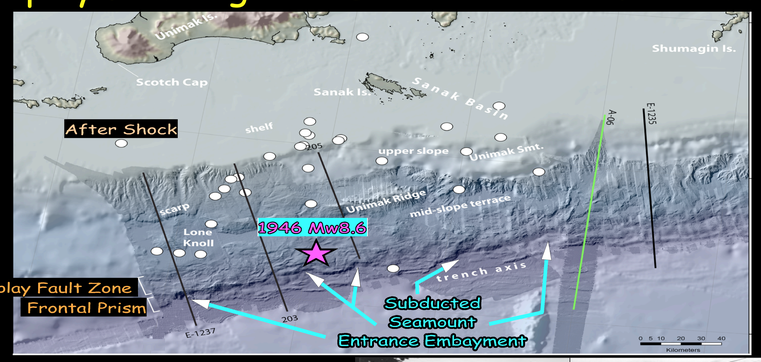
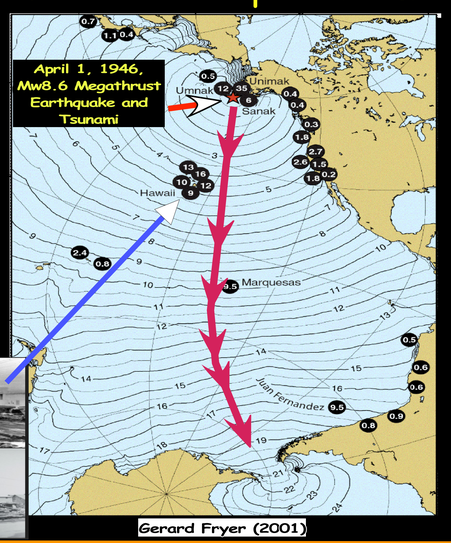
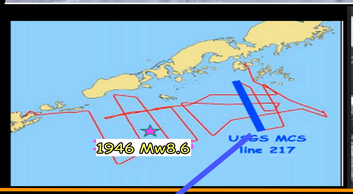
Subducting Seamounts Condition Splay Faulting Along the Outer Alaska Forearc-- Testing This Hypothesis For The Outer Aleutian Forearc

Dave Scholl and Roland von Huene; Emeriti, Earthquake Science Center, Moffett Field, Mt View, CA

Subducting Seamounts Conditioned Outer Forearc Splay Faulting that Launched the 1946 Mw8.6 Scotch Cap Tsunami

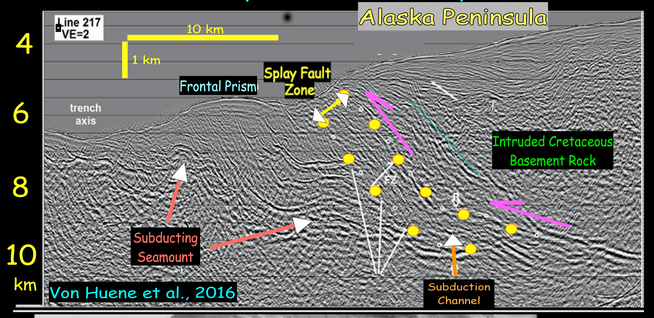




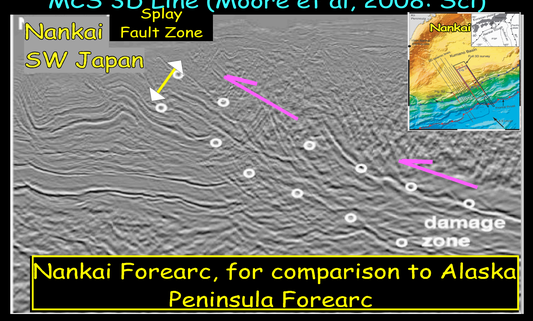


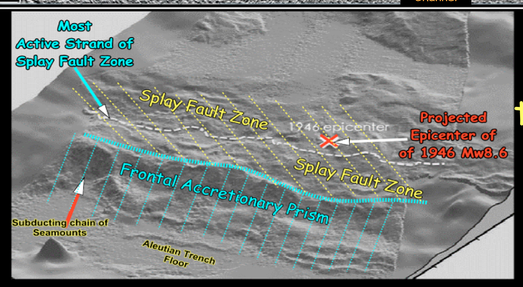
Evidence of Splay Faulting

R/V Lee, MCS 2D Line 217, 1982



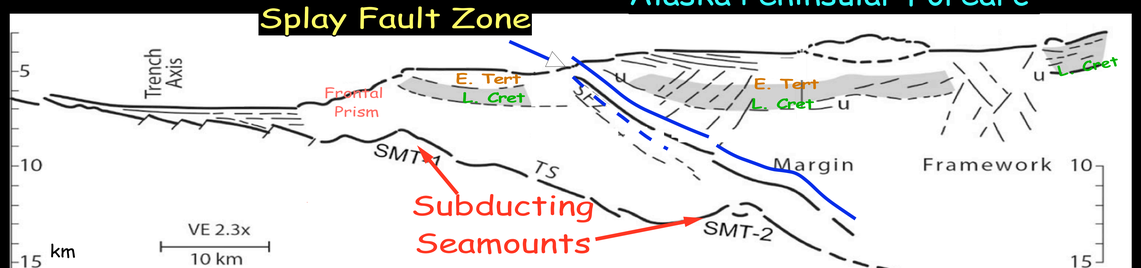
MCS 3D Line (Moore et al, 2008: Sci)



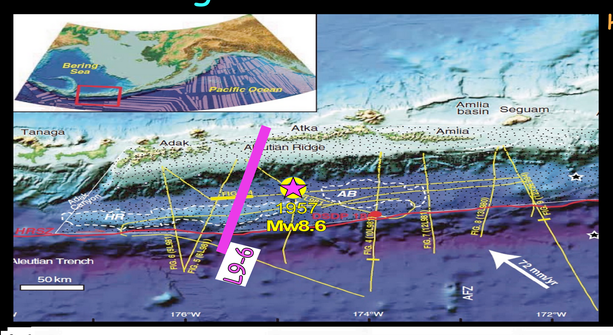


Multibeam bathymetry reveals that the splay fault zone is characterized by an irregular, undulating ridge and trough seafloor

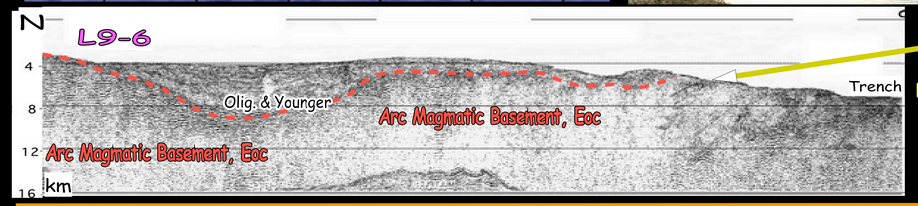
Alaska Peninsular Forearc



Did Subducting Seamounts Also Condition Outer Forearc Splay Faulting that Launched the 1957 Mw8.6 Andreanof Tsunami ?



Hilo, Hawaii, Arrival of March 9, 1957, Tsunami Launched from the Central Aleutian Andreanof Forearc by an Mw8.6 Megathrust



Vintage (1980) MCS profiles reveal fuzzy images of possible outer forearc splay faulting

Testing Strategy

Large seamounts enter the Aleutian subduction zone west of the west migrating Amlia Fracture Zone. But few east of the AFZ enter the SZ . If large subducting seamounts set up conditions favorable to outer forearc splay faulting, then evidence of active splay faulting west of AFC and inactive or fossil evidence east of it should be found

State-of-the-art Data Needed

Forearc and trench area multibeam swath maps east and west and across AFZ

Positioned bathymetrically, forearc normal MCS lines collected east and west of AFZ

High-resolution seismic (e.g. Chirp) profiles collected along all MCS lines