



European Station for Time-series in the Ocean, Canary Islands

The “European Station for Time-series in the Ocean, Canary Islands” (or “Estación Europea de Series Temporales del Oceano, Islas Canarias”, ESTOC) is located 100 km north (upstream) of Gran Canaria in the eastern boundary flow of the subtropical North Atlantic gyre (at 29°10’N and 15°30’W). The station is situated in the northern Canary Basin about 460 km west of the Moroccan coast and is surrounded by deep water.

ESTOC field sampling is aiming to investigate the long-term changes of stratification and circulation on seasonal and interannual time scales, and to investigate biogeochemical cycles in this region to better understand controls on flux of carbon and associated bio-elements on seasonal and interannual time scales. The ESTOC was established to complement existing open-ocean stations in the eastern boundary regime of the North Atlantic. The time-series data of physical, chemical and biological parameters and rate measurements are used both as a contribution to WOCE and JGOFS.

The main purpose of the station is to build a long-term oceanographic data base to be able to discern seasonal from long-term variability of hydrographic and biogeochemical parameters in this environmentally sensitive region of the Eastern Boundary Current of the North-Atlantic gyre. Together with the Bermuda station located at about the same latitude in the Sargasso Sea and the Hawaii time-series station, ESTOC constitutes a third site in the tropical /subtropical ocean to accomplish such monitoring. The region is also especially interesting because of episodic dust depositions from the Sahara that likely influence productivity and particle formation.

Since February 1994 at the Instituto Canario de Ciencias Marinas on Telde, Gran Canaria and the Instituto Español de Oceanografía on Tenerife, and in collaboration with laboratories at the University in Las Palmas, the parameters determined so far are salinity and temperature, nutrients, oxygen, chlorophyll, oxygen and carbon stable isotopes, alkalinity and pH, trace metals and zooplankton and ichthyoplankton distribution. In addition, a sediment trap mooring has been operated and repeatedly exchanged at the station by the group at Fachbereich Geowissenschaften, Universität Bremen and a current meter and thermistor mooring is operated at ESTOC by the Institut für Meereskunde, Kiel.

In addition to the monthly measurements at the station and the mooring work, cruises with German research vessels covering different seasons are carried out in the region to conduct

station work, exchange the moorings and check the representativity of the station for the larger region. During these process-oriented cruises, productivity experiments are carried out and surface tethered particle traps are deployed to quantify the short term variability of carbon flow below the mixed layer. These rate measurements are planned to be implemented in the monthly sampling program in the near future. Also, investigators from other research institutions take advantage of these cruises to conduct more extended work based on the reference data provided upon request from the ESTOC station.

ESTOC was also used as a reference station for the European project 'CANIGO' (Canary Islands Azores Gibraltar Observations, 1996-1999), of the European Union - Marine Science and Technology (MAST) III programme.

The programme is organized by the international 'ESTOC Scientific Committee' with five members:

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Since ESTOC is a multi-national and multi-partner project, several websites are related to its activities and datasets:

www.ifm.uni-kiel.de/allgemein/research/projects/estoc.html

www.allgeo.uni-bremen.de/forschung/projects/estoc/

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www.gobiernodecanarias.org/iccm/materiales/paginaweb/proyectoestoc.htm

www.pangaea.de/Projects/ESTOC/