

INTRODUCTION TO A TSUNAMI DEPOSITS DATABASE

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ABSTRACT

The nature, distribution and recurrence rate of tsunami remains rather poorly documented. In order to better understand the impact of tsunami on coastal zones around the world, studies are needed to identify geologic records of sedimentary event horizons generated by tsunami and to date the events radiometrically in order to establish recurrence rates on a regional or even local level. In order to achieve a better understanding of the nature of tsunami deposits we have initiated a Tsunami Deposits Database, which currently consists of lithologic characteristics of 278 tsunami deposit publications (of roughly 800 identified sources). The data compilation shows an uneven distribution of publications with only thirteen percent describing historic tsunami, and the remainder describing paleo-tsunami events. The most common type of tsunami deposit is a sand sheet. Common occurrences include:

- Beach sediments that are transported inland leaving a sand sheet in wetlands and other coastal settings.
- Sands that have been carried inland and buried grasses and other vegetation. The bent vegetation can be used to document flow direction.
- The backwash deposits frequently contain sand and mud (particularly rip-up clasts of mud) transported from land to the sea and carrying charcoal and organic debris as well.
- The tsunami waves can overtop or “blow-out” coastal sand dunes and leave a catastrophic inundation record within marshes.
- A 'Tsunami Stratigraphy' (of lithologic couplets) is present and has been associated with inundation and drain-back.
- In many cases, tsunami run-up leaves one or more sand sheets, reflecting multiple waves.
- The deposits left onshore often contain marine shells/fossils transported into a non-marine setting, and vice-versa.
- Tsunami deposits are ephemeral in nature and are easily removed by subsequent erosion by normal coastal processes and modification of the environment by humans.