

The ESTOC Time Series Station Started Operation

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The WOCE Science Plan included the requirement of establishing time series stations using research vessels. The main goals were to identify secular changes in deep water masses, to provide information on the temporal evolution of temperature and salinity as a complement to hydrographic stations, and to provide comparison data for the check of accuracies of observations made from commercial ships or satellites. Similarly, the JGOFS Science Plan calls for the establishment of time series stations. Two such stations exist now, one at Bermuda and one at Hawaii, both in the interior of the respective oceans.

The Canary Islands region appeared to be an appropriate location for the establishment of a time series station in an eastern boundary regime. The archipelago in the North Atlantic is surrounded by deep water, is situated in the eastern boundary flow, and several marine research institutions exist on the islands which are able to contribute to the operations. With a long record of observations in the deep Canary Basin, the Marine Physics group at the Institut für Meereskunde (IfM) in Kiel, Germany, joined forces with the Instituto Espanol de Oceanografia (IEO), the Instituto Canario de Ciencias Marinas (ICCM) and the JGOFS group at the University of Bremen (UB) in establishing the 'European Station for Time-series in the Ocean Canary Islands' or 'Estacion Europea de Series Temporales Oceanicas de Canarias' (ESTOC).

The station position is located about 60 nautical miles to the north (upstream) of the islands of Gran Canaria and Tenerife. The goal is to occupy the station on one day each month with a research vessel. These measurements are complemented by moored observations. The backbone of the programme is the research vessel 'Taliarte' of the ICCM (length 40 m, 350 tons). From time to time other Spanish and German vessels will be available instead. Programme components are funded by the Spanish and German governments.

The 'Taliarte' will soon be equipped with another winch, A-frame and CTD/Rosette to allow WOCE-type CTD measurements. It was decided that it will be valuable to start the time series with Nansen bottle/reversing thermometer observations as early as possible in order to gain operational experience and a first view of temporal variability at the ESTOC station. Since January 1994 the station was occupied regularly each month, usually by the Spanish 'Taliarte' and once by the German 'Poseidon'. The following parameters are being determined at this

time: temperature, salinity, chlorophyll, nutrients, oxygen, some ichtioplankton and the distribution of zooplankton.

A mooring with sediment traps was repeatedly deployed at the ESTOC position by the UB group since 1991. A current meter mooring was added by the IfM group in October 1994. In addition XBT lines exist between Gran Canaria and the station and also between Gran Canaria and the African coast. It is expected that the set of observations will be extended during the first few years of operation. Survey cruises will be carried out in the region at least once per year to check the representativeness of the ESTOC data. The first of these surveys were performed by 'Poseidon' in February 1992 and October 1994.

The station work is overseen by an International ESTOC Committee with its members (the authors of this note) representing the four participating institutions, and with two members also bringing in their experience in WOCE and JGOFS, respectively.

It is hoped that the existence of the ESTOC station near the Canary Islands will lead to other programmes with participants making use of the time series data as a reference.

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