

Alaska-Tahiti Geotraces Section planning meeting
Statement of John Crusius; USGS at UW School of Oceanography
4 August, 2016

Several independent lines of evidence from recent publications point to an aeolian flux to the surface waters of much of the subarctic N Pacific of $1 \text{ g/m}^2/\text{yr}$ (Hayes et al, 2013; Serno et al, 2014; Crusius et al, 2011). Recent evidence (Crusius et al, submitted to GBC) suggests that this flux represents an important source of Fe and probably other TEI's to surface waters beyond the shelf break in the Gulf of Alaska region. Some of this flux could be dust derived from the Alaska coastline, some of it could be dust from the Gobi and other deserts, and some could be lithogenic material from volcanic eruptions. I have 3 full yrs of continuously collected dust samples from Middleton Island (N Gulf of Alaska), which includes dust of Alaskan origin. We have documented 20x or more interannual variability in dust fluxes from the Alaskan coastline. Volcanic ash input is almost certainly even more variable. Given the short residence time of Fe and other TEIs in surface waters, it will be beneficial to a summer 2018 cruise to know the recent history of dust and ash deposition in the region. It will also be beneficial to distinguish dust from volcanic ash inputs. I propose to collect time series samples from Middleton Island, and probably one other location, over the time period before the 2018 cruise, to provide constraints on these sources. I also propose to analyze these and existing samples to help pin down these source end members.