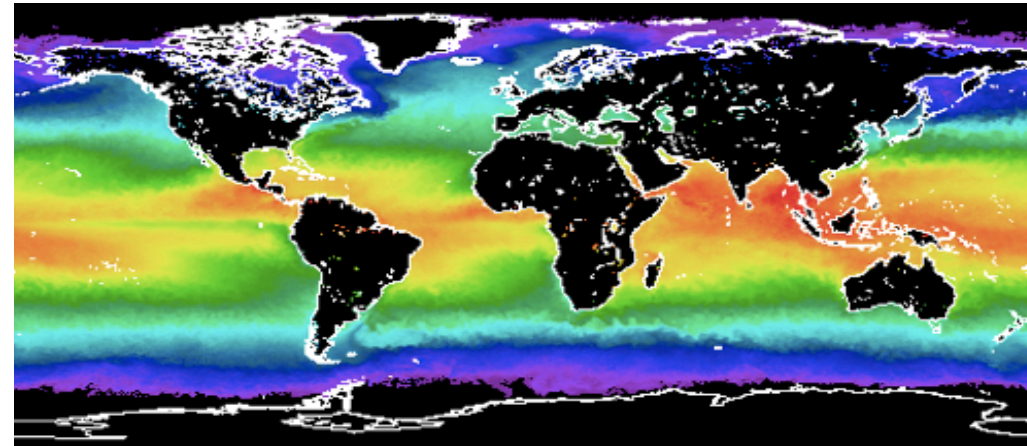


Vulnerability of Panamanian Fisheries to Weather and Water Impacts

Nancy Lee Pospelov, Earth System Science

Overview



May 2010, MODIS Aqua shows elevated Panamanian Water temperatures

Weather and water impacts such as El Nino, the Panama Bight upwelling, and sea surface temperatures have an affect on fisheries in the different bays surrounding Panama. MODIS Aqua satellite images, NOAA's degree heat weeks and buoys of the Smithsonian Tropical Research Institute were utilized for data gathering. In addition, attention was given to reproduction studies as a preventative measure.

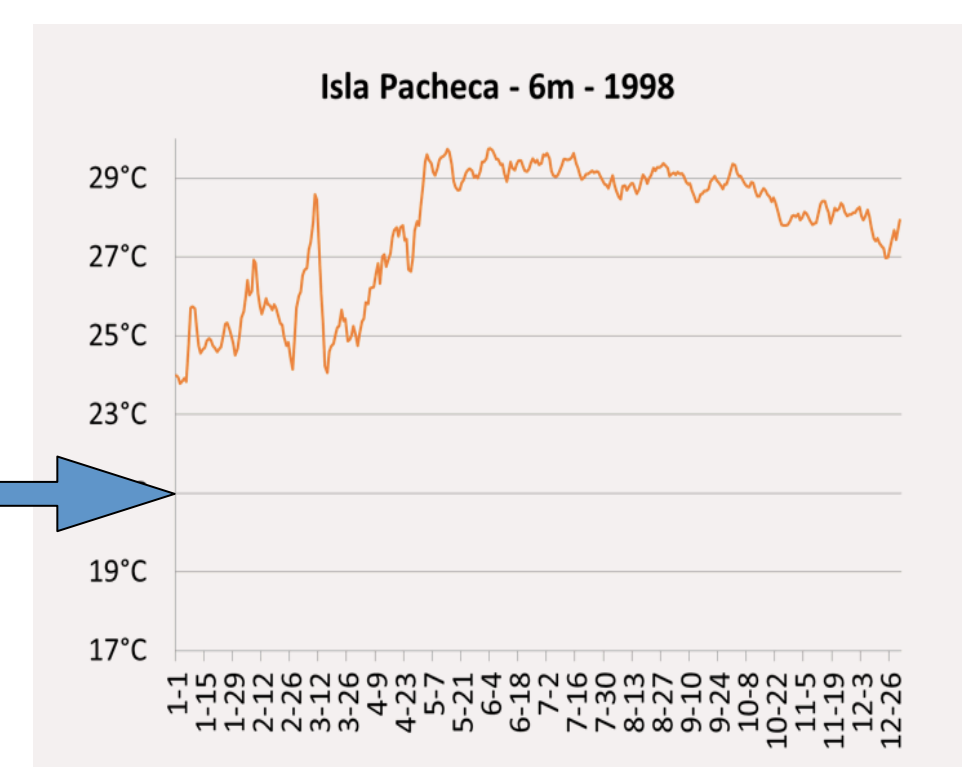
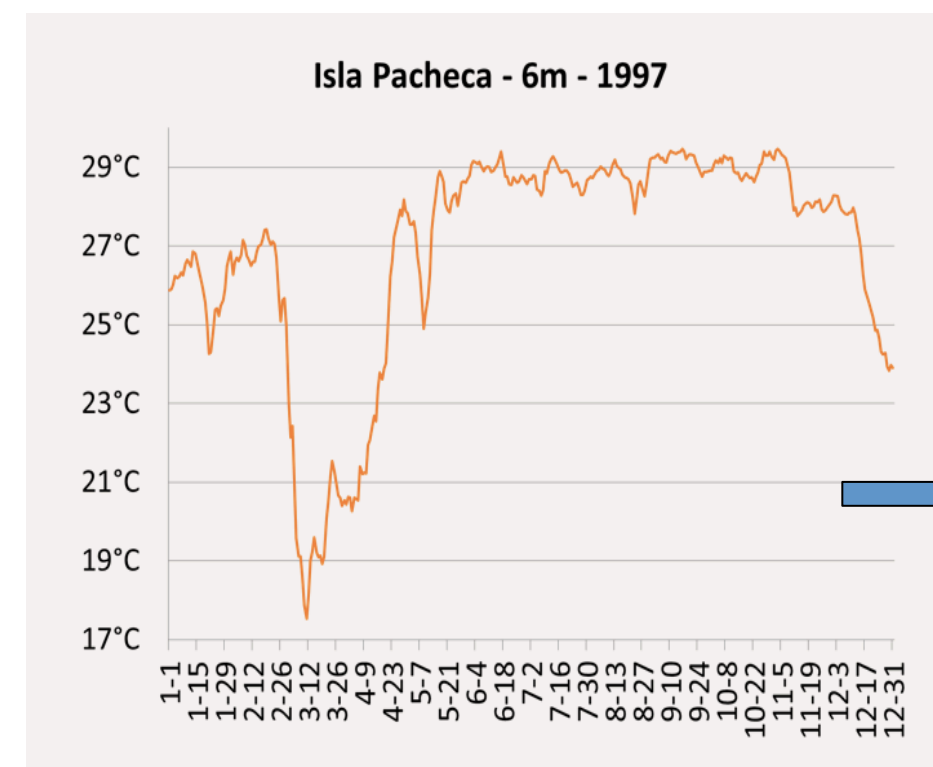
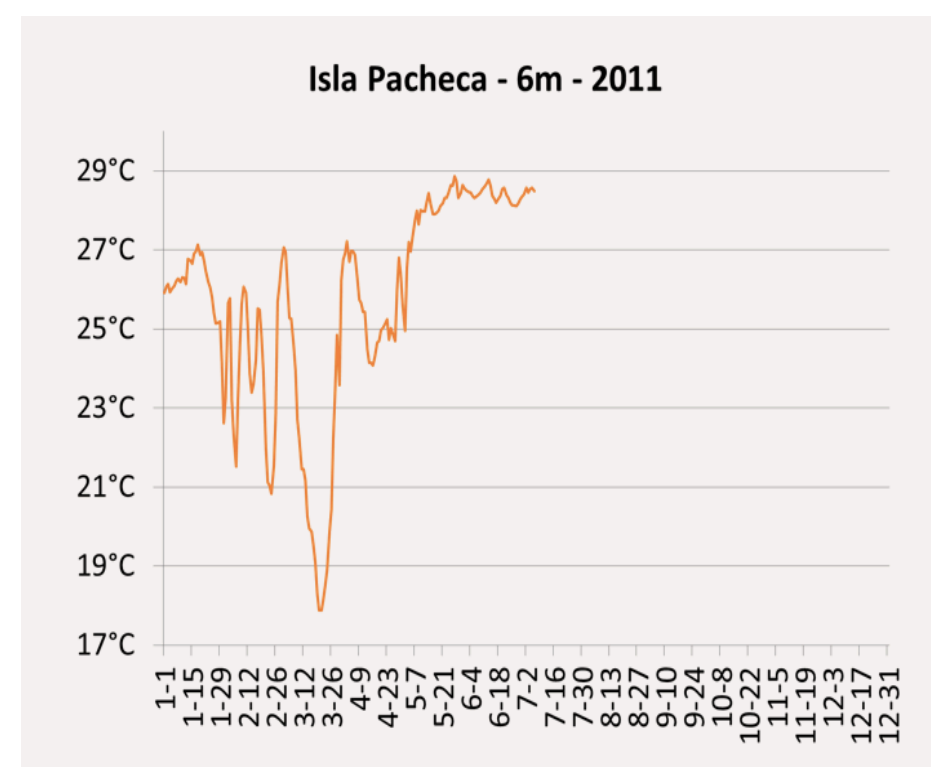
Impact

As one of the main exports of the country, the fisheries of Panama are important to the economy. They are a source of protein for many people as well as a source of employment.

The fishermen that were interviewed for this project stated that anchovies, one of the most important catches in Panama is currently collapsing and there are no laws in place for its protection or recovery.

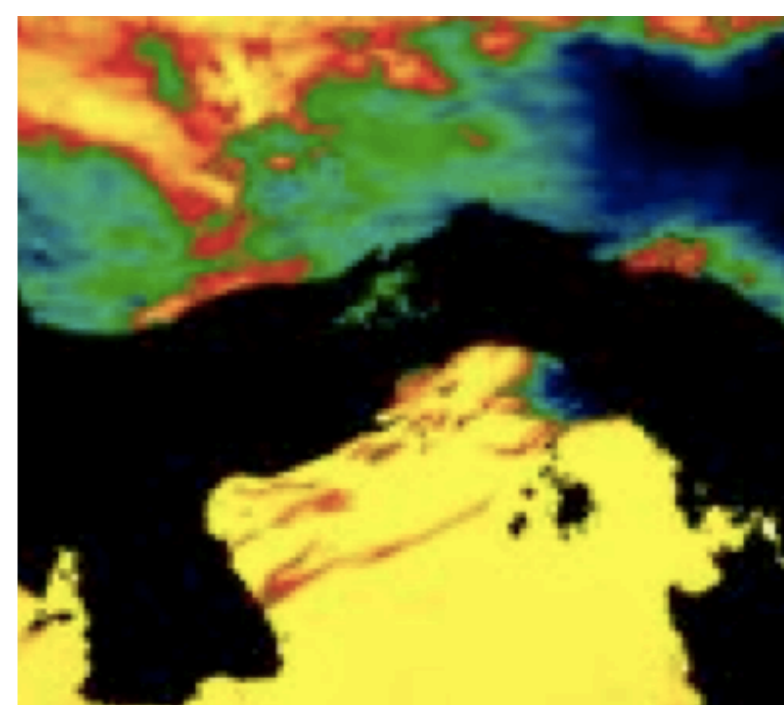
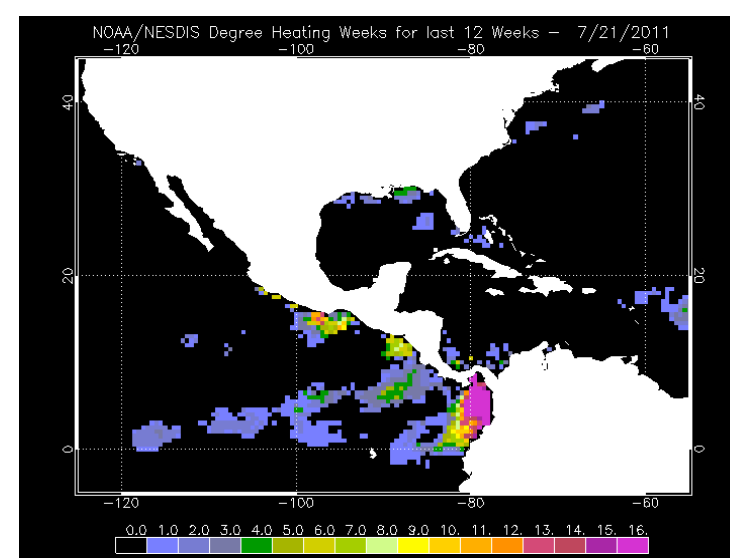
Acknowledgements

Dr. Tom Sever, Robert Griffin, Dr. Osvaldo Jordan, Joel Perez
AMP Autoridad Maritima de Panama
ARAP Autoridad de los Recursos Acuaticos de Panama
Conservation International
Contraloria General de la Republica de Panama



Key Findings

The years of 1997 and 2011 are examples of when the Panama Bight upwelling is present in the area and water temperatures were reduced as would be expected. In 1998, during an El Nino, the water temperatures did not drop and the normal pattern of lower temperatures was disrupted.



The waters in the Panama Bay often take longer to cool than other areas affected by El Nino. Also, annual patterns of reduced summer water temperatures have ceased in recent years.

Different Bays,
Different Temperatures
MODIS Aqua with
Square Root
enhancement



Explanation

Time is of the essence for establishing laws, for fisheries management in Panama. In order to protect fisheries from collapse, more in depth reproduction studies are needed; close monitoring of environmental factors which affect the fisheries are needed; as well as an accurate assessment of the number of fish being harvested.