CARIBBEAN SARDINE COLLAPSE LINKED TO CLIMATE CHANGE

The collapse of sardine fisheries in the southern Caribbean Sea during the past decade may have been driven by global climate change, according to a study.

Researchers from the United States and Venezuela linked ecological measurements in the southern Caribbean Sea with global climate changeindicators. These indices were revealed to correlate to changes in regional wind and seawater circulation patterns, which may have dire socioeconomic consequences for Caribbean countries such as the collapse of valuable sardine fisheries.

The sardine, *Sardinella aurita*, feeds on plankton but since 2005, plankton levels in the Caribbean have reduced significantly, which, coupled with overfishing, may have contributed to the collapse of these fisheries which plummeted by as much as 87 per cent, the study says.

The research team said that the decreasing levels of plankton production are the result of a reduction in ocean upwelling, whereby nutrients crucial for plankton production are brought from the sea's floor to the surface. The drop in upwelling

has, in turn, been driven by changes in wind patterns and wind strength, themselves driven by global climate change.

The conclusions are based on monthly measurements taken over a period of 14 years in the Cariaco Basin, off the northern coast of Venezuela. They were published in *Proceedings of the National Academies of Science*(*PNAS*), last month (15 October).

Researchers measured parameters such as temperature, salinity and the concentration of carbon dioxide in the seawater, said Yrene Astor, a researcher from La Salle Foundation of Natural Sciences, and a co-author of the study.

The measurements in Cariaco are performed regularly, at monthly intervals, to see the trend over time for each parameter, Astor told*SciDev.Net*. This revealed that water temperature has increased by 1.1 degree Celsius [since 1996] a very slight increase, slow but steady.

The temperature increase contributes to the stratification of the sea, further limiting the upwelling and thus reducing plankton production.

But researchers are still unsure about whether the changes are driven by man-made climate change or natural climate variation, and, according to Astor, the project

would need further measurements to determine whether or not the ecological shifts are man-made.

Funding for the Cariaco project has been guaranteed from the National Endowment for Science, Technology and Innovation of Venezuela up to 2014, Astor said.

Research in the Cariaco Basin is the basis for understanding the low production of fisheries off the Venezuelan coast, Csar Lodeiros, a researcher at the Oceanographic Institute of Venezuela, told *SciDev.Net*.

The Venezuelan sardine catch has dropped from about 200 thousand tonnes in 2004 in to less than 40 thousand tonnes today, Lodeiros explained. The same goes for other areas, because the abundance of plankton, generated by coastal upwelling, is the basis for the high production of fish and marine organisms on the Venezuelan coast, particularly in the East and West.

Lodeiros added that the Cariaco Basin investigation is also important because it reveals long-term trends in climate change impacts.

Source: http://www.scidev.net/global/biodiversity/news/caribbean-sardine-collapse-linked-to-climate-change.html