

## **New evidence of historic and prehistoric tsunamis produced by eruptions of Augustine Volcano, Alaska**

**James Beget** (ffjeb1@uaf.edu), **Leslie Amberg**, Department of Geology & Geophysics, and Alaska Volcano Observatory, Fairbanks, AK; **Cynthia Gardner**, Cascade Volcano Observatory, Vancouver, WA

Historic records suggest Augustine Volcano produced a tsunami wave as much as 6-9 m high in 1883 when an eruption sent a debris avalanche 8 km into the waters of Cook Inlet. No trace of tsunami deposits has previously been reported from the Cook Inlet area, leading to suggestions the historic record is in error, and the hazard from future volcanic tsunamis is minimal. We report here on several sites that appear to provide evidence of the 1883 and older tsunamis. The 1883 debris avalanche deposit on Augustine Island is overlain at several sites by water-rounded pumice, shells and sands recording wave action at elevations as much as 9 m above MSL. At the native village of Nanwalik 80 km east of Augustine, we found deposits of sand and water-rounded cobbles buried by Augustine 1883 tephra, consistent with reports by observers in 1883. The Augustine deposits are overlain by Katmai 1912 tephra, and a sheet of sand and cobbles deposited by a tsunami produced by the 1964 Alaskan earthquake. Dendrochronologic evidence indicates a sand horizon intercalated with peat at the Red River north of Augustine also dates to 1883. We also report evidence for a second volcanic tsunami wave, evidently produced by the ca. 500 year old West Island debris avalanche. This wave eroded sediment and ash to an elevation of 17 m above MSL on the southeast side of Augustine Island. Still older distal tsunami deposits of sand and water-rounded cobbles were found near Russian Point and Seldovia, 80 km from Augustine Volcano, where they occur as high as 5 m above MSL, intercalated with numerous tephra layers in peats.