

**Archaeological evidence of great earthquakes and associated tsunamis,
Alaska subduction zone.**

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Investigations Undertaken:

The objective of this study is to clarify the chronology of great earthquakes on the Alaska subduction zone from the temporal patterns of abandonment of prehistoric native village sites along the southern coast of Alaska. Active use of a site is indicated in the archaeological record by the accumulation of midden material (i.e. cultural strata associated with house tenancy, hearths and food waste). On the other hand, the presence of culturally 'sterile' interbeds such as sand or gravel layers, forest soils or landslide deposits indicate abandonment of at least part of the site. Sites which were abandoned due to the direct or indirect effects of subduction zone earthquakes may exhibit one or more of the following features:

- a) regionally uniform chronologies of occupation and desertion;
- b) indicators of change in regional sea level as a result of coseismic crustal deformation;
- c) tsunami interbeds, and
- d) abrupt changes in subsistence and cultural patterns.

Our efforts to date have been to:

1. compile a bibliography and collect reports from archaeological investigations on the coastline of the Gulf of Alaska. The bibliography comprises some 170 reports covering 64 sites;
2. refine study objectives in discussions with Alaskan archaeologists (University of Alaska and National Park Service) and geologists (US Geological Survey) during a visit by Hutchinson to Anchorage in May, 2001;
3. prepare a map of the distribution of excavated sites in five sub-regions (Prince William Sound, Kenai Peninsula, Cook Inlet, Kodiak Island and Katmai) along this littoral; and
4. document the record of site occupation and the subsistence patterns and cultural associations of the people living at the site. The documentary record consists of two complementary Filemaker databases which contain the following items of information:

Site name, ID, and location

Excavator and source of information

Midden stratigraphy by natural layers

Radiocarbon and/or cultural chronology

Excavator observations on site history, tectonics, relative sea-level position, tephra deposits and subsistence patterns (changes in the exploitation of marine and terrestrial fauna)

In some cases these observations have been refined in discussions with the original excavators.

To date, information from sites in the Prince William Sound, Kenai Peninsula and Cook Inlet sub-regions have been entered into the databases. It is anticipated that remaining sites can be this phase of the investigation will be complete by the end of December, 2001.

Our intention is to provide universal access to these databases by linking site information to a site map that will form the home web page of this project.

The second phase of the project will be initiated in January 2002. The prehistoric pattern of site occupation and abandonment will be investigated from a temporal analysis of cultural and sterile layers at each site. Radiocarbon ages will be corrected for reservoir effects and calibrated to the sidereal time-scale. Inferred periods of site abandonment will be compared to the regional paleoseismic history that has been reconstructed from dating of coseismically-buried marsh soils in Cook Inlet and coseismically-uplifted marine terraces on Middleton Island. Comparisons between the geological record of tectonic deformation and the archaeological record of site occupation will take place at the level of the individual village site, between sites in individual tectonic segments, and between groups of potentially interacting segments.