Abstract

The Cariaco Basin is one of the largest anoxic basins in the world's ocean located on the continental shelf of Venezuela in the South-eastern Caribbean Sea. It has a unique oceanography as it experiences strong seasonal upwelling driven by intense Trade Winds during December-April every year; during September and October, high precipitation increases riverine inputs. The upwelling leads to high primary productivity (~450 g of carbon/m² y⁻¹) which supports local fisheries and leads to large fluxes of organic matter to the bottom of the Basin. The magnitude of this flux and the reduced exchange of water with the Caribbean Sea, due to its unique geography, lead to anoxic conditions in the basin from ~250 m to the bottom.

These characteristics make the Cariaco Basin an important location for studies of ocean chemistry, physical processes, biodiversity and climate change. Variations of marine and atmospheric conditions are stored in the basin’s sediments, which contain one of the most important and detailed records of past climate change.

The Cariaco Basin offers the international community a unique environment in which to study past and present changes, and predict future conditions. Since 1995, the CARIACO Ocean Time-Series Project has been collecting monthly time-series measurements of hydrographic, meteorological, geological, chemical and biological data critical to quantify and interpret the changing ocean and climate conditions. This includes assessments on important resources such as fisheries and cycling of carbon between the atmosphere and the ocean. Important shifts, such as ocean acidification and warmer ocean temperatures have already been observed at this location.

Venezuela leads this international programme in collaboration with a broad range of international partners. We discuss the programme, highlighting 20 years of research findings, and emphasize the importance and value of biogeochemical ocean time series programs around the world to understand and better predict global changes.
Dr Baumar Marín is a biologist graduated from the University of Oriente (Venezuela), and Master in Fisheries Biology and Ph.D. at Laval University (Canada). He joined in 1987 the Marine Biology Department of the Oceanographic Institute of Venezuela (IOV) and is currently Associate Professor at the same institution. He is member of the Study Group on Shellfish and Plankton Ecological Studies (CINS-UDO), and is developing projects and services in marine ecology. He currently coordinates the Ichthyoplankton Laboratory of IOV and his speciality is research in Ecology and Taxonomy of fish larvae. He currently coordinates the Ichthyoplankton Laboratory of IOV and his specialty is research in Ecology and Taxonomy of fish larvae.

Dr Máyida El Souki, Biologist and Doctor in Ecological Sciences, participated in several research projects that focused on ecology, biodiversity, preservation, and statistical analysis of environmental and time series data related to the climate change. She is the author of seven publications. She participated in numerous meetings and conferences at national and international level.

Ms El Souki is the National Director of Research at La Salle Foundation for Natural Sciences, a 56 year-old scientific-educational institution at the service of the communities. Nowadays, the Foundation has offices in at least 12 communities of Venezuela.

Her main activities are planning of strategies, establishment of guidelines, and formulation of policies in the five research stations of the Foundation whose main lines of research involve: anthropology, ecology, biodiversity, preservation, marine and coastal studies, and agriculture, among others. The Foundation is one of the main supports of the Cariaco project with INTECMAR (Instituto de Tecnología y Ciencias Marinas) and the Oceanographic Institute of Venezuela (IOV).