


ANTARES 1 - March 29 - May 18, 1993

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OBJECTIVES | **CRUISE & METHODS** |
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OBJECTIVES

 The objectives of the ANTARES program are to describe and model the biogeochemical processes that control the dynamics of nutrients (C, N, S, P) and silica in the Southern Ocean. The modelling component should rely on sound oceanographic data in order to lead to a quantitative understanding of these cycles. Some cardinal information is still missing in the Southern Ocean. We have little knowledge of boundary conditions, e.g., the transport of water masses across the northern boundary of the Southern Ocean, and more importantly, the benthic environment. This marine system is the link between present processes and the permanent sediments, that constitute the record of the past.

The initial objectives of the ANTARES 1 cruise, were to investigate the seasonal ice zone (SIZ), deploy arrays of sediment traps and focus our attention on benthic processes. Unfortunately, the weather conditions precluded the work at the southern latitudes and our efforts were primarily directed to the frontal zone. The specific goals reached during this expedition were:

- A detailed description of the transport of water masses across the polar front zone (PFZ), which are corroborated by chemical and microbial tracer studies.
- A description of the sediment water interface bridging biological, chemical, and microbial studies
- New insights into the diagenesis of biogenic silica.

THE CRUISE AND METHODS

 The ANTARES 1 cruise embarked 30 scientists of six different nationalities. The cruise departed from, and returned, to St Denis (Ile de la Reunion). It lasted 51 days, from March 29 until May 18, 1993, on board the N.O. Marion Dufresne. During this oceanographic expedition,

we put in at Port aux Francais (Kerguelen Islands) and Crozet.

Hydrographic and nutrient data were acquired using rosette hydrocasts of twelve (12) Niskin bottles. Conductivity-temperature-pressure and oxygen (CTD-Oxy) profiles were obtained using a Neil Brown Mark III B probe. Water column samples were also collected using a large volume bottle (200 L) made of stainless steel for the analysis of organic tracers. Surface sediments were sampled using either an USNEL box core, a watertight box core from the Netherlands Institute of Oceanography (NIOZ), and a multiple corer, 12 clear PVC cores of 6 cm diameter (Barnett et al., 1984). At selected locations, piston cores were collected to complete our description of past oceanic conditions. A total of 20 stations were occupied where 142 hydrological and coring sampling operations were performed. On board, the data generated were formatted using the WOCE (1991) recommendations.

(Please, refer to cruise reports in CDROM)

RESULTS



They have been published, in part, in a special issue of Deep Sea Research II. Topical Studies in OCEANOGRAPHY.

IMPORTANT NOTES



1. Problem with nutrients
2. Oxygen : please refer to "hydro-gamberony"