

Cascadia Initiative Amphibious Array – onshore/offshore integration

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(chair, Amphibious Array Steering Committee)

Integrating existing data

- Unified waveform datasets – *now available*
- Seismicity (& maybe tremor)
- Array-based imaging

Other Datasets, future goals

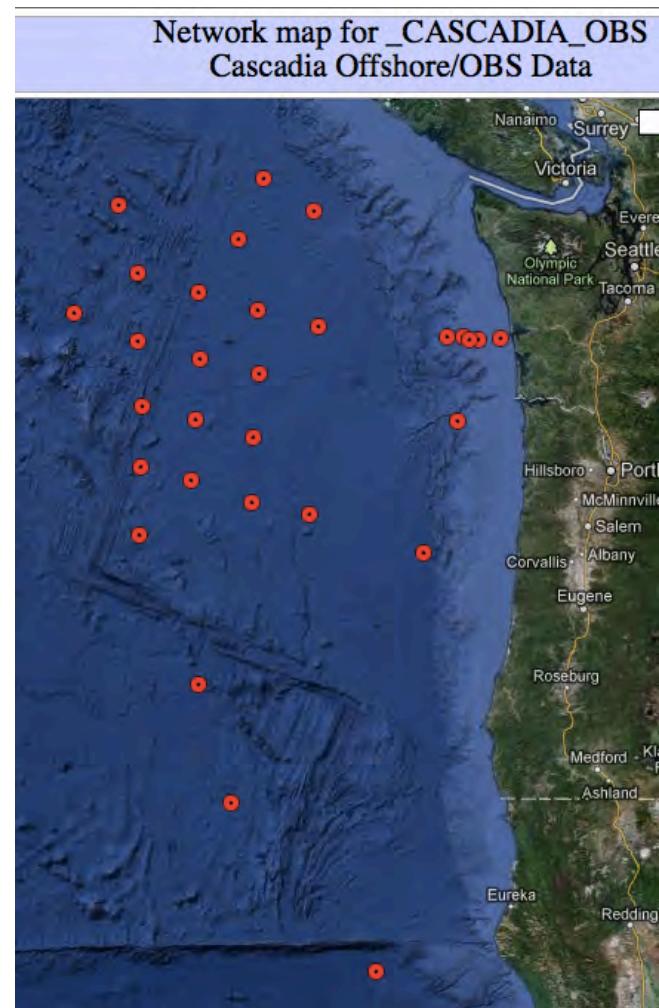
- Broader integration – geodesy, MT,
- Uniform data standards

Waveforms now available – virtual networks

Virtual Networks:

- **_CASCADIA_OBS**: NSF Cascadia Initiative Offshore/OBS data
- **_CASCADIA-TA**: NSF Cascadia Initiative, Earthscope TA
- **_CASCADIA**: NSF Cascadia Initiative, Earthscope TA plus Regional Network Stations

Cascadia Initiative OBS Metadata
Cascadia Initiative Expedition Team (CIET)
web site (<http://cascadia.uoregon.edu>).



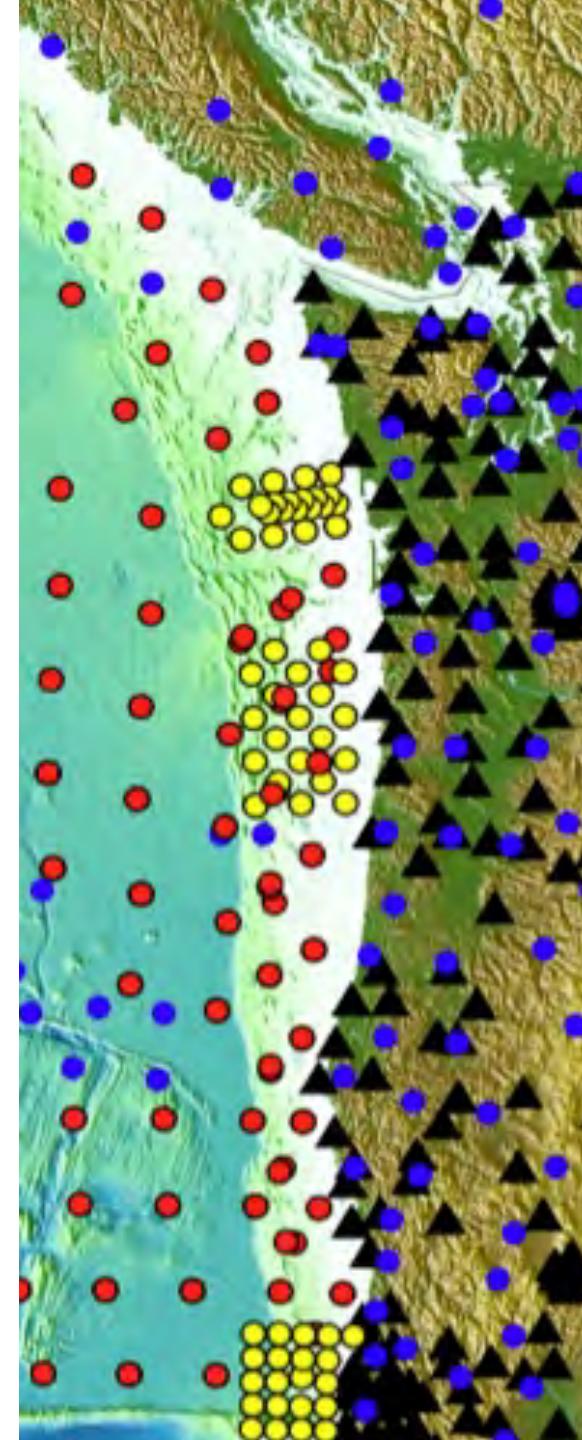
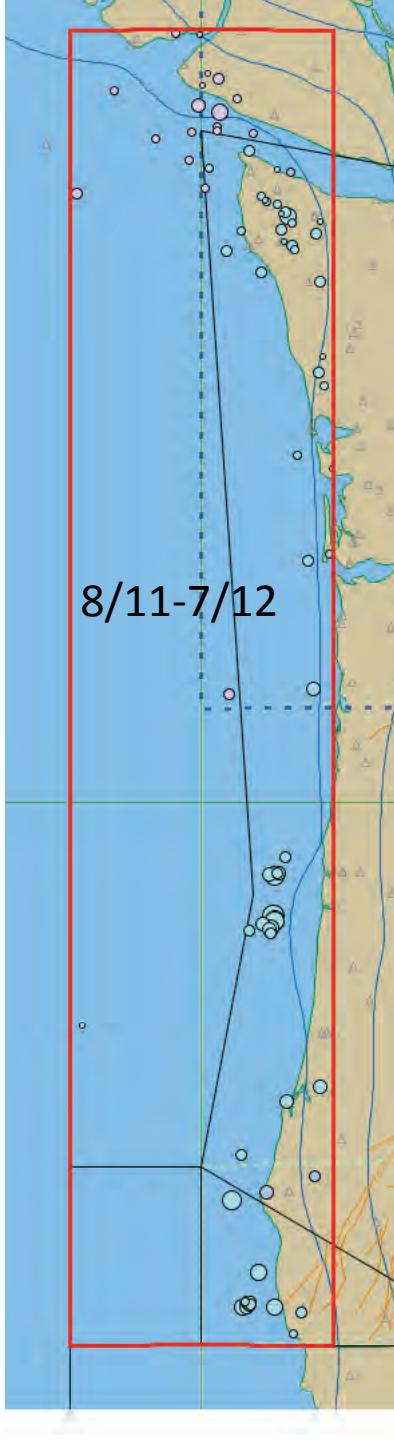
Seismicity

PNSN,
Left: everything
1960's to present

Center: during
deployment 1

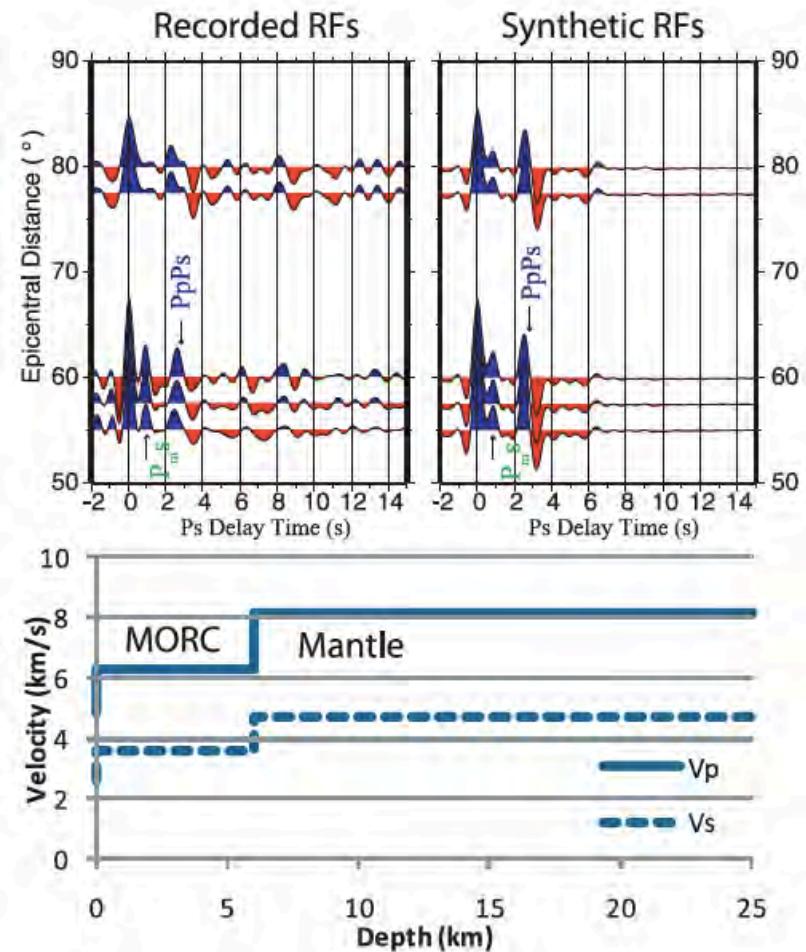
(courtesy J. Vidale)

is there tremor?

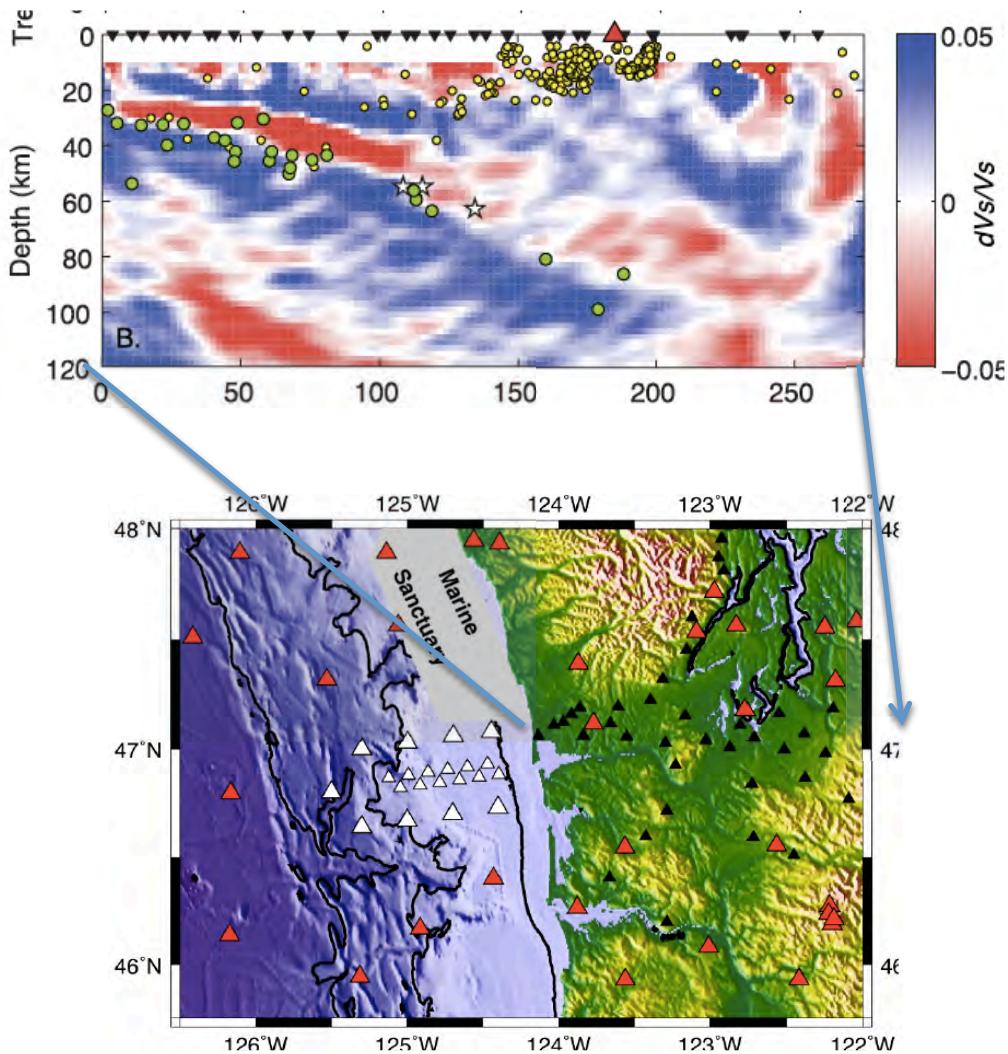


Structure. 1) Are receiver functions possible?

Example from PLUME experiment
(Leahy et al., 2010 GJI)

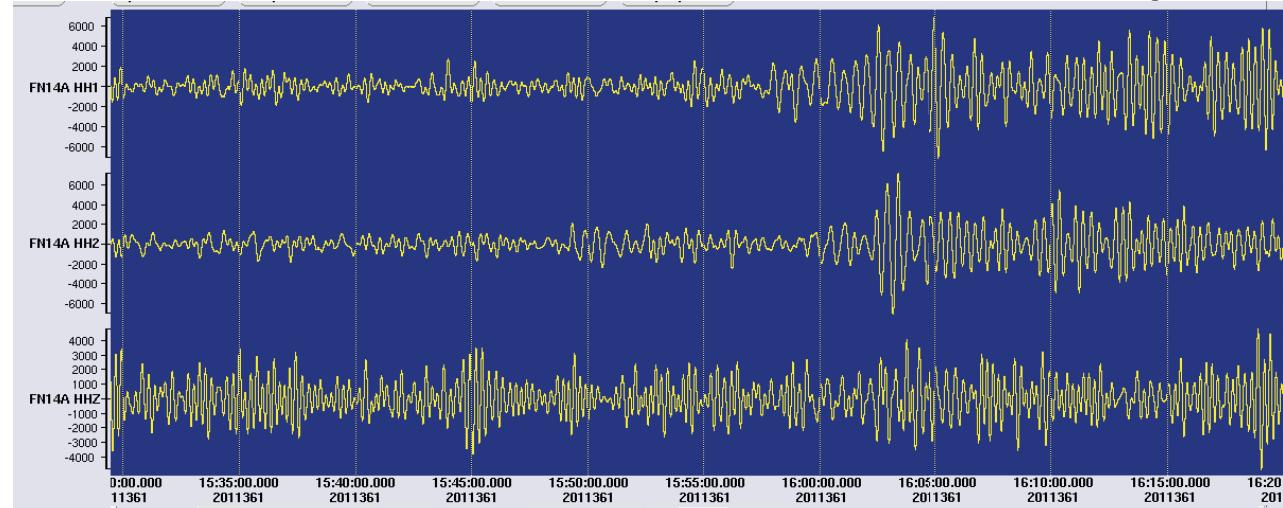


Cascadia onshore – CAFE –
Washington (Abers et al., 2009):
extend offshore?



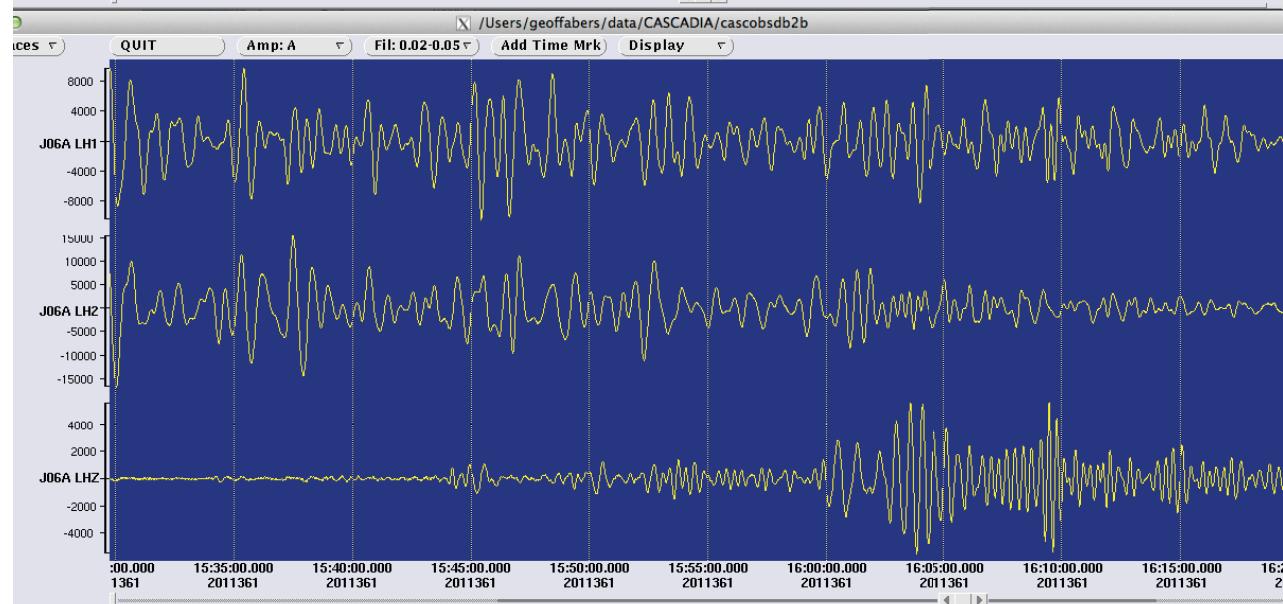
Optimism: shallow water TRM's have useable horizontal components

H1



Trawl-resistant
design (TRM)
173m depth

H2



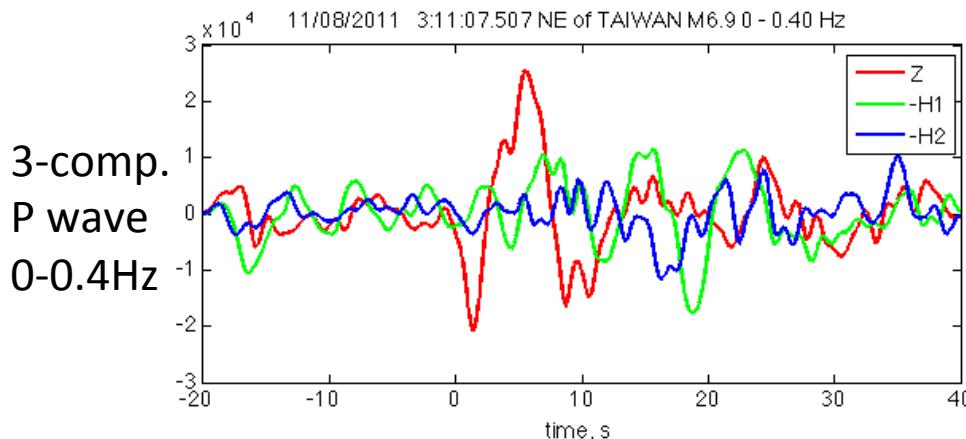
standard OBS
3224m depth

First RF: TRM vs TA

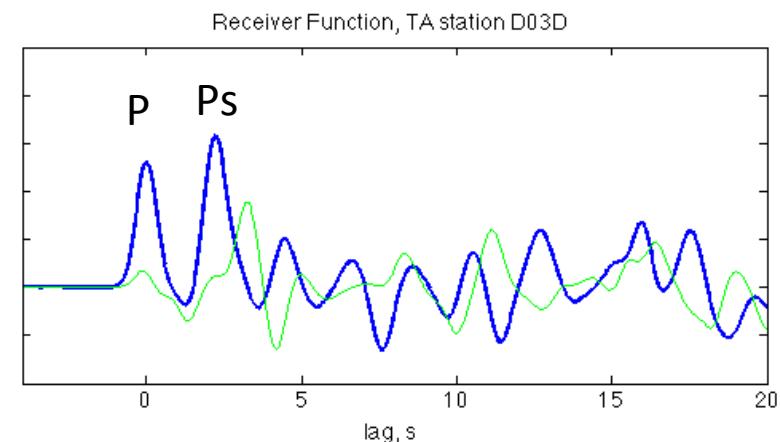
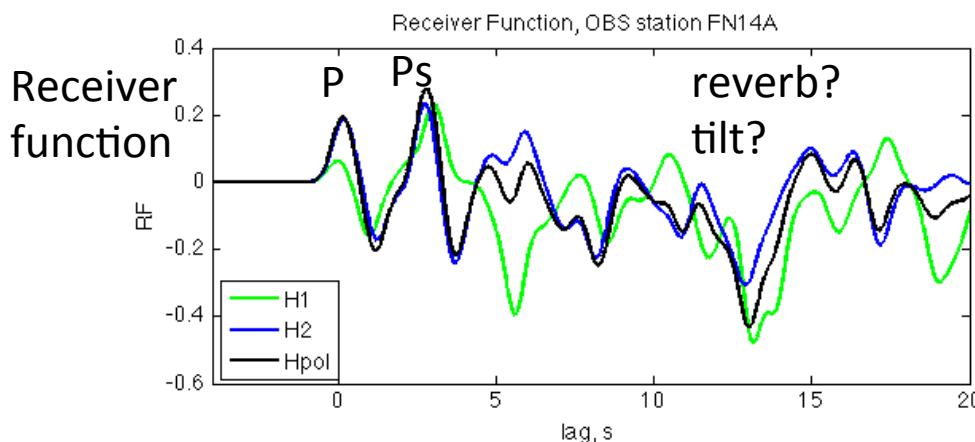
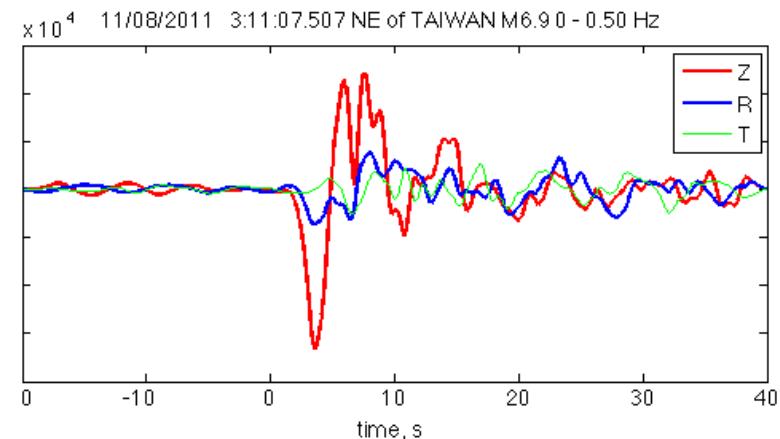
P waves & receiver functions from one earthquake

(Taiwan, M6.9 08-11-2011 03:11:07)

TRM-OBS = FN14A



Land BB-TA site D03D



blue,green: horizontals recorded

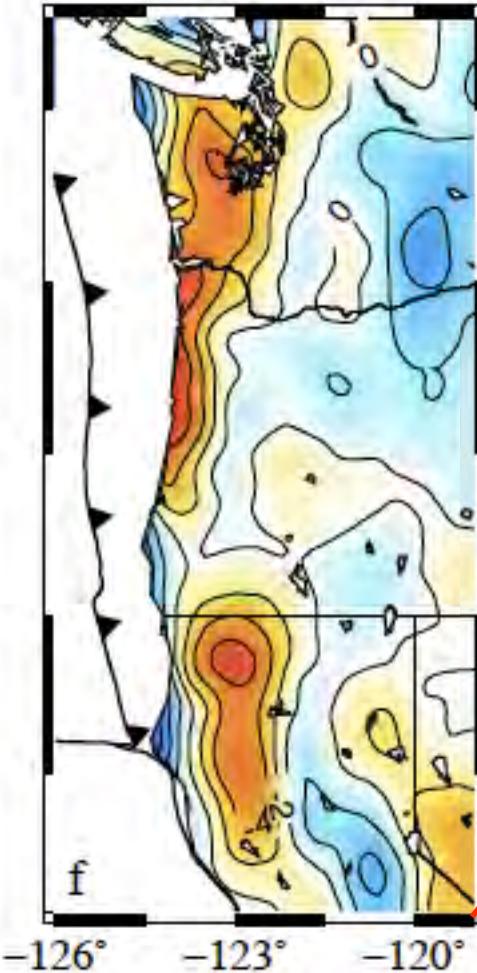
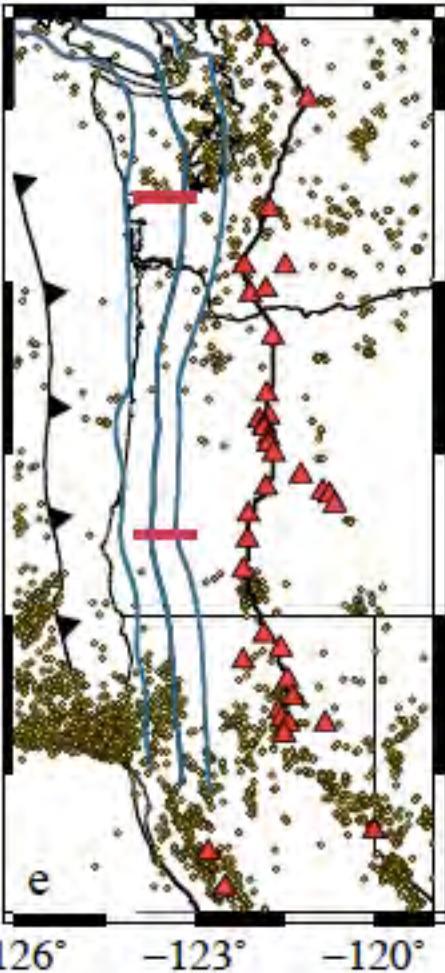
red: vertical

black: "R" from P polarization

Other Possible Seismic integration

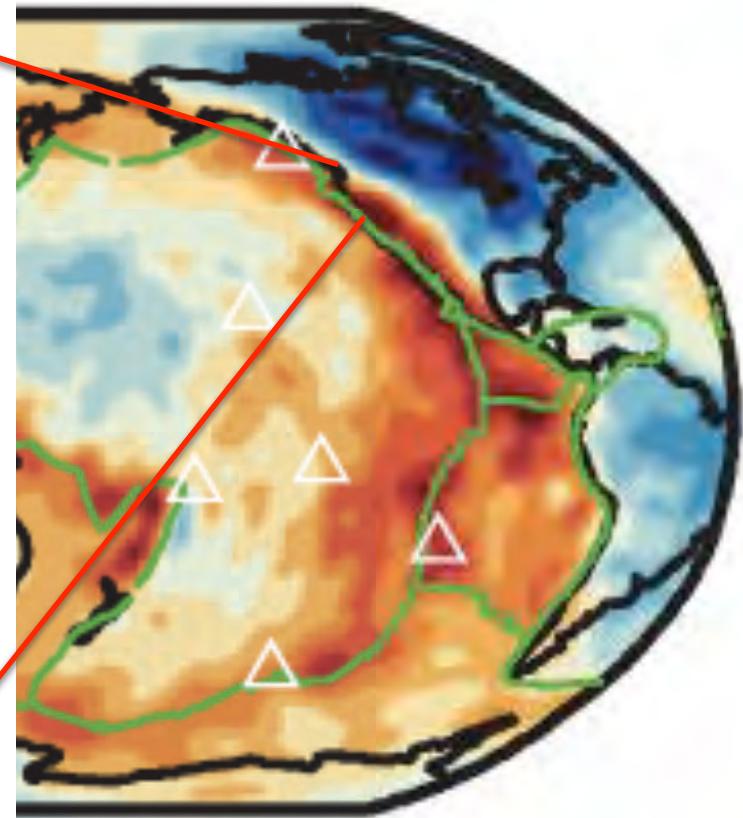
Tomography (e.g., ambient noise) on land

35km



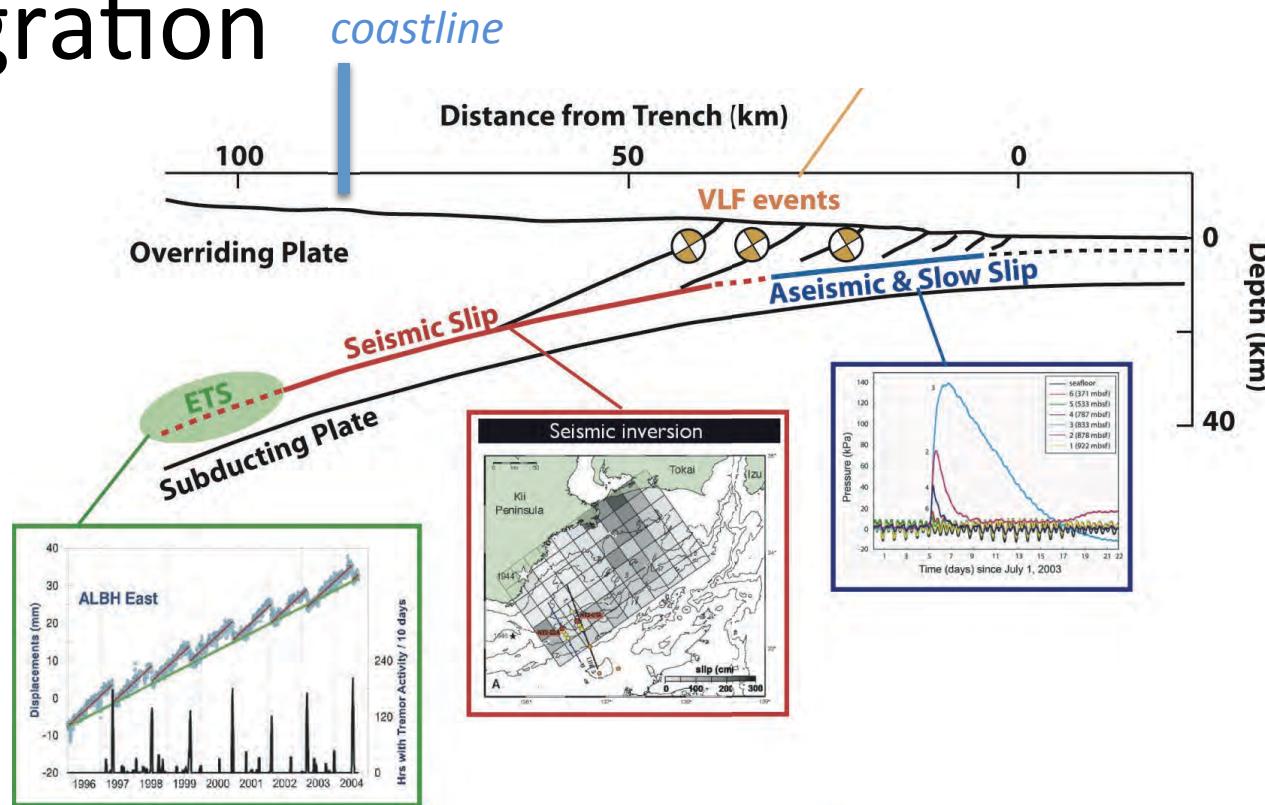
[Porritt et al. 2011 EPSL]

Tomography in the Pacific



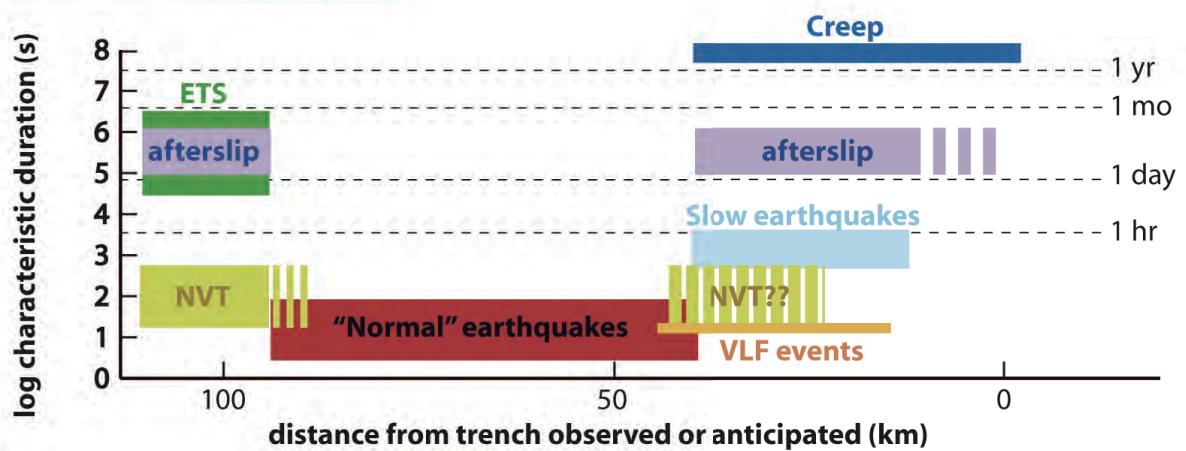
S40RTS Vs at 100 km depth
[Ritsema et al. 2011 GJI]

... cornerstone for broader integration



Scales of Slip Behaviors

[MARGINS Decadal Review 2009]



finally – after 2015, does this facility remain intact? go where?

