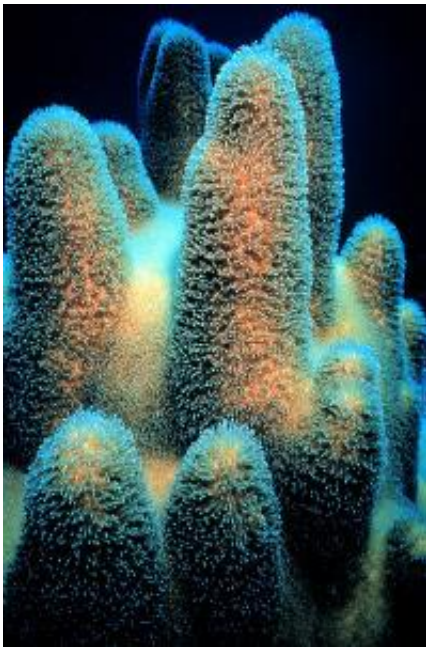


# Catastrophic climatic events leave corals facing a decade-long fight for recovery

May 31 2013

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Pillar coral, *Dendrogyra cylindricus*. Image: NOAA

Marine conservationists from Plymouth University, and the Universidad Federal da Bahia in Brazil, have spent more than 17 years analysing the diversity and density of coral colonies off the coast of South America.

That coincided with the catastrophic El Niño event of 1997-98, creating an opportunity for the first detailed assessment of the long-term impact a major environmental incident of this nature can have on coral assemblages.

Professor Martin Attrill, Director of Plymouth University's Marine Institute, said: "[Coral reefs](#) are perhaps the most diverse marine ecosystem on Earth, potentially holding 25% of the known [marine species](#). Yet they are under intense threat from a range of local human activities and, in particular, climate change. Any impact on the corals is going to have major knock on effects on the organisms that live on coral reefs, such as the fish, and if [climatic events](#) become more frequent, as is suggested, it is likely corals will never be able to fully recover."

The 1997-98 El Niño was the most extensive global event of its kind in history, with record global high [seawater](#) temperatures in an 18-month period before and subsequently.

It prompted flooding in some parts of the world and droughts in others, but also caused severe coral bleaching and mortality in parts of Central America, the Indian Ocean, Arabian Gulf, the [tropical Pacific](#) and Brazil.

For this study, the research team used their own observations of eight species of scleractinian corals, and data from the Brazilian Meteorological Office, to create a full picture of environmental conditions and species behaviour that resulted.

It showed a significant rise in air and seawater temperatures in 1998, with increased mortality across all species and, in one case, it disappearing completely from the reefs for more than seven years.

The density of the coral in the area also fell after 1998, but then increased continuously until 2007, with recent measurements showing it is now mostly back to pre-1998 levels.

Professor Attrill added: "El Niño events give us an indication of how changing climate affects ecosystems as major changes in the weather

patterns within the Pacific impact the whole world. If the reefs can recover quickly, it is probable they can adapt and survive the likely changes in water temperature ahead of us. However, we found it took 13 years for the coral reef system in Brazil to recover, suggesting they may be very vulnerable to regular climate-related impacts. This has major consequences for how we consider [climate change](#) impacts on coral reefs."

The study was conducted by Professor Attrill and Dr Francisco Kelmo, from Bahia's Instituto de Biologia, and their findings are published today in the *PLOS ONE* scientific journal.

Provided by University of Plymouth

Citation: Catastrophic climatic events leave corals facing a decade-long fight for recovery (2013, May 31) retrieved 24 May 2024 from <https://phys.org/news/2013-05-catastrophic-climatic-events-corals-decade-long.html>

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