissance Report: Earthquake Spectra, Supplement A to v. 16, p. 11-53.

**Witter, R.C.**, H.M. Kelsey, and E. Hemphill-Haley, 2001, Pacific storms, El Niño and tsunami: Competing mechanisms for sand deposition in a coastal marsh, Euchre Creek, Oregon, *Journal of Coastal Research*, 17, 3, 563-583.

**Witter, R.C.**, W.R. Lettis, J.L. Bachhuber, A. Barka, E. Evren, Z. Cakir, W.D. Page, J.V. Hengesh, and G. Seitz, 2000, Paleoseismic Trenching Study Across the Yalova Segment of the North Anatolian Fault, Hersek Peninsula, Turkey, *in* A. Barka, O. Kazaci, S. Akyüz, and E. Altunel (eds.), *The 1999 Izmit and Düzce Earthquakes: Preliminary Results*, Istanbul Technical University, pp. 329-339.

Kelsey, H.M., **R.C. Witter**, and E. Hemphill-Haley, 1998, Response of a small Oregon estuary to coseismic subsidence and post seismic uplift in the last 300 years, *Geology*, 26, 231-234.

### ***Dissertation***

**Witter, R.C.**, 1999, Late Holocene paleoseismicity, tsunamis and relative sea-level changes along the south-central Cascadia subduction zone, southern Oregon, U.S.A.: Ph.D. dissertation, Eugene, University of Oregon, 178 p.

### ***Conference Proceedings***

Goldfinger, C., **R.C. Witter**, G.R. Priest, K. Wang, Y.J. Zhang, J. Patton, and J. Beeson, 2010, Cascadia supercycles: Evidence of clustering and Holocene history of energy management from the long Cascadia paleoseismic record, American Geophysical Union, Chapman Conference on Giant Earthquakes and Their Tsunamis, May 2010, Valparaiso, Vina del Mar, and Valdivia, Chile.

Nelson, A.R., Y. Sawai, A. Hawkes, **R.C. Witter**, B. Horton, L.-A. Bradley, A. Kemp, and Z. Maharrey, 2010, Challenges in Inferring great earthquake history from tidal marsh stratigraphy, central Oregon coast, American Geophysical Union, Chapman Conference on Giant Earthquakes and Their Tsunamis, May 2010, Valparaiso, Vina del Mar, and Valdivia, Chile.

**Witter, R.C.**, Goldfinger, C., Wang, K., Priest, G.R. and Zhang, Y., 2010, Variable rupture scenarios for tsunami simulations inferred from a 10,000-Year history of Cascadia megathrust earthquakes, American Geophysical Union, Chapman Conference on Giant Earthquakes and Their Tsunamis, May 2010, Valparaiso, Vina del Mar, and Valdivia, Chile.

Allan, J.C., **R.C. Witter**, P. Ruggiero, and A.D. Hawkes, 2009, Coastal geomorphology, hazards, and management issues along the Pacific Northwest coast of Oregon and Washington, in Eds. J.E. O'Connor, R.J. Dorsey, and I.P. Madin, *Volcanoes to Vineyards: Geologic Field Trips through the Dynamic Landscape of the Pacific Northwest*, Geological Society of America Field Guides 15, p. 495-520.

**Witter, R.C.**, J.C. Allan and G.R. Priest, 2007, Evaluation of coastal erosion hazard zones along dune and bluff-backed shorelines, southern Lincoln County, Oregon: Seal Rock to Cape Perpetua, 2007 Landslide Symposium Proceedings and Field Trip Guide, Oregon Department of Geology and Mineral Industries, Open-File Report O-07-06.

**Witter, R.C.**, 2005, Giant earthquakes and tsunamis at the Cascadia subduction zone, Invited speaker, 8<sup>th</sup> Annual Japan-American Frontiers of Science Symposium, Shonan, Japan, December 2005.

**Witter, R.C.**, H.M. Kelsey, and E. Hemphill-Haley, 2000, Stratigraphic evidence for twelve Cascadia earthquakes in the last 6600 years from the Coquille River estuary, Oregon, in J.J. Clague, B.F. Atwater, K. Wang, M.-M. Wang, and I. Wong, eds., *Proceedings of the Geological Society of America Penrose Conference: Great Cascadia Earthquake Tricentennial*, Oregon Dept. Geology and Mineral Industries, p. 121.

### ***Professional Reports***

**Witter, R.C.**, Y. Zhang, K. Wang, G.R. Priest, C. Goldfinger, L.L. Stimely, J.T. English, and P.A. Ferro, 2011, Simulating tsunami inundation at Bandon, Coos County, Oregon, using hypothetical Cascadia and Alaska earthquake scenarios: Oregon Department of Geology and Mineral Industries Special Paper 43.

Reconnaissance of the February 27, 2010 Maule, Chile Earthquake, National Science Foundation GEER Association Report No. GEER-022, Report for Web Dissemination available at: [http://www.geerassociation.org/GEER\\_Post%20EQ%20Reports/Maule\\_Chile\\_2010/Ver2\\_Maule\\_Chile\\_2010\\_index.html](http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Maule_Chile_2010/Ver2_Maule_Chile_2010_index.html)

Priest, G.R., Goldfinger, C., Wang, K., **Witter, R.C.**, Zhang, Y., and Baptista, A.M., 2009, Tsunami hazard assessment of the northern Oregon coast: A multi-deterministic approach tested at Cannon Beach, Clatsop County, Oregon: Oregon Department of Geology and Mineral Industries Special Paper 41.

**Witter, R.C.**, T. Horning, and J.C. Allan, 2009, Coastal erosion hazard zones in Southern Clatsop County, Oregon: Seaside to Cape Falcon, Oregon Department of Geology and Mineral Industries, Open-File Report O-09-06, 35 p., appendices.

**Witter, R.C.**, Y. Zhang, and G. Priest, 2008, Reconstructing Hydrodynamic Flow Parameters of the 1700 Tsunami at Ecola Creek, Cannon Beach, Oregon, U.S. Geological Survey, National Earthquake Hazard Reduction Program Final Technical Report [Grant award number 07HQGR0089], 46 p., Appendix.

**Witter, R.C.**, 2008, Prehistoric Cascadia tsunami inundation and runup at Cannon Beach, Clatsop County, Oregon, Oregon Department of Geology and Mineral Industries, Open-File Report O-08-12, 36 p., appendices

**Witter, R.C.**, G.H. Grondin, and J.C. Allan, 2008, Geomorphic and hydrologic assessment of historical water level changes at Cleawox Lake, Jessie M. Honeyman Memorial State Park, Lane County, Oregon, 46 p., 2 plates.

**Witter, R.C.**, J.C. Allan, G.R. Priest, 2007, Evaluation of coastal erosion hazard zones along dune and bluff-backed shorelines, southern Lincoln County, Oregon: Seal Rock to Cape Perpetua, Oregon Department of Geology and Mineral Industries, Open-File Report O-07-03, 32 p., appendices.

**Witter, R.C.**, R.W. Givler, M. Zeliff, C. Iacoboni, and R.J. Carson, 2006, Two post-glacial earthquakes on the Saddle Mountain West fault, southeastern Olympic Peninsula, Washington: U.S. Geological Survey, National Earthquake Hazard Reduction Program Final Technical Report [Grant award number 05HQGR0089], 42 p., 2 plates.

R.D. Koehler, **R.C. Witter**, G.D. Simpson, E. Hemphill-Haley, and W.R. Lettis, 2005, Paleoseismic investigation of the northern San Gregorio fault, Half Moon Bay, California: U.S. Geological Survey, National Earthquake Hazard Reduction Program Final Technical Report [Grant award number 04HQGR0045], alternately paginated.

Baldwin, J.N., R.W. Givler, and **R.C. Witter**, 2004, Geologic and paleoseismic characterization of the New Madrid North fault, Farrenburg, southeastern Missouri: U.S. Geological Survey, National Earthquake Hazard Reduction Program Final Technical Report [Grant award number 02HQGR0024], alternately paginated.

Baldwin, J.N., and **Witter, R.C.**, 2004, Paleoseismic investigation of the Idalia Hill fault along the Commerce geophysical lineament, Idalia, Missouri: *U.S. Geological Survey, National Earthquake Hazard Reduction Program Final Technical Report* [Grant award number 03HQGR0095], 69 p.

Knudsen, K.L., J.M. Sowers, **R.C. Witter**, C.M. Wentworth, and E.J. Helley, 2000, Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California: A Digital Database, U.S. Geological Survey Open-File Report 00-444. Digital Database by Wentworth, C.M., Nicholson, R.S., Wright, H.M., and Brown, K.H. Online Version 1.0.

Knudsen, K.L., **R.C. Witter**, C.E. Garrison-Laney, J.N. Baldwin, and G.A. Carver, 1999, Evidence for earthquake-induced, rapid subsidence in estuarine sediment along the northern San Andreas fault, U.S. Geological Survey, National Earthquake Hazard Reduction Program Final Technical Report, 44 p. [Grant award number 1434HQ97GR03009]

Koehler, R.D., Simpson, G.D., **Witter, R.C.**, Hemphill-Haley, E., and Lettis, W.R., 2003, Paleoseismic Investigation of the Northern San Gregorio Fault at Pillar Point Marsh near Half Moon Bay, California: U.S. Geological Survey, National Earthquake Hazards Reduction Program Final Technical Report, [Grant award number 02HQPA0001], 64 p.

Randolph Loar, C.E., **Witter, R.C.**, and Lettis, W.R., 2004, Paleoseismic Investigation of the Southern Rodgers Creek Fault, Martinelli Ranch, Sonoma County, CA: *U.S. Geological Survey, National Earthquake Hazards Reduction Program Final Technical Report*, [Grant award number 03HQGR0083], 38 p.

Thompson, S.C., **Witter, R.C.**, Givler, R.W., Hitchcock, C.S., and Lettis, W.R., 2004, Evaluating the repeatability of lateral spreading: *U.S. Geological Survey, National Earthquake Hazards Reduction Program Final Technical Report*, [Grant award number 03HQGR0075], 54 p.

**Witter, R.C.**, Kelsey, H.M., and Hemphill-Haley, E., 1999, A paleoseismic history of the south-central Cascadia subduction zone: Assessing earthquake recurrence intervals and upper-plate deformation over the past 6600 years at the Coquille River estuary, southern Oregon, U.S.A., *U.S. Geological Survey, National Earthquake Hazard Reduction Program Final Technical Report* [Grant award number 1434-HQ-97-GR-03036], 54 p.

**Witter, R.C.**, Patton, J.R., Carver, G.A., H.M. Kelsey, C. Garrison-Laney, R.D. Koehler, and E. Hemphill-Haley, 2002, Upper-plate earthquakes on the western Little Salmon fault and contemporaneous subsidence of southern Humboldt Bay over the past 3,600 years, northwestern California, *U.S. Geological Survey, National Earthquake Hazard Reduction Program Final Technical Report*, [Grant award number 01HQGR0125], 44 p.

**Witter, R.C.**, K.I. Kelson, A.D. Barron, and S.T. Sundermann, 2003, Map of active fault traces, geomorphic features and Quaternary surficial deposits along the central Calaveras fault, Santa Clara County, California: U.S. Geological Survey, National Earthquake Hazards Reduction Program Final Technical Report, [Grant award number 01HQGR0212], 32 p.

**Witter, R.C.**, K.I. Kelson, and Sundermann, S., 2004a, Paleoseismology of a secondary strand of the central Calaveras fault in Halls Valley, Santa Clara County, CA: U.S. Geological Survey, National Earthquake Hazards Reduction Program Final Technical Report, [Grant award number 03HQGR0098], 32 p.

**Witter, R.C.** and Kelsey, H.M., 2004b, Middle to Late Holocene earthquake chronologies for the Cascadia subduction zone from two estuaries in southern Oregon: Collaborative research with William Lettis & Associates, Inc. and Humboldt State University U.S. Geological Survey, National Earthquake Hazards Reduction Program Final Technical Report, [Grant award number 02hqgr0057], 40 p.

### **Abstracts**

Chague-Goff, C., K. Goto, S. Fujino, Y. Nishimura, D. Sugawara, W. Szczucinski, B.M. Richmond, D.R. Tappin, B.E. Jaffe, **R.C. Witter**, E. Yulianto, and J.R. Goff, 2011, Geological and Geochemical Field Survey on the Sendai Plain following the 11 March 2011 Tohoku-Oki Tsunami, AGU Fall Meeting, abstract # NH11A-1344.

Hawkes, A.D., S.E. Engelhart, B.P. Horton, A.R. Nelson, **R.C. Witter**, K. Wang, P.-L. Wang, C.H. Vane, and Y. Sawai, 2011, Cascadia tidal marshes archive repeated episodes of coseismic subsidence from late Holocene great megathrust earthquakes, AGU Fall Meeting, abstract # OS43D-02.

Pilarczyk, J. B.P. Horton, and **R.C. Witter**, 2011, The applicability of fossil foraminifera as a paleo-tsunami indicator: evidence from the 2011 Tohoku and A.D. 869 Jogan tsunami events, AGU Fall Meeting, abstract # OS33A-1641.

Richmond, B.M., K. Goto, S. Fujino, Y. Nishimura, D. Sugawara, D.R. Tappin, **R.C. Witter**, B.E. Jaffe, C. Chague-Goff, W. Szczucinski, E. Yulianto, and J.R. Goff, 2011, Field Observations of Erosion, Deposition, and Tsunami Flow Characteristics on the Sendai Coastal Plain after the March 2011, Tohoku-oki Tsunami, Japan, AGU Fall Meeting, abstract # NH13G-07.

Wang, P.-L., K. Wang, A. Hawkes, B.P. Horton, S.E. Engelhart, A.R. Nelson, **R.C. Witter**, 2011, Heterogeneous Rupture in the Great Cascadia Earthquake of 1700 Inferred from Coastal Subsidence Estimates, AGU Fall Meeting, abstract # OS33A-1630.

**Witter, R.C.**, Y.J. Zhang, K.Wang, G.R. Priest, C. Goldfinger, and L.L. Stimely, 2011, Simulating Tsunami Inundation in Southern Oregon, USA Using Hypothetical Cascadia and Alaska Earthquake Scenarios, AGU Fall Meeting, abstract # NH21C-1523.

Goldfinger, C., **R.C. Witter**, G.R. Priest, K. Wang, and Y.J. Zhang, 2010, Cascadia Supercycles: Energy Management of the long Cascadia Earthquake Series, [abstract] Seismological Society of America, 2010 Annual Meeting, Portland, Oregon.

Goldfinger, C., J.R. Patton, A.E. Morey, and **R.C. Witter**, 2010, Segmentation and Probabilities for Cascadia Great Earthquakes Based on Onshore and Offshore Paleoseismic Data, [abstract] Seismological Society of America, 2010 Annual Meeting, Portland, Oregon.

Horton, B.P., A.R. Nelson, **R.C. Witter**, K. Wang, A. Hawkes, S. Engelhart, and Y. Sawai, 2010, Megathrust Paleogeodesy at the Central Cascadia Subduction Zone, [abstract] Seismological Society of America, 2010 Annual Meeting, Portland, Oregon.

- Witter, R.C.**, Goldfinger, C., Wang, K., Priest, G.R. and Zhang, Y., 2010, Validating numerical tsunami simulations in southern Oregon using late Holocene records of great Cascadia earthquakes and tsunamis, [abstract] Seismological Society of America, 2010 Annual Meeting, Portland, Oregon.
- Givler, R., I. Madin, and R.C. Witter, 2009, Quaternary geologic and geomorphic mapping along the Mount Angel fault using high-resolution LiDAR data, northern Willamette Valley, Oregon, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 432.
- Goldfinger, C., G.R. Priest, K. Wang, Y. Zhang, **R.C. Witter**, and A.M. Baptista, 2009, Structural influences on Cascadia rupture patches and width, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 702.
- Priest, G.R., K. Wang, C. Goldfinger, Y. Zhang, **R. Witter**, and A.M. Baptista, 2009, Fault deformation models for generation of tsunamis from the Cascadia subduction zone: Implications for seismic and tsunami hazards on the Washington and Northern Oregon coast, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 702.
- Witter, R.C.**, G.H. Grondin, and J.C. Allan, 2009, Flooding of historical buildings at Oregon's Jessie M. Honeyman Memorial State Park linked to inter-decadal variations in precipitation, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 473.
- Witter, R.C.**, Y.J. Zhang, and G.R. Priest, 2008, Reconstructing Hydrodynamic Flow Parameters of the 1700 Tsunami at Ecola Creek, Cannon Beach, Oregon, *EOS, Transactions AGU*, v. 88, no. 52, Fall Meeting Supplement, Abstract # OS53A-1290.
- Priest, G.R., Goldfinger, C., Wang, K., **Witter, R.C.**, Zhang, Y., and Baptista, A.M., 2008, Tsunami Hazard Assessment of the Northern Oregon Coast: A Multi-Deterministic Approach Tested at Cannon Beach, Oregon, *EOS, Transactions AGU*, v. 88, no. 52, Fall Meeting Supplement, Abstract # OS42B-08.
- Goldfinger, C., Wang, K., **Witter, R.**, Baptista, A., Zhang, Y., Priest, G., Nelson, H., Morey, A., and Johnson, J., 2007, Interplay of structure and sediment supply may influence subduction zone rupture patches and propagation [abs.]: *Eos (Transactions, American Geophysical Union)*, Fall meeting supplement, v. 88, no. 52, abstract T52A-07.
- Witter, R.C.**, Y.J. Zhang, and G.R. Priest, 2007, Testing Numerical Tsunami Simulations Against the Inland Extents of Prehistoric Cascadia Tsunami Deposits at Cannon Beach, Oregon, *EOS, Transactions AGU*, v. 88, no. 52, Fall Meeting Supplement, Abstract #T53G-03W.
- Madin, I.P., R.J. Blakely, **R.C. Witter**, and R.W. Givler, 2007, High-resolution geophysical surveys of the Mount Angel fault, northern Willamette Valley, Oregon, [abs.], Geological Society of America, Cordilleran Section - 103rd Annual Meeting, Paper No. 17-9 available at: [http://gsa.confex.com/gsa/2007CD/finalprogram/abstract\\_121181.htm](http://gsa.confex.com/gsa/2007CD/finalprogram/abstract_121181.htm)
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- Kelsey, H.M., **R.C. Witter**, and E. Hemphill-Haley, 1996, Record of plate boundary earthquakes near Cape Blanco, south coastal Oregon, *Geol. Soc. Am. Abstr. Programs*, v. 28, p. 80.
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## **GRANT AWARDS**

1999, Liquefaction Susceptibility Mapping at 1:24,000-scale, San Francisco Bay Area: Year 2, USGS National Earthquake Hazards Reduction Program Award 99HQGR0095 [**\$125,448**]

2001, Investigating late Holocene deformation along the Little Salmon fault, Humboldt County, northwestern California, USGS National Earthquake Hazards Reduction Program Award 01HQGR0125 [**\$13,301**]

2001, Holocene geologic characterization of the central Calaveras fault, San Francisco Bay Area, California, USGS National Earthquake Hazards Reduction Program Award 01HQGR0212 [**\$34,342**]

2002, Refining Cascadia earthquake chronologies that bracket a candidate segment boundary, Southern Oregon: Collaborative research with Humboldt State, USGS National Earthquake Hazards Reduction Program Award 02HQGR0057 [**\$48,000**]

2003, Paleoseismology of the central Calaveras fault at Halls Valley, Alum Rock, California, USGS National Earthquake Hazards Reduction Program Award 03HQGR0098 [**\$35,000**]

2005, Two post-glacial earthquakes on the Saddle Mountain West Fault, Southeastern Olympic Peninsula, Washington: Collaborative Research with William Lettis & Associates, Inc., and the USGS, USGS National Earthquake Hazards Reduction Program Award 05HQGR0089 [**\$50,000**]

2005, Integrate the New Quaternary Mapping with OFR 00-444 and then with the Unified Geologic Map of the San Francisco Bay Region, USGS National Earthquake Hazards Reduction Program Award 2005 [**\$13,000**]

2006, Paleoseismology of the Mount Angel Fault in the Willamette Valley, Oregon: Collaborative Research with William Lettis & Associates, Inc. and the Department of Oregon Geology and Mineral Industries, USGS National Earthquake Hazards Reduction Program Award 06HQGR0147 [**\$40,475**]

2007, Reconstructing the A.D. 1700 Tsunami Flow Parameters at Ecola Creek, Cannon Beach, Oregon: Geologic Calibration of Numerical Tsunami Inundation Models, USGS National Earthquake Hazards Reduction Program Award 07HQGR0089 [**\$33,000**]

2008, Tracking Prehistoric Cascadia Tsunami Deposits at Nestucca Bay, Oregon, USGS National Earthquake Hazards Reduction Program Award 08HQGR0076, [**\$41,747**]

2009 to 2010, Megathrust paleogeodesy at the central Cascadia subduction zone, PI Ben Horton, Univ. of Pennsylvania, National Science Foundation Award ID 0842728 [**~\$30,800** to Witter]

2009 to 2013, Mitigating Oregon's Tsunami Risk: Accelerating Tsunami Inundation Mapping and Promoting Preparedness through Community-Based Outreach, National Tsunami Hazard Mitigation Program, NOAA Award Number NA09NWS4670014, [\$710,992 in 2009; \$718,734 in 2010]

## **PUBLIC OUTREACH**

### **2006**

April 2006, Candidate Segment Boundary near Cape Blanco Inferred from Great Cascadia Earthquake Chronologies in Southern Coastal Oregon, invited talk delivered to the USGS Pacific Science Center, Santa Cruz, California

November 2006, Paleotsunami inundation and runup at Cannon Beach, Oregon, presentation to the Newport Agate Club, Newport, Oregon

### **2007**

February 2007, Cannon Beach tsunami hazard assessment, Oregon Coast Fire Chiefs Association Quarterly Meeting, Siuslaw Valley Fire & Rescue Station, Florence, Oregon

March 2007, Evaluation of Coastal Erosion Hazard Zones: Southern Lincoln County, presentation to Oregon Department of Land Conservation and Development, Newport, Oregon

April 2007, Prehistoric tsunami inundation at Cannon Beach, Oregon, Annual Emergency Preparedness Forum, City of Cannon Beach, Oregon

May 2007, Prehistoric tsunami inundation at Cannon Beach, Oregon: Empirical Data Used to Verify Numerical Tsunami Simulations, invited seminar, Hatfield Marine Science Center, Newport, Oregon

June 2007, Balancing Careers and Raising Kids: Perspectives from a Couple of Geologists, Invited Seminar, Department of Geological Sciences, University of Oregon, Eugene, Oregon

July 2007, Mapping Geologic Hazards Along Oregon's Coastline: Earthquakes, Tsunamis, Landslides and Coastal Erosion, Oregon Coast All-Hazard Task Force Meeting, Siuslaw Valley Fire & Rescue Station, Florence, Oregon

December 2007, Oregon Tsunami Hazard Mapping, Presentation to Committee on Emergency Preparedness & Ocean Policy, Oregon State Capitol, Salem, Oregon

### **2008**

February 2008, Oregon Tsunami Hazard Mapping Program: Goals and objectives for developing Oregon's next generation tsunami hazard maps, Oregon Tsunami Hazards Advisory Council, Waldport City Hall Council Chambers, Waldport, Oregon

February 2008, Department of Geological Sciences, Oregon State University, co-led Coastal Hazards Class field trip, central Oregon coast

May 2008, Historical Water Level Changes at Cleawox Lake: Probable Causes and Potential Solutions, presentation to staff of Jessie M. Honeyman State Park, Florence, Oregon

May 2008, Cannon Beach Tsunami Hazard Assessment: Scientific foundation for a new tsunami evacuation map for the City of Cannon Beach, Cannon Beach Town Hall Meeting, The Coaster Theater, Cannon Beach, Oregon

June 2008, Balancing Careers and Raising Kids: Perspectives from a Couple of Geologists, Invited Seminar, Department of Geological Sciences, University of Oregon, Eugene, Oregon

July 2008, Tsunami hazards at Depoe Bay, Oregon: Guidance on the possibility of relocating the Depoe Bay Fire Station, Gleneden Beach Fire Station, Gleneden Beach, Oregon

July 2008, Coast field trip for NSF-funded Teachers on the Leading Edge workshop, co-leader with Brian Atwater, Lewis & Clarke River, Astoria, Oregon

October 2008, Reevaluating Oregon's Tsunami Hazards: Summary of a new tsunami hazard assessment at Cannon Beach, Oregon, Department of Geosciences Seminar, Oregon State University, Corvallis, Oregon

October 2008, Reevaluating Oregon's Tsunami Hazards, consultation for student science project, Taft High School, Lincoln City, Oregon

October 2008, Historical Water Level Changes at Cleawox Lake: Probable Causes and Potential Solutions, presentation to Oregon Parks and Recreation Department, Salem, Oregon

September 2008, Panel discussion on tsunami hazard to Seaside School District, Seaside, Oregon

## **2009**

February 2009, Oregon tsunami hazard program: 2009 update, Oregon Coast Fire Chiefs Association Quarterly Meeting, Siuslaw Valley Fire & Rescue Station, Florence, Oregon

February 2009, "Tsunami Update," Oregon Field Guide, Oregon Public Broadcasting, subject of video documentary on tsunami hazards in Oregon, Cannon Beach, Oregon

March 2009, Tsunami hazards at Rockaway Beach, Oregon, presentation to the City of Rockaway Beach, City Hall, Rockaway Beach, Oregon

April 2009, Tsunami hazards at Newport, Oregon, presentation to the City of Newport, City Hall, Newport, Oregon

April 2009, Balancing Careers and Raising Kids: Perspectives from a Couple of Geologists, Invited Seminar, Department of Geological Sciences, University of Oregon, Eugene, Oregon

July 2009, Cascadia earthquake and tsunami hazards: Latest findings and new products, Oregon Coast Fire Chiefs Association Quarterly Meeting, Siuslaw Valley Fire & Rescue Station, Florence, Oregon

September 2009, Reevaluating Oregon's tsunami hazards: Summary of DOGAMI's tsunami hazard assessment program 2009-2013, presentation to DOGAMI Board of Directors, Hallmark Resort, Cannon Beach, Oregon

## **2010**

February 2010, Oregon's tsunami hazard mitigation program: February 2010 update, Oregon Coast Fire Chiefs Association Quarterly Meeting, Siuslaw Valley Fire & Rescue Station, Florence, Oregon

April 2010, Oregon tsunami hazard mitigation program: Update, Coastal Processes and Hazards Working Group, Beverly Beach State Park, Newport, Oregon

June 2010, Observations in Chile following the 27 February 2010 Mw 8.8 earthquake and tsunami, invited presentation at 2010 DOGAMI Annual Meeting, Agate Beach Inn, Newport, Oregon

August 2010, Video interview and field trip for National Geographic Television documentary film on Cascadia earthquakes, Copalis, Washington

September 2010, Oregon TsunamiReady TsunamiPrepared Outreach Program keynote address, Siuslaw Valley Fire & Rescue Station, Florence, Oregon

October 2010, Balancing Careers and Raising Kids: Perspectives from a Couple of Geologists, Invited Seminar, Department of Geological Sciences, University of Oregon, Eugene, Oregon

November 2010, Bandon tsunami evacuation map workshop, Bandon City Hall, Bandon, Oregon

November 2010, Port Orford tsunami evacuation map workshop, Port Orford City Hall, Port Orford, Oregon

November 2010, Geological observations two weeks after the February 27, 2010 Mw 8.8 Chile earthquake, presentation to the Oregon Transportation Commission, City of Keizer Community Center, Keizer, Oregon

November 2010, Educational videos for K-12 schools in Lincoln County, Oregon produced by Oregon Shakes, Video 5: Earthquakes in the Pacific Northwest and Video 17: Earthquake hazards – tsunamis, Toledo High School, Toledo, Oregon

December 2010, Impacts of the M2 8.8 February 27, 2010 Chile earthquake and implications for Oregon, invited seminar, Hatfield Marine Science Center, Newport, Oregon

December 2010, Brookings-Harbor tsunami evacuation workshop, Brookings City Hall, Brookings, Oregon

December 2010, Gold Beach tsunami evacuation workshop, Gold Beach City Hall, Gold Beach, Oregon

## **2011**

January 2011, 2011 Brookings-Harbor tsunami evacuation maps, Town Hall Meeting, Brookings-Harbor High School, Brookings, Oregon

January 2011, 2011 Port Orford tsunami evacuation map, Town Hall Meeting, American Legion Hall, Port Orford, Oregon

January 2011, 2011 Gold Beach tsunami evacuation map, Town Hall Meeting, Curry County Fair Grounds, Gold Beach, Oregon

January 2011, Impacts of the M2 8.8 February 27, 2010 Chile earthquake and implications for Oregon, invited seminar, Southwestern Oregon Community College lecture series, Coos Bay, Oregon