

**DOCUMENTATION OF THE FARFIELD PARAMETERS
OF THE NOVEMBER 1, 1755 "LISBON" TSUNAMI ALONG THE
SHORES OF THE WESTERN ATLANTIC OCEAN**

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ABSTRACT

The tsunami from the 0930 LT (1006 UTC) Saturday, November 1, 1755 "Lisbon" Earthquake which occurred offshore, west of the Iberian Peninsula, is as well-known as a mid-eighteenth century tsunami can be. There are written records from England and Ireland southward through Portugal, Spain and Morocco where the tsunami was a major contributor to the death toll from this estimated $\approx 8.7 M_I$ (Intensity Magnitude) earthquake. On the other hand, the farfield observations of the teletsunami in the western North Atlantic are much more difficult to locate. Many authors note the arrival of the "Lisbon" Tsunami in the mid-afternoon of November 1st in the Windward Islands of the eastern Caribbean, but few cite references and even fewer cite primary, or near-primary, references. Some authors note the tsunami as far west as Santiago de Cuba in what can be best described as a most ambiguous reference.

The author was prompted to search for original sources of the "Lisbon" Tsunami by the realisation, as the December 26, 2004 Indian Ocean Tsunami that broke upon our TV screens in North America, that the Atlantic Ocean is no better protected than was the Indian Ocean when it comes to a tsunami warning system. The "Lisbon" Tsunami, as the largest and most tragic historic tsunami in the Atlantic, is not documented in the western Atlantic to the degree that the records can assist in the design of any proposed Atlantic tsunami warning system.

Locating primary, or echoes of primary, references to the tsunami is not an easy task and results are not achieved quickly. The internet is not of a great deal of help. The real resources in such a search are the memories and knowledge of archivists, historians and reference librarians who know their collections and the intricacies of their finding aids. Modern historians too often pay little attention to the weather or the "unusual agitation of the sea" in deference to generals, armies, armadas and forts. This was not the case in the mid-1700s when humans were much more dependent on the vagaries of Nature for survival, food and communication. In many cases it was more than two months (and in la Martinique three months, one week) before word of the "Lisbon" Earthquake arrived to provide an explanation for the unusual rise and fall of a harbour, or surging currents in an estuary seen in the mid-afternoon of November 1, 1755.

This study has found good reports of the "Lisbon" Tsunami from Bonavista, Newfoundland, from a vessel in an Antigua port, from Sint Maarten in an arriving vessel report in a Boston Colonial newspaper and in an 1817 Dutch history, from Barbados in a tropical disease medical text's extensive footnote, from la Martinique in an *éphémérides* written in French, transcribed and printed in 1850 and a single copy of which has survived the 1900 explosion of Mont Pelée, a report in Spanish from Santiago de Cuba, and in Portuguese from Lisbon archival records relevant to the South Atlantic where the tsunami struck Brazil at 4°S with a small number of deaths noted. Bermuda can also be added to the list via a Charles-Town, South Carolina rice merchant's secondary

account in a letter to a fellow merchant. Reported arrivals in Saba, St. Lucia, Dominica and la Guadeloupe cannot yet be verified. No reports for Nova Scotia or eastern United States have yet been found even though a numerical model strongly suggests that the "Lisbon" Tsunami would have had an amplitude of 5.5 m at the eastern edge of the U.S. continental shelf.

The assessment has confirmed that the reported tsunami from the November 18, 1755 "Cape Ann" Earthquake at 0412 LT (0856 UTC) can be removed from the record. John Winthrop IInd in his published "Lecture on Earthquakes" is mistakenly referring to the "Lisbon" Tsunami of November 1st as it arrived in Saint-Martin/Sint Maarten of the eastern Caribbean.

If the farfield parameters of the "Lisbon" Tsunami can be determined, then these data may allow one to assist in the assessment of the location, orientation, amplitude, length and area of the ocean floor rupture which occurred on the morning of November 1, 1755 off Portugal -- parameters that as yet are not well understood or agreed upon.