WFP Ref. No.: AR16
Last Updated: October 10, 1994

Cruise Report
MORENA I

A. Cruise narrative

A.1. Highlights

a. WOCE designation: AR16
b. Expedition designation: 29CSMORENA/1
Spain: MORENA I
c. Chief scientist: Jose M. Cabanas, IEO
d. Ship: R/V Cornide de Saavedra
e. Ports of call: Vigo, Spain
f. Cruise dates: May 10 - June 1 1993

A.2. Cruise Summary Information

a. Geographic boundaries: The cruise occupied stations in the AR16 area from 40 to 43 N and 9 to 11 W.

The cruise track and station locations are available from the WHPO.

b. Stations occupied: A total of 92 CTD/rosette stations were occupied in the AR16 area.

Water sampling on the cruise included measurements of salinity both by CTD and water bottle samples, CTD and bottle sample oxygen determination, CTD temperature, pH, alkalinity, total carbon (TOC), and nutrients (silicate, nitrate, nitrite, phosphate).

c. Floats and drifters deployed: No floats nor drifters were deployed on this cruise.

d. Moorings deployed or recovered: Four moorings were deployed in 42 16'N 10 10'W(a), 42 25'N 10 29'W(b), 41 00'N 9 50'W(c) and 41 00'N 9 35'W(d) with 4-5 current meters at 2000, 1200, 800, 300, 100 m deep.

After 1 year (a) was recovered, we lost (b) and half of RCM (c) and (d).

A.3. List of Principal Investigators

The principal investigators for all parameters measured on the cruise are:

Name	Affiliation	Responsibility
CTD/Rosette	IEO/GODFUL	G. Diaz
Salinity	GODFUL	P. Oliveira
Oxygen	IIM	G. Roson
pH, Alkalinity	IIM	G. Roson
Nutrients	IIM	F. Perez
Total Carbon (TOC)	IIM	A. Alvarez
Phytoplankton	IEO	S. Fraga
Primary production	IIM	F. Figueiras

IIM: Instituto de Investigaciones Marinas, Vigo, Spain
IEO: Instituto Español de Oceanografía, Vigo, Spain
GODFUL: Dept. de Física. Fac. Ciencias. Univ. de Lisboa, Portugal

A.4. Scientific Programme and Methods

The ship departed from Vigo to Station 1, 43° 0.69'N,9° 2945'W, on May 11

1993. Two CTDs were used. From station 1 to station 37 a Seabird 911 CTD and SBE rosette with 24 bottles (1.7 liters) and then from Station 38 to Station 92 an NBIS Mark III CTD equipped with dissolved oxygen sensor and GO rosette sampler (24 bottles, 10 liters) was used.
The Seabird CTD is uncalibrated (3 years old). The NBIS Mark III was recently calibrated (Dec. 92) at the WHOI calibration facility.

Several samples for salinity are taken in all stations and measured in an Autosal salinometer using standard seawater (batch P122, 21 Jan. 93) as reference. oxygen at all depths sampled was taken and analyzed (Winkler method, potentiometric end point).

Samples for pH, alkalinity, TOC, nutrients was taken as usual, and analyzed using standard methods (Grashoff, 1984).

A.5. Major Problems and Goals Not Achieved

Several problems were encountered with the hydrographic winch but did not affect the results of CTD casts.

No problems was presented with the equipment CTD/rosette, which worked well all through the cruise. The chemical analysis (salinity, oxygen, nutrients) were done on board without problems.

A.6. Other Incidents of Note

None noted.