

# Tsunami caused long-term ecosystem change in the Caribbean

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A detailed analysis of sediments from the island of Bonaire in the Caribbean presents convincing evidence for an extraordinary wave impact dating back some 3,300 years, even though no historical records of tsunamis exist for this island. Of particular interest are the consequences this large wave impact had on the island's ecosystem. The sediments studied by the scientists suggested that this tsunami entirely changed the coastal ecosystem and sedimentation patterns in the area. The work by Dr. Max Engel and colleagues, from the University of Köln in Germany, is published online in Springer's journal, *Naturwissenschaften – The Science of Nature*.

The [Caribbean region](#) is highly vulnerable to coastal hazards, including tropical cyclones, earthquakes, volcanoes, and tsunamis. Even though the island of Bonaire has not experienced a [tsunami](#) during the past 500 years, which is the period of historical documentation, overwash deposits from a coastal lagoon provide evidence for at least one such event in prehistory.

Engel and colleagues investigated [sediment cores](#) from Washington-Slagbaai National Park. They looked specifically at grain size distribution, carbonate content, organic matter, magnetic susceptibility and fauna. Their analyses showed that the sediments had criteria typically linked with tsunami deposits, consistent with a tsunami with a maximum age of 3,300 years.

The authors conclude: "This single catastrophic event is of long-term

ecological significance. Formation of a barrier of coral rubble was triggered by the tsunami separating a former inland bay from the [open sea](#) and turning it into a highly saline lagoon which persists until today. Further studies of the geology of tsunamis, using well-dated deposits, are required over the entire Caribbean to reconstruct reliable patterns of magnitude, frequency and spatial occurrence of tsunami events and their environmental impact."

**More information:** Engel M et al (2012). A prehistoric tsunami induced long-lasting ecosystem changes on a semi-arid tropical island - the case of Boka Bartol (Bonaire, Leeward Antilles). Naturwissenschaften – The Science of Nature; [DOI 10.1007/s00114-012-0993-2](#)

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