Tsunami deposits and modeling of potential sources at Discovery Bay, WA

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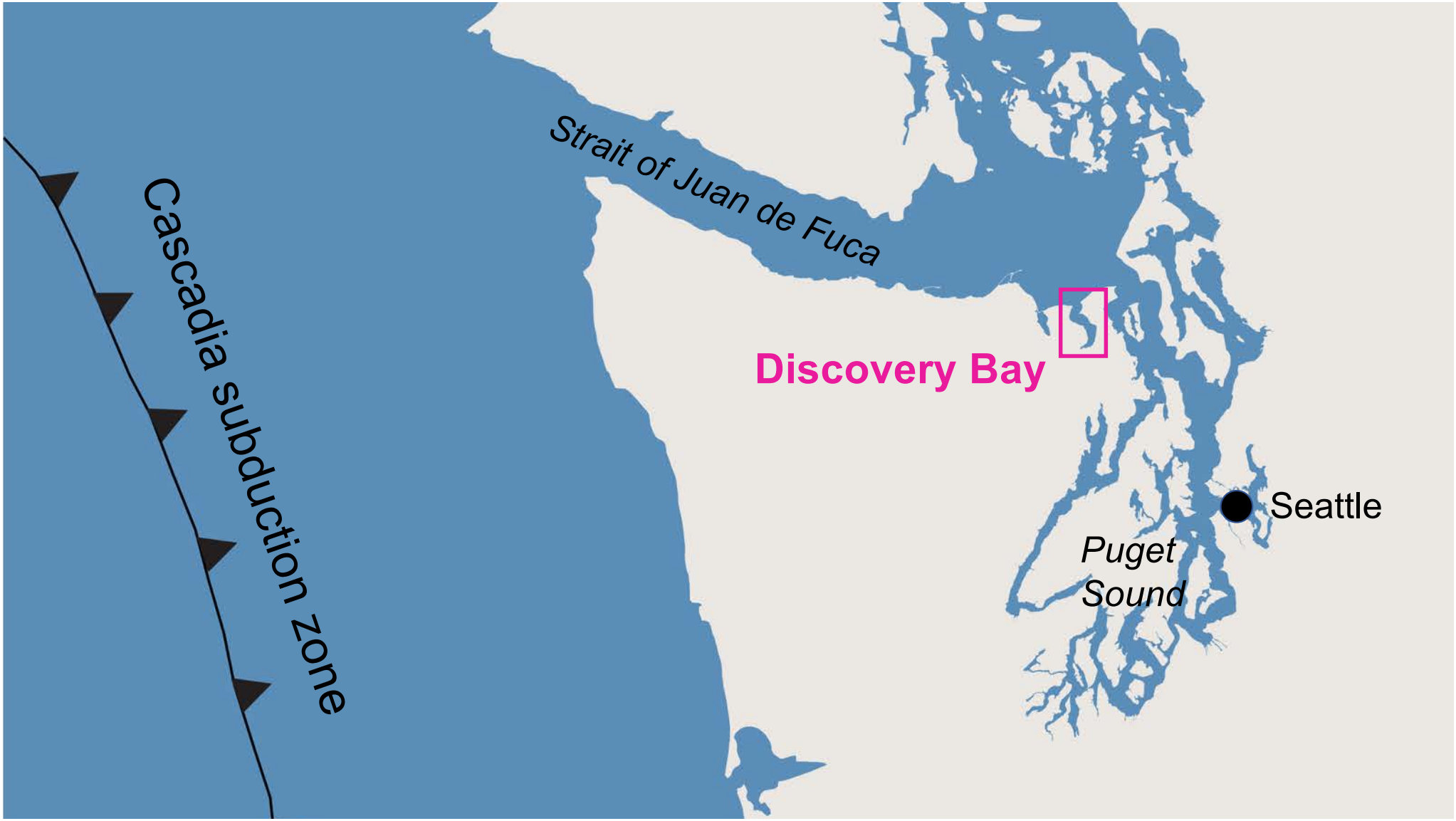
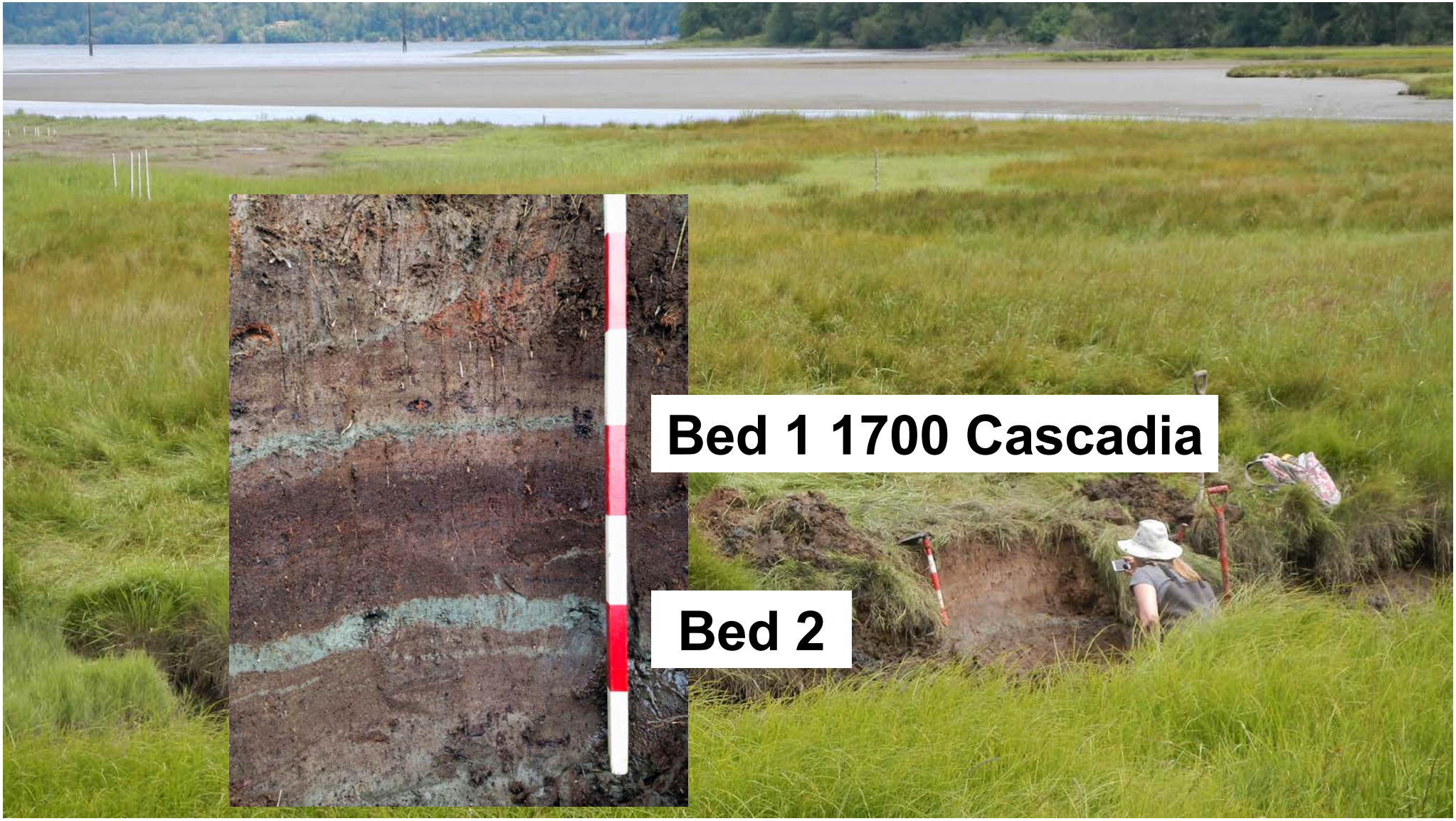
Sea Grant Washington

COLLEGE OF THE ENVIRONMENT
UNIVERSITY of WASHINGTON

12TH AIWEST-DR 2019


Strait of Juan de Fuca
Cascadia subduction zone
Discovery Bay
Seattle
Puget
Sound


Bed 1 1700 Cascadia
Bed 2

Tsunami deposits at Discovery Bay

9 tsunami deposits in the last 2,500 years

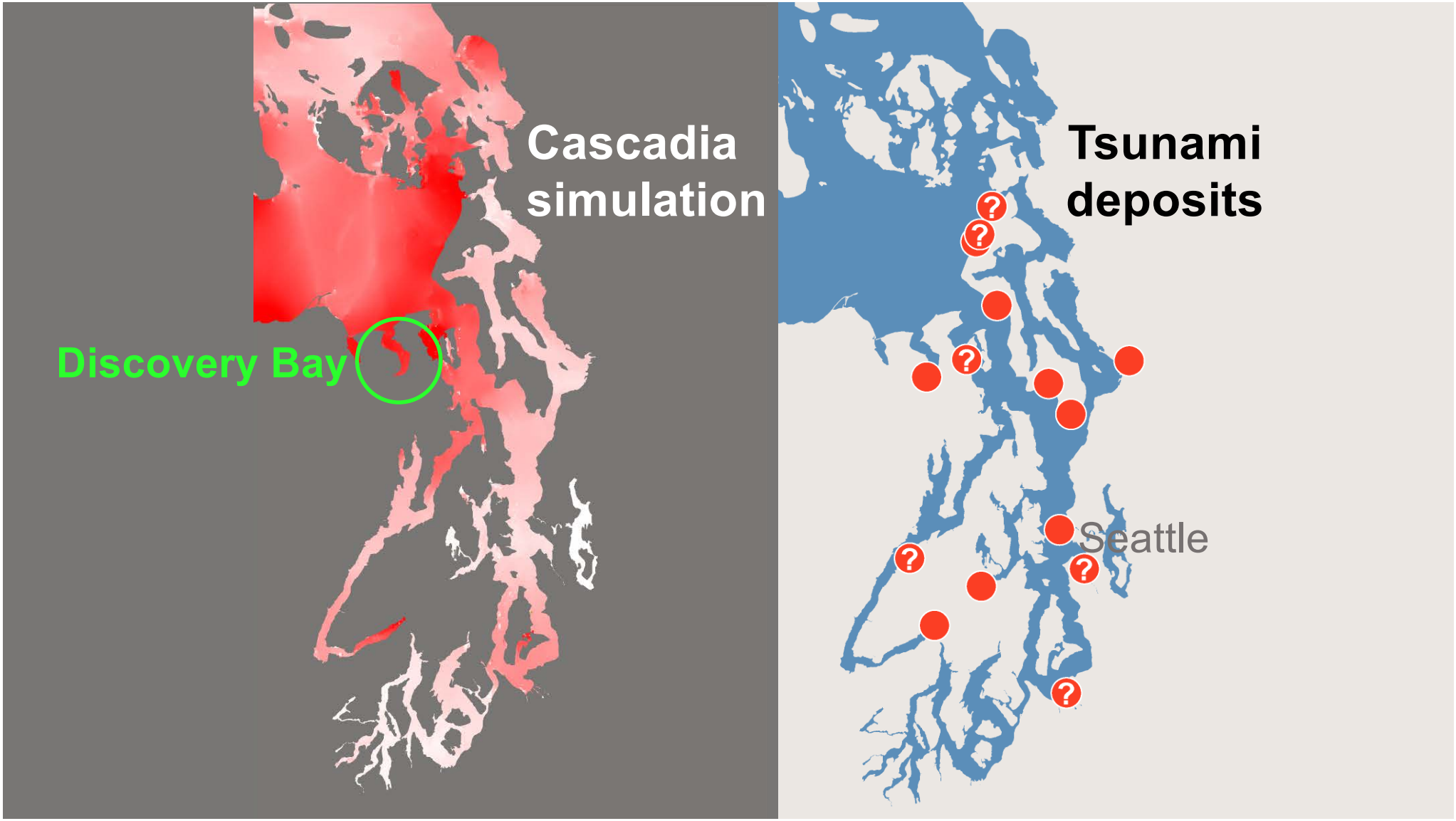
Bed 1, 1700 AD Cascadia

Bed 2 630-560 yr BP Cascadia?

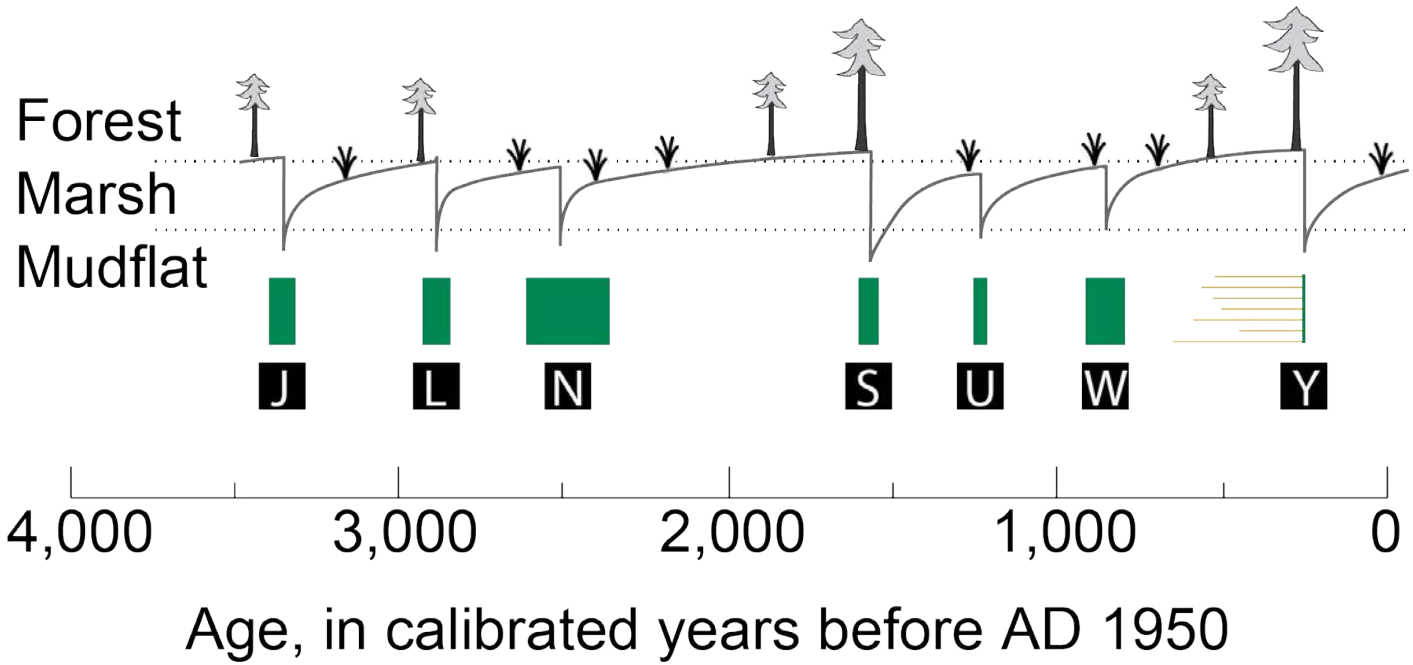
Bed 3 1010-670 BP Cascadia?

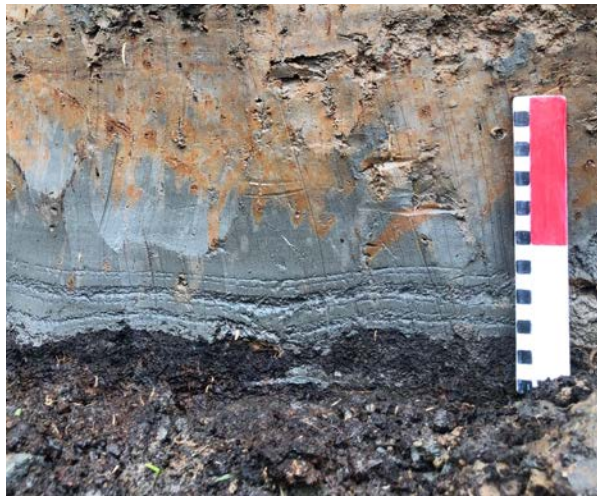
Bed 4 1120-750 yr BP Cascadia?

+5 more below

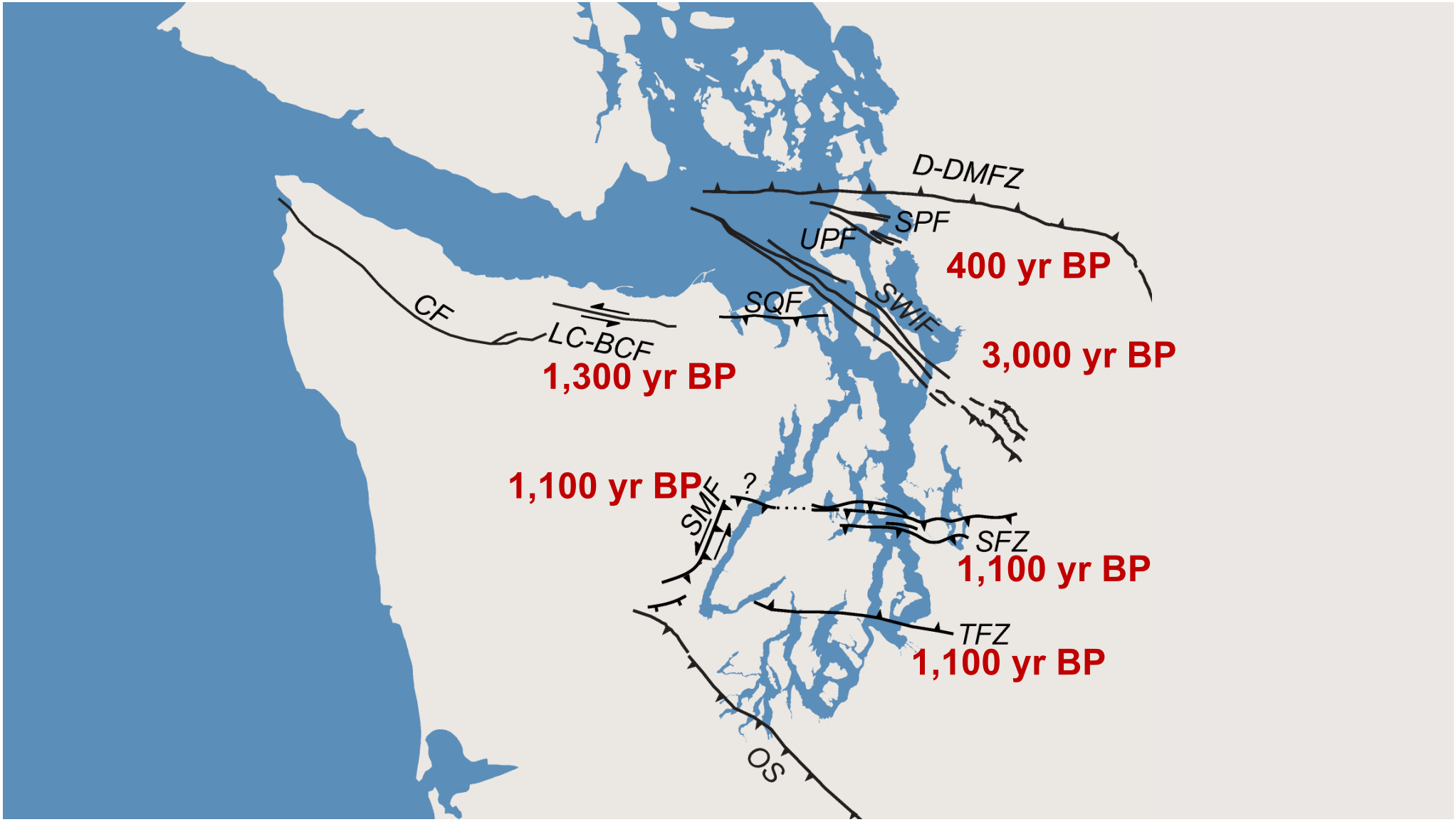

Cascadia
simulation
Discovery Bay
Tsunami
deposits
Seattle

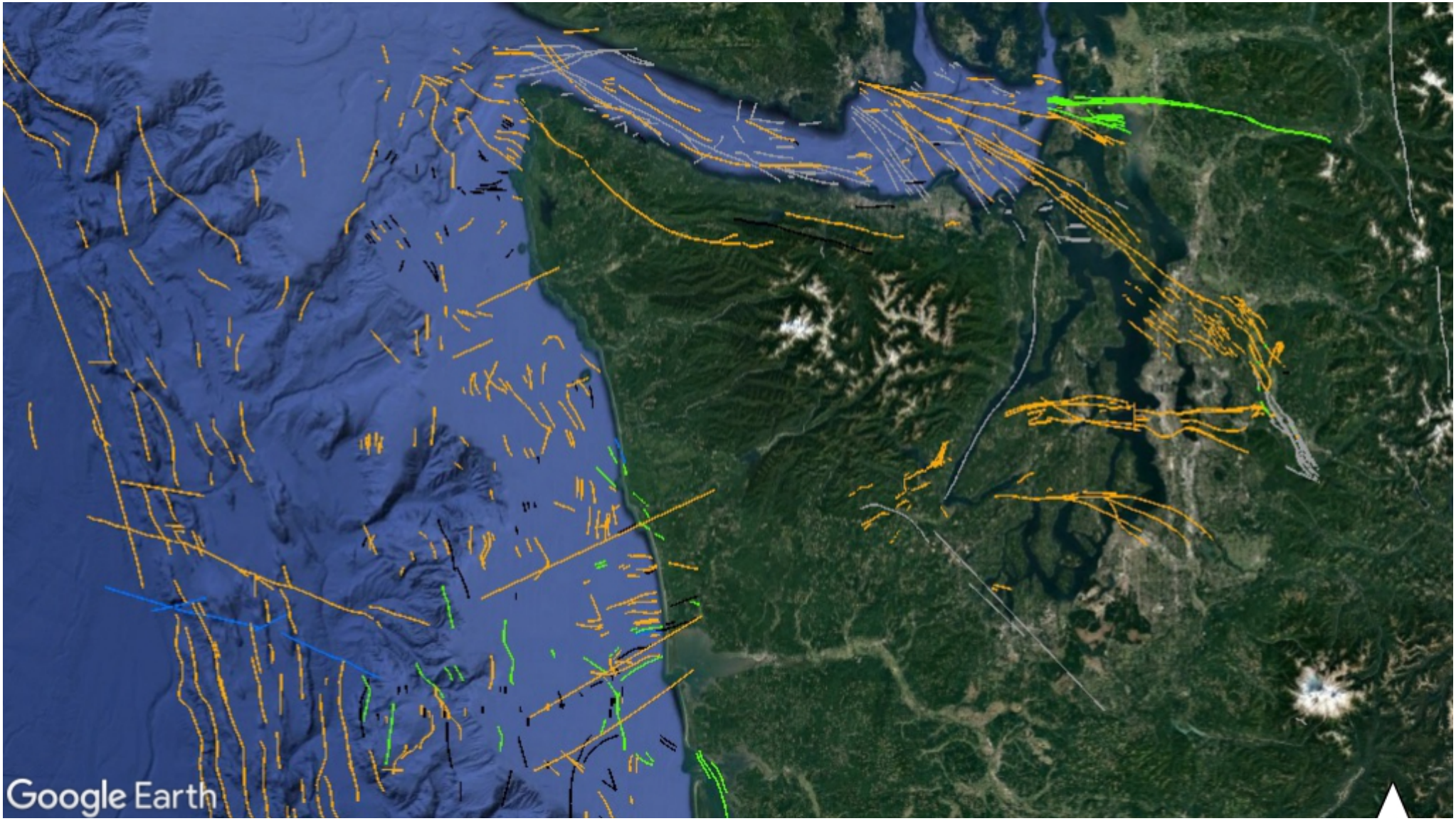
Cascadia earthquake history in Washington



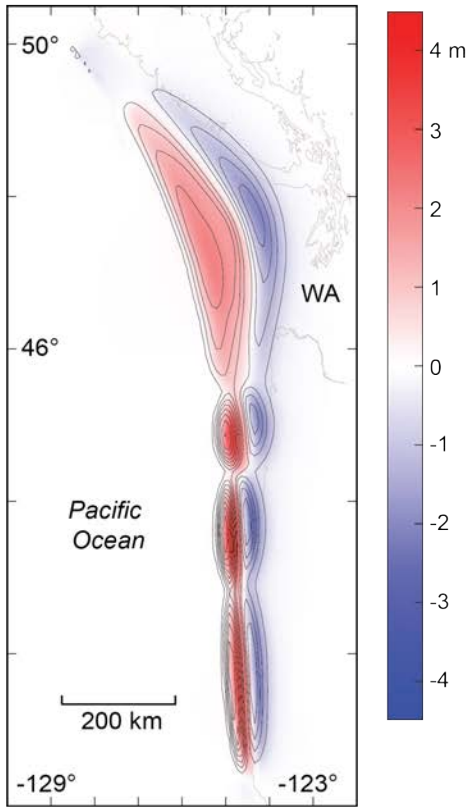


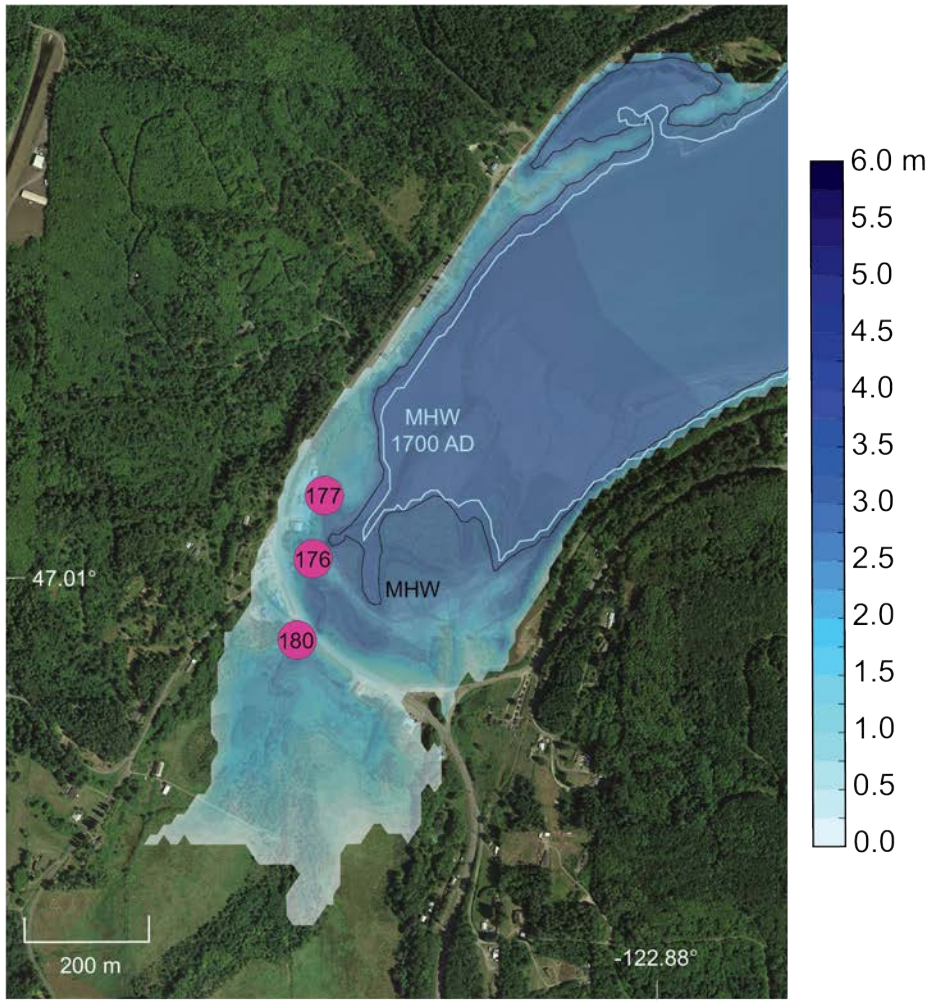
Adapted from a figure by Brian Atwater


D-DMFZ
SPF
UPF
400 yr BP
SQF
SWIF
CF
LC-BCF
1,300 yr BP
3,000 yr BP
1,100 yr BP
?
SMF
SFZ
1,100 yr BP
TFZ
1,100 yr BP
OS


Google Earth

Cascadia Patchy Slip Mw ~9.0, approximation of AD 1700

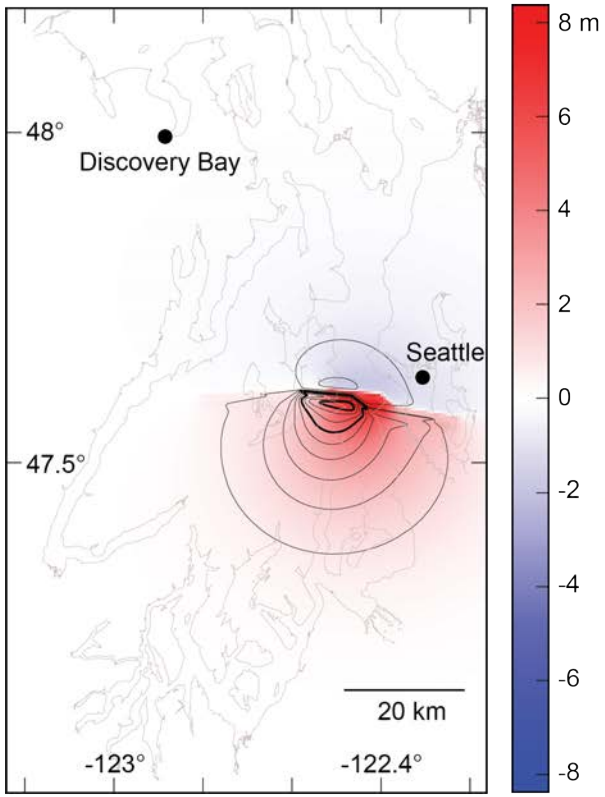


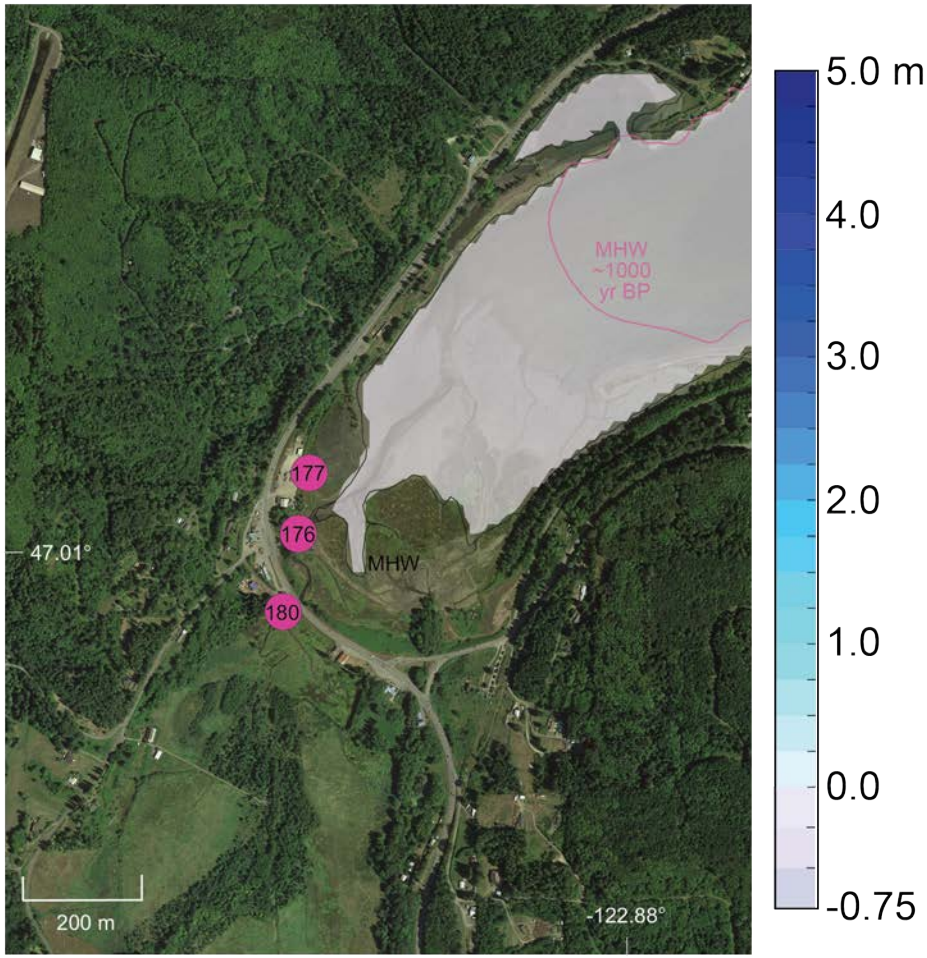


Deformation model: Gao, 2016, Figure 4.16c

Seattle fault earthquake Mw = 7.3

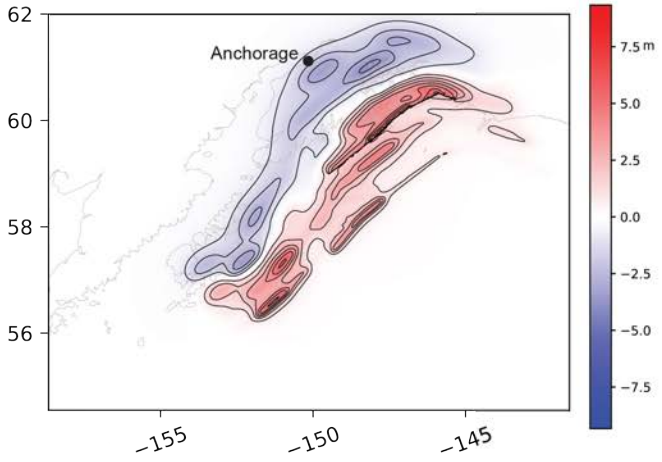
AD 930-900

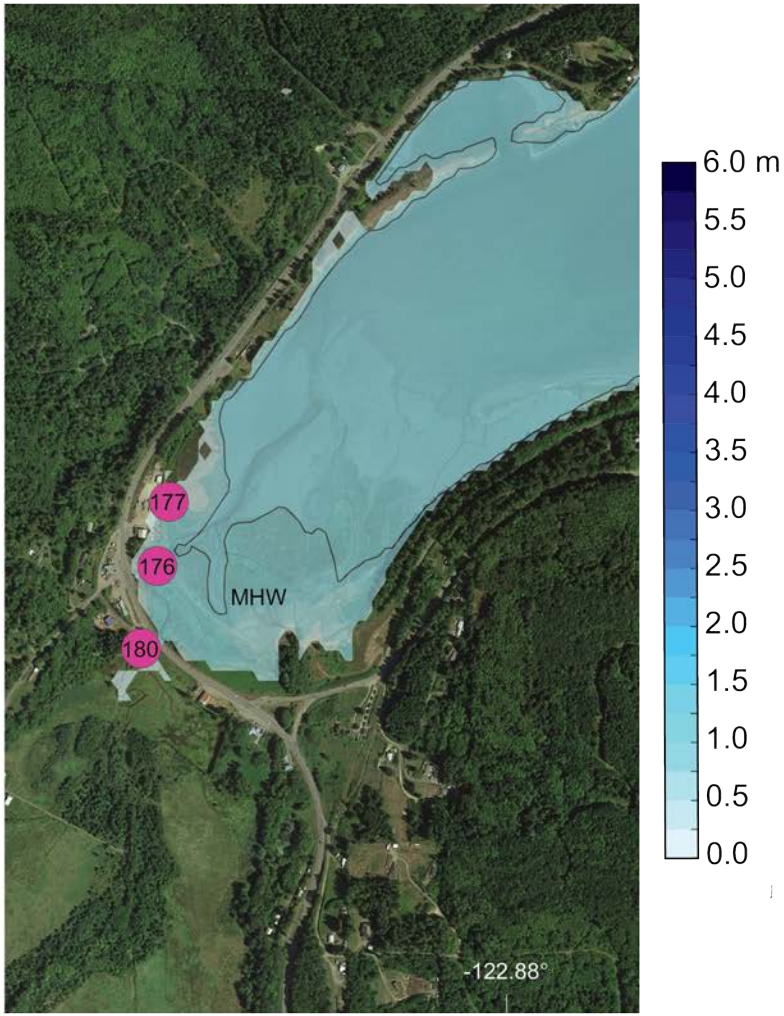




Deformation model: Chamberlin et al., 2015, Table 1, Scenario A

1964 Alaska Mw 9.2





Deformation model: Suleimani, E. 2011

1964 Alaska tsunami at Discovery Bay

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Tidal Wave Alerts Received By Various Agencies Here

Various agencies here received tidal wave alerts following the destructive Alaska earthquake Friday night, but as far as could be determined by the police and sheriff's departments there was no damage of consequence in this area.

Sheriff Robert L. Hansen said that when the warning of a possible tidal wave was received by his department he and deputies set about warning people known to be living in low areas near tidewater.

Hansen said the only definite report of inundation to come to his attention was from Mrs. Audrey Bowman, resident at the head of Discovery Bay, whose home was flooded by water which overflowed Salmon Creek.

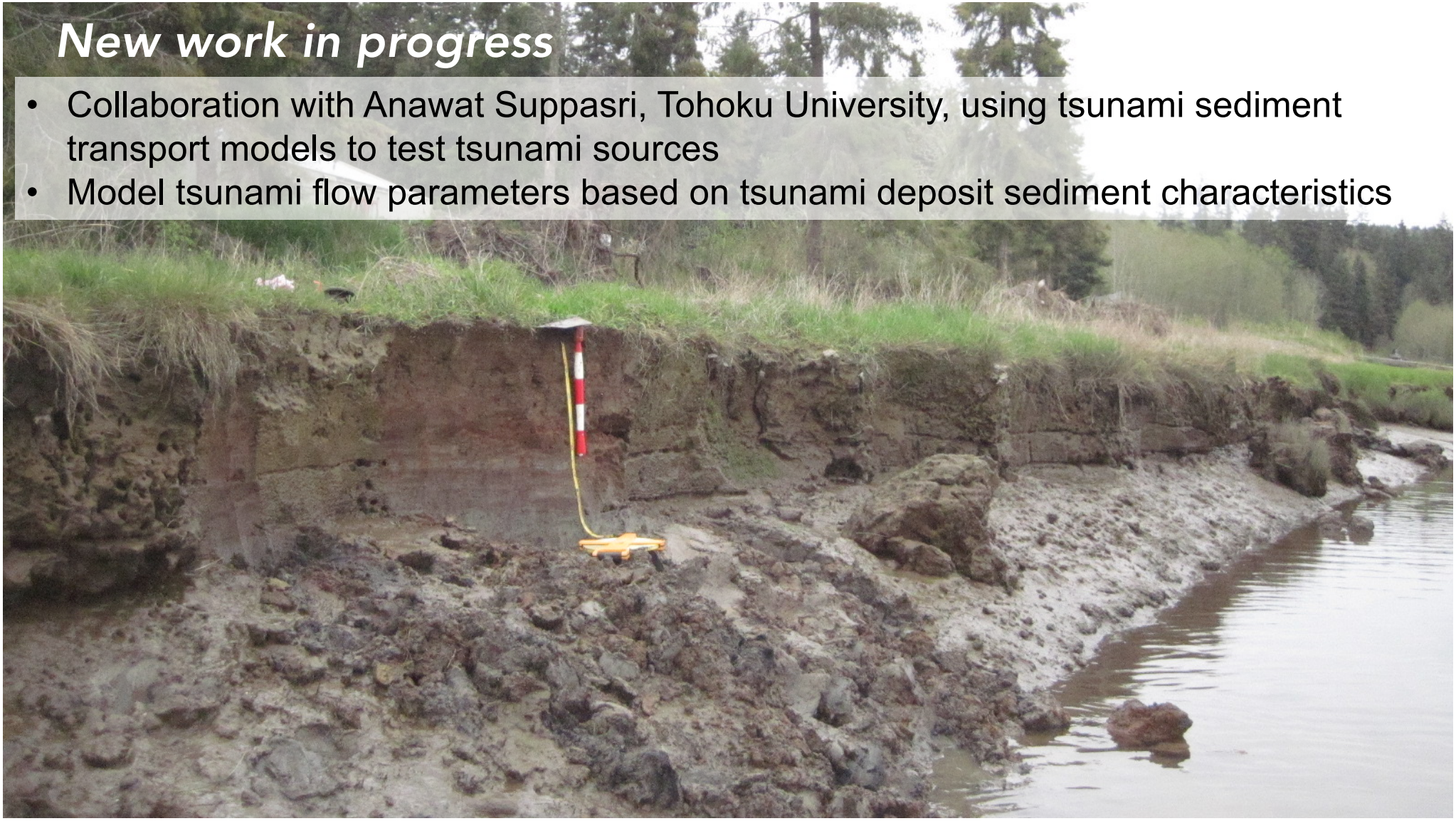
Mrs. Bowman told the sheriff that the creek rose to a height about six feet above normal level and water flowed into her home. The first flood occurred at about 2:30 a.m. Saturday and receded about 20 minutes later. The water rose again at about 4 a.m. to the same depth as before and then receded for good.

Tidal action in Quilcene Bay caused log rafts to break up and workmen were busy over the weekend retrieving logs.

Observers noted a rapid change of tides. It was reported that a Japanese freighter at the Crown Zellerbach mill rose

New work in progress

- Collaboration with Anawat Suppasri, Tohoku University, using tsunami sediment transport models to test tsunami sources
- Model tsunami flow parameters based on tsunami deposit sediment characteristics



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