The Importance of the Land-Based Paleoseismic Record of Giant Subduction Earthquakes Under Southern Alaska as Possible Reference Markers in the Trench Turbidite Record West of Kodiak Island

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The source of much of the thick trench fill in the Alaska subduction zone west of Kodiak Island seems unlikely to be from the Alaska Peninsula and the Aleutian Islands owing to the limited sediment source areas. Westward migration of sediment derived from glaciated southern continental Alaska would seem the likely source, perhaps transported by turbidite flow triggered by earthquake strong ground motions. Gary Carver and George Plafker (2008) have documented paleoseismic evidence from five sites east of Kodiak for nine giant (M>8.8) megathrust earthquakes (in addition to the 1964 event) during the last 5600 years (Table from Carver and Plafker, 2008). Subject to testing of this hypothesis by sampling the turbidite record south of the source area, this chronology will likely serve as a reference set of dates that will, along with the Holocene tephra record of ten caldera-forming volcanic eruptions, help to date smaller turbidite flows sourced in the Alaska-Peninsula/Aleutian-Islands segment of this 3400 km-long subduction system.

Earthquake	Age Range (2 sigma Cal B P)	Median Age (yrs Cal B P)	Median Interval (years)
1964	-14	-14	
			(517)
EQ Kod 1	533-473	503	875
			(358)
EQ 1	913-808	861	
			618
EQ 2	1522-1324	1479	
			649
EQ 3	2374-2025	2128	
			574
EQ 4	2754-2650	2702	
			357
EQ 5	3134-2984	3059	
			333
EQ 6	3464-3320	3392	
			721
EQ 7	4255-3971	4113	
			366
EQ 8	4784-4199	4479	
			551
EQ 9	5277-4783	5030	

Mean median interval including EQ Kod 1 (11 events) = 504 years

Mean median interval excluding EQ Kod 1 (10 events) = 560 years

Mean median interval for Kodiak segment (5 events) = 437 years

Carver, Gary and Plafker, George (2008), Paleosesimicity and Neotectonics of the Aleutian Subduction Zone: An Overview, pp. 43-63, Geophysical Monograph 179, American Geophysical Union, Washington DC [ISBN 0065-84.48]