



Coral-based climate reconstruction of the southern Caribbean during Holocene time-windows

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Hurricane and tsunami deposits on Bonaire (Netherlands Antilles) provide fossil and sub-modern corals that can be used to reconstruct interannual to multidecadal climate variability of the local area. The island of Bonaire is located in the southern Caribbean Sea, 100 km off Venezuela and close to the Cariaco Basin. Instrumental observations of the last 50 to 100 years indicate that interactions of the tropical Pacific and Atlantic oceans play a crucial role in controlling interannual to multidecadal climate variability through the Caribbean region. Caribbean rainfall changes on these timescales are linked to the northward migration of the Intertropical Convergence Zone (ITCZ) during boreal summer as well as to the frequency and intensity of tropical storms and hurricanes. These phenomena are influenced by natural modes of ocean/atmosphere variability such as the El Niño-Southern Oscillation (ENSO), the Atlantic Multidecadal Oscillation (AMO), the Tropical Atlantic Variability (TAV) and the North Atlantic Oscillation (NAO). Sub-seasonal reconstructions of changes in both hydrologic balance and temperature at the sea surface will be generated from oxygen isotope and Sr/Ca variations in the aragonitic skeletons of massive annually-banded corals (*Diploria* sp.). Preliminary radiocarbon dating of some of the cores drilled from about 30 colonies indicates that they represent time-windows during the last 4400 years (cal. yr BP).

This study is part of the INTERDYNAMIK project CaribClim that aims at identifying the forcing mechanisms of seasonality and interannual to centennial climate variability in the Caribbean region during the Holocene, by analysing fossil corals and sta-

lagmites, combined with climate model simulations. This approach will quantify the natural range of climate variability on these timescales, and will contribute to more robust predictions of the future Caribbean climate.