

# Cascadia Recurrence Project Meeting Agenda and Notes, October 18, 2018, 11:00 am – 1:00 pm

## General

Brian Sherrod noted FY18 work with UW and start of work on land-level changes along the Olympic Peninsula. FY19 plans include more work on Olympic Peninsula, involving mostly GHSC and ESC scientists, and CMG's activities offshore Cascadia. A Cascadia workshop in Seattle also is planned for FY19, similar to past Northern California workshops.

Joan Gomberg summarized SZ4D Research Coordination Networks, encouraging USGS scientists to get involved in these efforts. She also noted that an SZ Communications Plan is being developed to facilitate sharing of information internally and externally. This effort is being led by Rex Sanders from CMG, with input from Guy Gelfenbaum, Joan and whomever else would like to be involved.

Lydia Staisch summarized plans for the Powell Center project, reviewing the topics various workshops being planned for the next two years, the first of which will be in March, 2019 and focused on the earthquake cycle broadly. She also updated us on work on the development of the CR database.

## FY18 summary, FY19 plans:

Maureen Walton introduced herself as the new Powell Center post-doc.

Scott Bennett described his and others' paleoseismic work (includes trenching studies) in the backarc and Olympic Mountains. In FY19 they plan to analyze new Lidar data and do some Coulomb modeling, and prepare and publish a Scientific Investigation Map.

Andy Cyr described the Mendenhall Fellowship focused on Cascadia landslides now being advertised, encouraging people to solicit candidates. He noted that the NHMA will fund 4 Fellowships.

Art Frankel described his and others' (mostly Paul Bodin at the PNSN) work to constrain the structure of the Seattle basin using noise recorded on temporary seismic stations.

Chris Goldfinger shared his thoughts on automated turbidite analysis; his slides are attached (click the paperclip at the top of the page).

Joan Gomberg noted another Mendenhall Fellowship focused on a broad range of aspects of land level changes from a Cascadia megathrust earthquake. She also described ongoing work on automated turbidite analyses.

Ruth Harris summarized the Tsunami Powell Center held on Oct 1-5 workshop, which focused on Alaskan tsunamis. The workshop highlighted needs for a logic tree approach in tsunami hazard assessments and for databasing information. A final workshop will be focused on sources in the Pacific other than those in Alaska, which may include Cascadia, although some participants are advocating for an additional Cascadia-only focused workshop.

Ralph Haugerud was not able to attend, but Joan noted that he is planning to begin work on an offshore geologic map of Cascadia during FY19.

SeanPaul La Selle summarized work of the tsunami team, which is continuing work in coastal lakes in Southern Oregon (Floras and Bradley). Deeper cores from Floras Lake were collected in FY18 and the analyses and dating of these cores are a priority for FY19, along with refining the ages of Bradley Lake tsunami deposits using new dating techniques. Work on onshore subsidence estimates is still ongoing at sites along the central and northern Oregon coast (Siuslaw River and Nehalem Bay). Models of tsunami inundation and sediment transport will be further developed for the Salmon River and Floras Lake in FY19. Their slides are attached (click the paperclip at the top of the page).

Alan Nelson summarized his and others' work on Bradley Lake.

Jay Patton described his new geodesy studies in southern Cascadia, which have illuminated differential motion across crustal faults. His slides are attached (click the paperclip at the top of the page).

## **Tom Brocher**

The 2018 Corvallis workshop on building a new Cascadia 3D seismic model identified a need for review papers highlighting existing data and interpretations. In this map Tom Brocher has summarized the locations of 34 individual controlled-source wide-angle seismic imaging experiments dating to the 1960s. Together, they provide 40 million independent ray paths sampling the subsurface. There are important gaps in these surveys in northern and southern Oregon. The Corvallis workshop report is attached (click on paperclip at the top of the page).



Cascadia Wide An... Seismic (1).pdf



Brocher 1873 Crescent MMI.pdf

1873 Crescent City earthquake: The location of this earthquake is very uncertain: could it be a megathrust event? Tom Brocher has been working in newspaper archives to uncover new accounts of the earthquake to update the ShakeMap for this earthquake. There are few felt reports of the earthquake south of the southern edge of the Gorda slab and really no reports of aftershocks. Tom thinks the best interpretation of these observations is that the earthquake occurred within the slab underneath the Oregon-Washington border. Such inslab earthquakes produce few aftershocks and the slab provides an efficient waveguide for seismic waves.

Lydia Staisch described her work on coastal uplift rates in southwest Washington.

Maureen Walton described CMG past and planned activities, as follows:

- USGS, in collaboration with NOAA, collected 22 days of high-resolution multibeam, backscatter, and water column data in July-August 2018 aboard the NOAA Ship Rainier. New data show fault structures and seeps on the seabed.
- CMG recently (Oct 2018) completed the first of several geophysical cruises aimed to obtain comprehensive 2D high-resolution multi-channel seismic, Chirp, and magnetometer data along the Cascadia margin. The 10-day October 2018 cruise took place aboard the R/V Coral Sea as a collaboration with Humboldt State University.
- Later in FY19, CMG is slated to complete 3 additional 10-day high-resolution geophysical surveys in Cascadia using UW's R/V Rachel Carson. These surveys will expand 2D geophysical coverage along the margin and examine turbidity flows in Astoria Canyon.
- Into FY20, CMG is looking forward to involvement with the 2020 R/V Langseth survey led by Suzanne Carbotte at Lamont - USGS will aim to add OBS instruments to the survey to acquire long-offset reflection and refraction data.
- In FY20-FY21, USGS will pursue collaborations to acquire 3D P-cable high-resolution seismic data in key area(s) and groundtruthing of geophysical surveys via piston coring and other sampling.
- Slides are attached (see paperclip at the top of the page).

Erin Wirth updated everyone on the M9 project, noting there are 2 recently published papers on M9 ground motion simulations (see [Frankel et al.](#), [Wirth et al.](#)). The simulation output is available on [DesignSafe](#). The City of Seattle has revised design recommendations for tall buildings in the Seattle basin based on their results (see [OFR report](#)). The M9 Project Final Workshop will be Tuesday, March 12, 2019 @ UW; contact Erin if interested in attending. Erin's presentation may be downloaded (see paperclip at the top of the page).

Tentatively we will have another online meeting toward the end of January and an in-person meeting before or after the SSA meeting in Seattle, in April, 2019.