OREGON SECTION OF THE ASSOCIATION OF ENVIRONMENTAL & ENGINEERING GEOLOGISTS

November 2012

Volume 13, Number 3

The Official

OREGON SECTION AEG NEWSLETTER

http://www.aegoregon.org

November Meeting Details

Tuesday November 20th

Location: Old Market Pub

6959 SW Multnomah

Portland, OR

6:00 pm Social

6:45 pm Dinner

7:30 pm Presentation

Dinner: Pizza & Salad

$20 Dinner ($5 Students)

Reservations:
mwegner@cornforthconsultants.com with "AEG Reservation" in the subject line or 971-222-2047 by 4pm Thur. Nov. 15

There is a $2 surcharge for those who do not reserve by the deadline.

Upcoming Meetings:

Dec	18th	Dulcy Berri
Jan	15th	ASCE/AEG Meeting
Feb	19th	Jim O'Connor
Mar	19th	Matthew Morris
Apr	16th	Student Poster Night
May	21st	James McCaplin

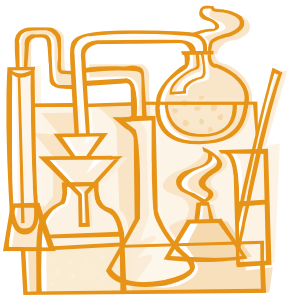
Cascadia Great Earthquakes: The Riddle of the Sands

Guest Speaker: Dr. Chris Goldfinger

Cascadia has become the poster child for paleoseismology in subduction zones. Evidence of great earthquakes was first discovered by Brian Atwater in the late 1980's. Since then, numerous investigators both onshore and offshore have pulled together a remarkable story of past earthquakes that reveals the long-term behavior of what was once the world's most enigmatic subduction zone.

Onshore and offshore paleoseismic evidence from 41 Cascadia earthquakes strongly suggest that structural segmentation plays a significant role only along the southernmost margin. Southern segments may be controlled by some of the obvious structural boundaries such as the Blanco Fracture zone, and two pseudo faults. Where resolution is adequate, these data also suggest that ruptures underlie forearc highs, and die out into the basins similar to that observed in the 2004, 2005, and 2007 earthquakes in Sumatra. The difference between the rupture modes observed for Nankai, Sumatra, and suggested here for Cascadia may be linked to the sediment supply for these systems, as proposed by Ruff, 1985. Cascadia and Sumatra are both systems where massive submarine fans are accreting to the margin in their northern regions, with incoming sections of 3-4 km thickness that taper southward. These thick sections smooth the plate interface with respect to structures in both the downgoing and upper plates, likely promoting long ruptures.

The paleoseismic data suggest that at least four seismic segments are operating in the Holocene. Along the northern margin, we find 19 large earthquakes with a recurrence averaging ~ 500-530 years. The central Oregon to northern California margin comprises at least three segments that include all of the northern ruptures and ~ 22 smaller events of restricted latitude range that are correlated between multiple sites. At least two northern California sites probably also record numerous small sedimentologically or storm triggered turbidites during the early Holocene. The shorter extents and thinner turbidites of the southern margin correspond well with timing and spatial extents interpreted from the onshore paleoseismic record. 41 events define a Holocene recurrence for the southern Cascadia margin of ~240 years. Time-independent probabilities for segmented ruptures range from 7-9% in the next 50 years for full margin ruptures, to ~18% in 50 years for a southern segment rupture. Time dependant failure analysis suggests the probability of an event by 2060 of ~25% for the northern margin and ~80% for the southern margin. The long paleoseismic record also indicates a pattern of clustered earthquakes that includes 4-5 cycles that are more robust in the later Holocene. The next Cascadia event is most likely to be a segmented rupture along one or both of the southern segments.

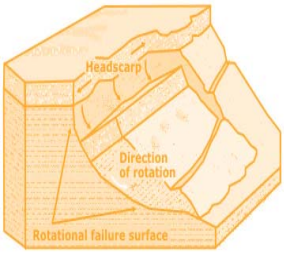


Bio: Dr. Chris Goldfinger

Dr. Chris Goldfinger is a marine geologist and geophysicist with a focus on great earthquakes and structure of plate boundary fault zones around the world. He has experience with deep submersibles, sidescan sonar, seismic reflection, and other marine geophysical tools on over 30 oceanographic cruises over the last 20 years. He is currently working on great subduction earthquakes along the Cascadia, NE Japan and Sumatran margins, as well as the Northern San Andreas Fault off northern California using the evidence for earthquakes found in deep-sea sediments. Goldfinger is a Professor of Marine Geology and received his PhD from Oregon State University in 1994.

Message from the Chair

Hello all. Please join us at the November meeting to hear Chris Goldfinger with OSU speak on a topic near and dear to us all – histories of Great Cascadia Earthquakes written in the sand. It promises to be interesting. Thank you for making the trip, Chris!



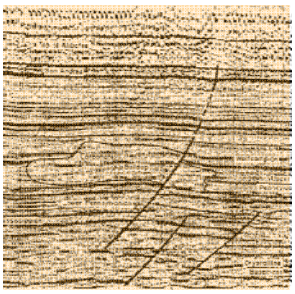
Please see the next page for summary of the BOD meeting in Salt Lake City, presented by National AEG Secretary Paul Santi. National AEG struggled this last year financially, but is on the mend and implementing strategies to improve its footing. Please help support National AEG (and the Oregon AEG Section) by making sure you're current on your annual dues. You can renew on the new-and-improved website (http://www.aegweb.org/). If you aren't a member, please become one. The AEG Foundation is going strong. Students, please remember to check the Foundation website for possible grant opportunities.

As you know, and Paul mentions, the BOD selected San Francisco over Portland as the city to present to IAEG for hosting the joint 2018 IAEG/Annual AEG meeting. The primary reason was the fundamentally greater international recognition of San Francisco. The silver lining in this decision is that in the event IAEG doesn't select San Francisco, Portland stands a very good chance of hosting the 2018 Annual AEG meeting. However, that is no reason for us not to do everything we can to help San Francisco win the spot! I've let the San Francisco and Sacramento sections know we are willing to step up.

Paul's summary mentions a number of fund-raising ideas that came up during the BOD. If you have any other ideas, please bring them to our attention or speak up during announcements at the meeting.

Finally, a great big wonderful thank you to Bill Orr for visiting us last month; indeed, it was a treat.

See you all soon,
Robin

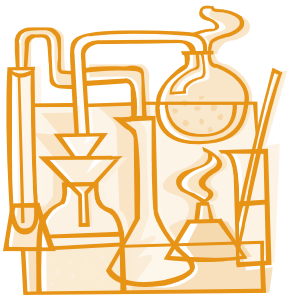


Summary of BOD minutes, September 2012 by National AEG Secretary Paul Santi

The AEG Board of Directors met on September 22 and 23 in Salt Lake City for their Annual Board meeting. They spent a day and a half discussing the business of AEG. While not all of the items are covered in this summary, here are a few of the important things they discussed.

There was a lengthy discussion of budget and finances. We have made three withdrawals from the Treasurers Reserve funds this year to cover cash flow shortages. We have not been able to repay these withdrawals. More withdrawals will be necessary in the near future until our cash flow issues are balanced. Although this is not a good situation and cannot continue, this was the purpose of creating the Treasurer's Reserve account. Other than recent withdrawals, this account has had a fairly consistent balance, although we would expect to have added more to the account over the last three years following very successful Annual Meetings. For FY 11, the EC has done a good job reducing expenses, but because of loss of membership our income is lower than budgeted. Membership numbers have stayed near 3300, but 1100 of those are students, who have joined at about the same rate we are losing paying, professional members. For FY 12, budget had been increased with the expectation of increasing membership and income from other sources, which were not realized. In response, the EC has been active in cutting costs during the year. Cuts were $25K in April and $32K in August. Estimated expenses to end of FY12 are approximately $74K (assuming no more AR is brought in).

A balanced budget was proposed and approved for FY13. It relied on: income projections that matched actual values from past years, targeting a modest surplus to contribute to the TR, better training of the Treasurer, improved tracking of funds, and increased oversight by FC and GC.



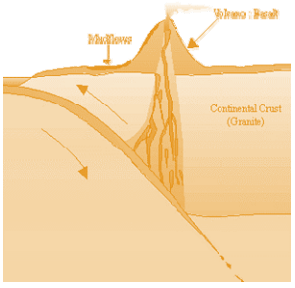
AEG Foundation President, **Patty Bryan**, reports that there has been a high level of contributions and growth in each fund, accompanied by a high level of award numbers and amounts. Geoscience library website has been set up and publications are being added steadily (www.geoscilibrary.org). They are also initiating the Cornerstone Fund to assist colleges and universities with the development and continuation of engineering geology programs. They have unanimously agreed to support the Needs Assessment initiative for $25,000.

Sections presented a variety of successful fund raising methods. A few of these include:

- Run courses in field skills, core and chip logging, rock identification (for civil engineers)
- Hold a boat cruise or river rafting field trip
- Secure meeting sponsorship from local companies
- Ask for annual sponsorship instead of single-meeting
- Ask for corporate sponsors to support student attendance at meetings
- Recruit new members from field trip rosters
- Contact non-renewing members

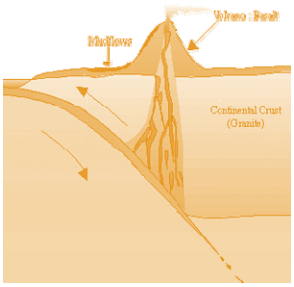
Hold raffles at meetings

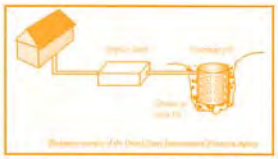
The Annual Meeting had 466 attendees, and will have an expected surplus in the range of $40K. There was a large contingent of students (78), which is great for the future of the Association, but led to a large number of complimentary registrations. Short courses and field trips were well subscribed. In particular the multi-day trip to Utah National Parks was very well attended, because it was scenery-heavy and attracted spouses, and the Seismic Hazard Analysis short course sold out.

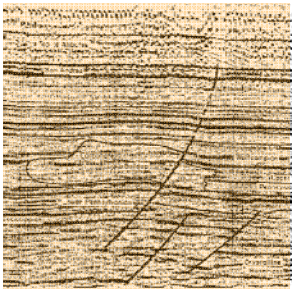


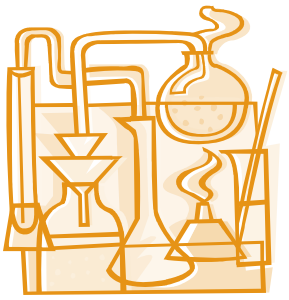
The 2013 Annual Meeting will be held at the Westin Hotel in downtown Seattle, within walking distance of the waterfront, Pike's Place Market, the Space Needle, and other attractions. Field trips will visit Mt. Rainier, the North Cascades, Whidbey Island, and Central Washington, among other areas. The Power Point presentation advertising the meeting will be posted for BOD access and use.

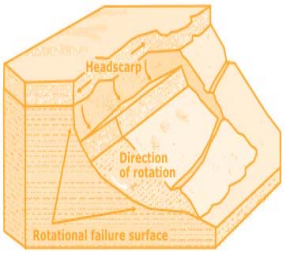
Future Annual Meeting locations include Phoenix (2014), Pittsburgh (2015), Hawaii (2016, just approved by the BOD), Denver/Boulder (2017). The BOD voted for San Francisco as the 2018 meeting location, which pending approval would be a joint meeting with the IAEG. If the IAEG does not select San Francisco for 2018, then Portland is willing to host the AEG Annual Meeting and San Francisco will try for the 2022 IAEG meeting.

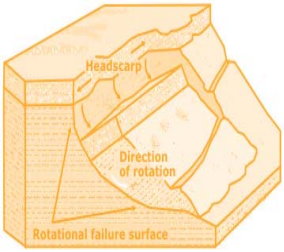


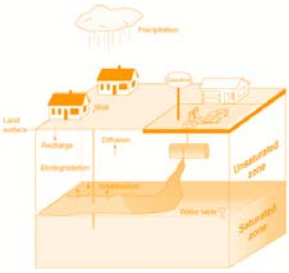

Schematic of a Seepage Pit (Dry Well)





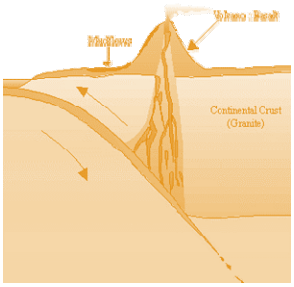






"Keen observation is at least as necessary as penetrating analysis"

Karl Terzaghi



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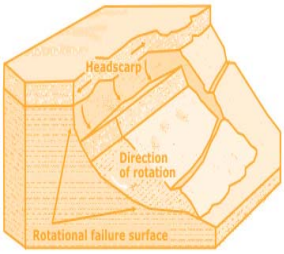

The Oregon Section Newsletter

OREGON SECTION AEG NEWSLETTER is published monthly from September through May. Subscriptions are for members of AEG affiliated with the Oregon Section or other Sections, and other interested people who have requested and paid a local subscription fee of $10.00. E-mail subscriptions are free. News items are invited and should be sent to: Scott Braunsten, OR Section AEG Newsletter Editor, PBS Engineering and Environmental, 4412 SW Corbett Avenue, Portland, OR 97239, e-mail: scott.braunsten@pbsenv.com, phone (503) 417-7737. Electronic media is preferred. Deadline for submittal is the 20th of the month. Advertising: business card $100/yr; ¼ page $200/yr; ½ page $350/yr. Please notify Scott if you have a change to your email or mailing address.

The Association of Engineering Geologists (AEG) contributes to its members' professional success and the public welfare by providing leadership, advocacy, and applied research in environmental and engineering geology. AEG's values are based on the belief that its members have a responsibility to assume stewardship over their fields of expertise. AEG is the acknowledged international leader in environmental and engineering geology, and is greatly respected for its stewardship of the profession.

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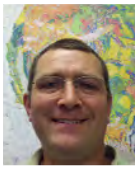

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National AEG webpage: http://aegweb.org