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A POSSIBLE TSUNAMI IN THE LABRADOR SEA RELATED TO THE DRAINAGE OF GLACIAL LAKE AGASSIZ ~8400 YEARS B.P.

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ABSTRACT

For thousands of years, the thick Laurentide Ice Sheet covered a large part of northern North America, damming northward-draining rivers. As this ice retreated, large lakes formed along its margin. Glacial Lake Agassiz was the largest of these ice-marginal lakes, covering an area of $>800,000 \text{ km}^2$ (more than twice the size of the largest lake in the modern world, the Caspian Sea) before it drained catastrophically into the Labrador Sea. Even before that, Lake Agassiz had periodically released large volumes of water into the ocean via the Great Lakes-St. Lawrence and the Athabasca-Mackenzie River systems. The last and largest of these outbursts released $>150,000 \text{ km}^3$ through Hudson Bay and Hudson Strait in 6-12 months; the average flux over that period was $\sim 5 \text{ Sv}$ ($1 \text{ Sv} = 1 \times 10^6 \text{ m}^3 \text{ s}^{-1}$).

When a volume of water this large is discharged into a coastal sea like the Labrador Sea, it may generate a surface flood wave or a tsunami if the water mass is large enough and introduced in a short time. To our knowledge no previous calculations have been made to estimate the potential impact of a flood burst on the generation of solitary waves. Using analogies of tsunamis generated by submarine landslides and ocean earthquakes, the amplitude of a Lake Agassiz generated tsunami is estimated to have been at least 2 m. Directionality considerations, as well as the effect of the Coriolis Force in the Northern Hemisphere, suggest that the resulting tsunami probably traveled 50-100 km along the west coast of the Labrador Sea, south of Hudson Strait where the outburst entered the ocean, before being dissipated. The erosional and depositional affects of historic and prehistoric tsunamis are present in the geological record, and provide guidance in seeking evidence for the Lake Agassiz flood burst and subsequent tsunami. This record may be found along the western coast of the Labrador Sea as well as along the shores of Hudson Strait.

TREND OF MICROMETEOROLOGICAL PARAMETERS DURING TSUNAMI ON THE EAST COAST OF INDIA

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ABSTRACT

Tsunami, a large, breaking wave is generated by displacement of seafloor occurring during earthquakes. The Sumatra earthquake of December 26,2004 at 6:28:51 IST generated the deadliest Indian Ocean tsunami causing severe damage along the coast of Indian mainland. The micrometeorological parameters are measured continuously at Portonova on the East coast of India with the help of a 30 m height meteorological tower by the Department of Civil Engineering, Annamalai University. The parameters like wind speed, wind direction, temperature and solar radiation were recorded during the time of Tsunami also, This paper is aimed at processing the data to check whether there are any significant changes in the parameters due to the occurrence of Tsunami. The wind speeds measured at 10m, 17m and 30m heights show a decreasing trend for three days (25th, 26th, 27th December 2004). Likewise the temperature also show a decreasing trend on the day of Tsunami. The solar radiation was steadily increasing without any modulation on that day which was not on the previous day or the next day of Tsunami.

Boulder Deposits on the Southern Spanish Atlantic Coast: Possible Evidence for the 1755 AD Lisbon Tsunami?

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Abstract

Field evidence of visible tsunami impacts in Europe is scarce. This research focused on an analysis of large littoral debris and accompanying geomorphic features and their relationship to a tsunami event at Cabo de Trafalgar, located on the southern Spanish Atlantic coast. Relative dating of weathering features as well as minor bioconstructive forms in the littoral zone suggest the Lisbon tsunami of 1755 AD as the event responsible for the large deposits described. This tsunami had run up heights of more than 19 m and was generated at the Gorringer Bank, located 500 km west off the Cape. Tsunami deposits at Cabo de Trafalgar are the first boulder deposits identified on the southern Spanish Atlantic coast and are located approximately 250 km southeast of the Algarve coast (Portugal), where other geomorphic evidence for the Lisbon tsunami has been reported.

CONCEPTUAL DIFFERENCES BETWEEN THE PACIFIC, ATLANTIC AND ARCTIC TSUNAMI WARNING SYSTEMS FOR CANADA

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ABSTRACT

Canada has coastlines on three of the four oceans on the globe, namely, the Pacific, Atlantic and Arctic oceans. The Pacific and Atlantic oceans are connected to the Arctic Ocean in the north, but still they are three distinct oceans, and need three individual tsunami warning systems. Tsunamis in the Arctic Ocean are not as well documented as in the Pacific and Atlantic oceans. From what is known, tsunamis in the Arctic Ocean are rare and probably are small in amplitude. Because of very low population density, around the Canadian Arctic, at present, there is no priority for a tsunami warning system for Arctic Canada. For the Pacific Ocean, a tsunami warning system is in existence since 1948. In at least one sense, the warning aspects of the tsunami warning system for the Pacific coast of Canada, is relatively simple and straight forward, because it involves only the federal government (PSEPC) and the provincial government of British Columbia (PEP). For the Atlantic Ocean, A tsunami warning system is now being established. The warning aspects will be some what more complex for eastern Canada, since it not only involves the federal government, but also five provinces, namely, Newfoundland and Labrador, Nova Scotia, New Brunswick, Prince Edward Island and Quebec. The Alaska tsunami warning center (ATWC) in Palmer, Alaska, provides tsunami warnings for both Pacific and Atlantic Canada.