Geophysical Research Abstracts, Vol. 9, 03309, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-03309

Caribbean brain coral tracks Atlantic Multidecadal Oscillation and past hurricane intensity

S. Hetzinger (1), M. Pfeiffer (1), W.-Chr. Dullo (1), N. Keenlyside (1), M. Latif (1), J. Zinke (2)

(1) Leibniz Institut für Meereswissenschaften, IFM-GEOMAR, Germany, (2) Vrije Universiteit Amsterdam, FALW, Dept. Paleoclimatology and Geomorphology, Dept. Petrology, Amsterdam, The Netherlands, (shetzinger@ifm-geomar.de / Phone: +49 431 6002846 / Fax: +49 431 6002941)

The 1995-2005 period represents the most active Atlantic hurricane decade on record. The cause of this unprecedented activity is the subject of much controversy. The crux of the recent debate is the limited length of the reliable instrumental record that exacerbates the attribution of long-term changes in hurricane activity to either multidecadal SST cycles or global warming. Here, we present the first marine coral-based proxy record (δ^{18}O, 1918-2004) that clearly captures multi-decadal variations in North Atlantic SST (the so-called Atlantic Multidecadal Oscillation, AMO) and correlates with hurricane intensity.

Our coral is sensitive to SST and salinity variations. The coral proxy record, obtained from a brain coral situated in the Atlantic hurricane domain, is a good proxy for hurricane activity. As multi-decadal SST variations in this region are closely related to the AMO, the coral is a good proxy for the AMO as well. Additionally, the coral's sensitivity to both SST and precipitation enhances the captured climate signal. Hence, this study raises new possibilities to extend the limited observational record in the tropical Atlantic, and to gain new insights into the mechanisms underlying the AMO and long term hurricane variations.