

CHAPTER 1 INTRODUCTION

1.1 GENERAL OBJECTIVES

Following an offer from NORAD extended through FAO and UNDP, an agreement was reached in Windhoek in January 1990 between the UNDP Resident Representative and Namibian authorities for the execution of a programme of surveys of the fish resources of the Namibian shelf with the R/V "DR. FRIDTJOF NANSEN". The Ministry of Fisheries and Marine Resources, Windhoek has since agreed with NORAD on an extension of this programme.

The purpose of the programme was defined as follows:

The main objectives are descriptions of the distribution, composition and abundance of the most important resources of fish. The small pelagic fish (horse mackerel, pilchard and anchovy) will be investigated by the acoustic integration method combined with sampling with mid-water and bottom trawls. A swept area trawl survey programme will be used for the demersal stocks. All catches will be sampled to species by weight and numbers, and biological sampling will be made of the commercially important stocks.

Environmental studies will include recording of surface temperature on a continuous basis and occupation of hydrographic stations along fixed tracks.

Possible taxonomic problems will be studied by sampling and examination by experts in cooperation with FAO's Fisheries Department.

1.2 SPECIFIC OBJECTIVES OF SURVEY 2/92, PART I

During the first part, 20 October to 22 November, the main objective is investigations of hakes and associated species and covering the whole shelf. The acoustic system will be used to observe off-shore horse mackerel and mid-water occurrence of the hakes. The survey design for the swept area trawl programme will be based on a distribution of hauls intended to cover the depth ranges of the two hake species. Biomass estimates of Cape hake will be based on post-stratification by density areas. Observations of surface temperatures will be made on a continuous basis for a study of comparison with satellite images. During the period 23-30 November daily samples of phytoplankton will be taken from the surface waters at selected sites to ground-truth a study on plankton distribution using satellite images, a pilot study in cooperation with the Natural Resources Institute in UK and the Weather Bureau of Namibia.

1.3 PARTICIPATION

The scientific staff from Namibia were:

Helen Boyer (29 Oct - 7 Nov), Filamon Dausab (20 Oct - 7 Nov), Victor Hashoonga, Willem Nauiseb (20 Oct - 14 Nov), Bennie Ushona, Rudolf Cloete (8 Nov - 1 Dec), Richardt Charuchab (22 Nov - 1 Dec), Wolf Serrer (22 Nov - 1 Dec), Nick Poole (22 Nov - 1 Dec).

From Natural Resources Institute, England:

Richard Brown (22 Nov - 1 Dec).

The scientific staff from the Institute of Marine Research were:

Tore Strømme (from 7 Nov), Oddgeir Alvheim, Knut Korsbrekke (until 14 Nov), Valentine Anthonypillai (from 15 Nov), Martin Dahl and Tore Mørk.

1.4 NARRATIVE

Figures 1a-c show the course tracks with the positions of the fishing and hydrographic stations. After departure from Walvis Bay on 20 October, work started near Orange River on 22 October following largely the course tracks and station grids used in the previous surveys. The hydrographic section off Panther Head was worked on 24 October. A short call was made at Lüderitz on 29 October to pick up one scientist. Coverage of the shelf up to St. Francis Bay, including the hydrographic profile off Hottentot Point, was completed by 30 October with a total of 64 successful swept area hauls. Weather conditions in this southern area were not favourable, but workable.

The profile off Conception Bay was worked on 2 November and the swept area trawling programme continued northwards with lines of stations about every 20 nm, taking care to locate both the inner and the outer limits of the distribution of the hakes. During previous surveys, aggregations of jellyfish in the shallow waters south of Walvis Bay constituted frequently a problem when trawling. The problem was not serious during the last survey.

A call on Walvis Bay was made on 7-8 November for change of scientific crew. A hydrographic profile was worked off Cape Cross on 9 November. Weather and sea conditions improved in the central area, and did not limit the work.

When working on a bottom trawl sampling profile off Ambrose Bay, one of the ships auxiliary engines broke down and it was necessary to return to Walvis Bay on 14 November for repair. A full engine overhaul with shipment of new parts was necessary and the vessel could not depart Walvis Bay before 22 November. To be able to complete the hake survey it was decided to reduce Fridtjof Nansen's participation in the following pilchard survey. The first week of the pilchard survey, which was a joint survey with R/V Benguela south of Walvis Bay, was therefore done without R/V "Dr. Fridtjof Nansen".

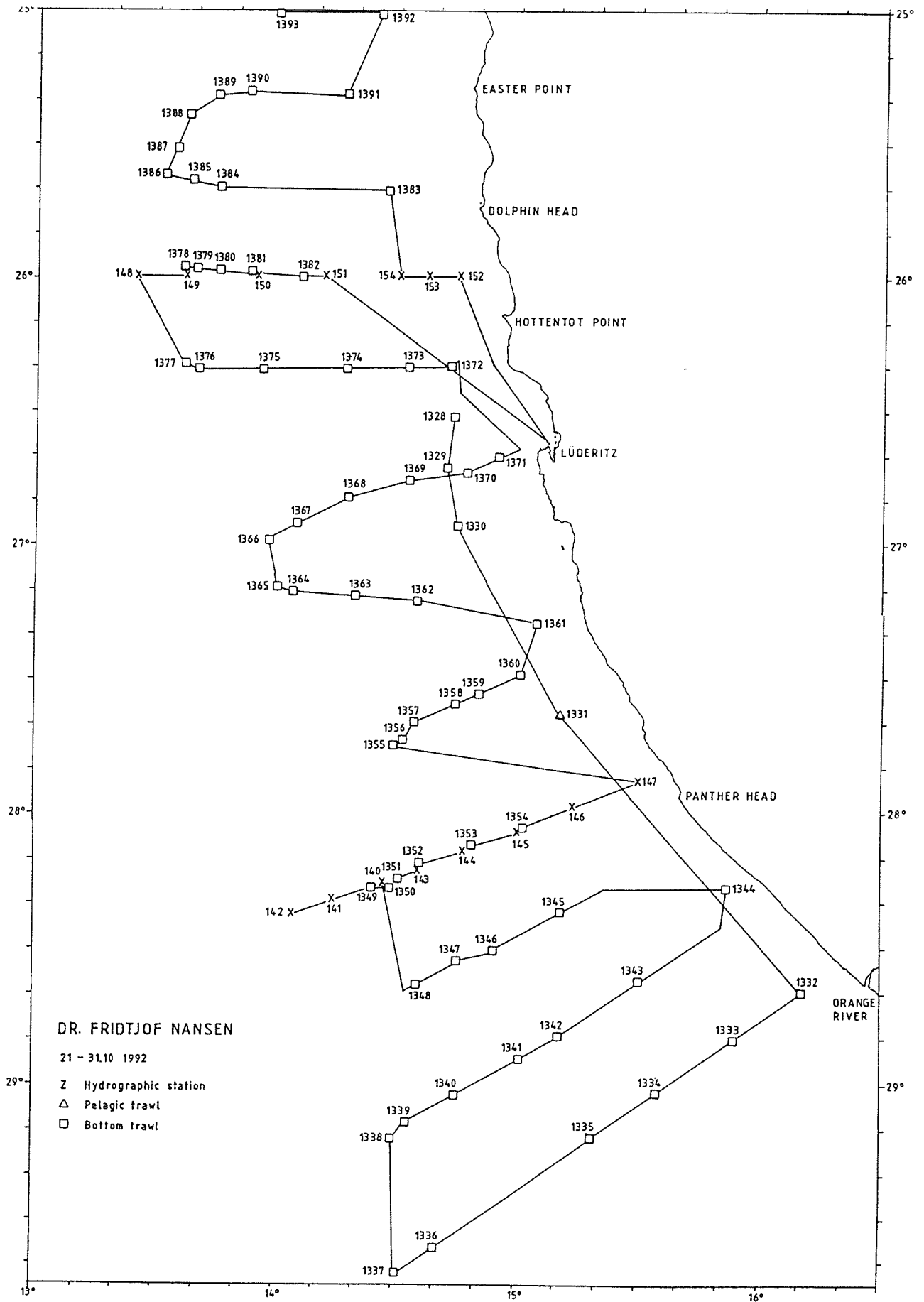


Figure 1a. Southern Region, Orange River to St. Francis Bay. Course tracks, fishing stations and hydrographic profiles.

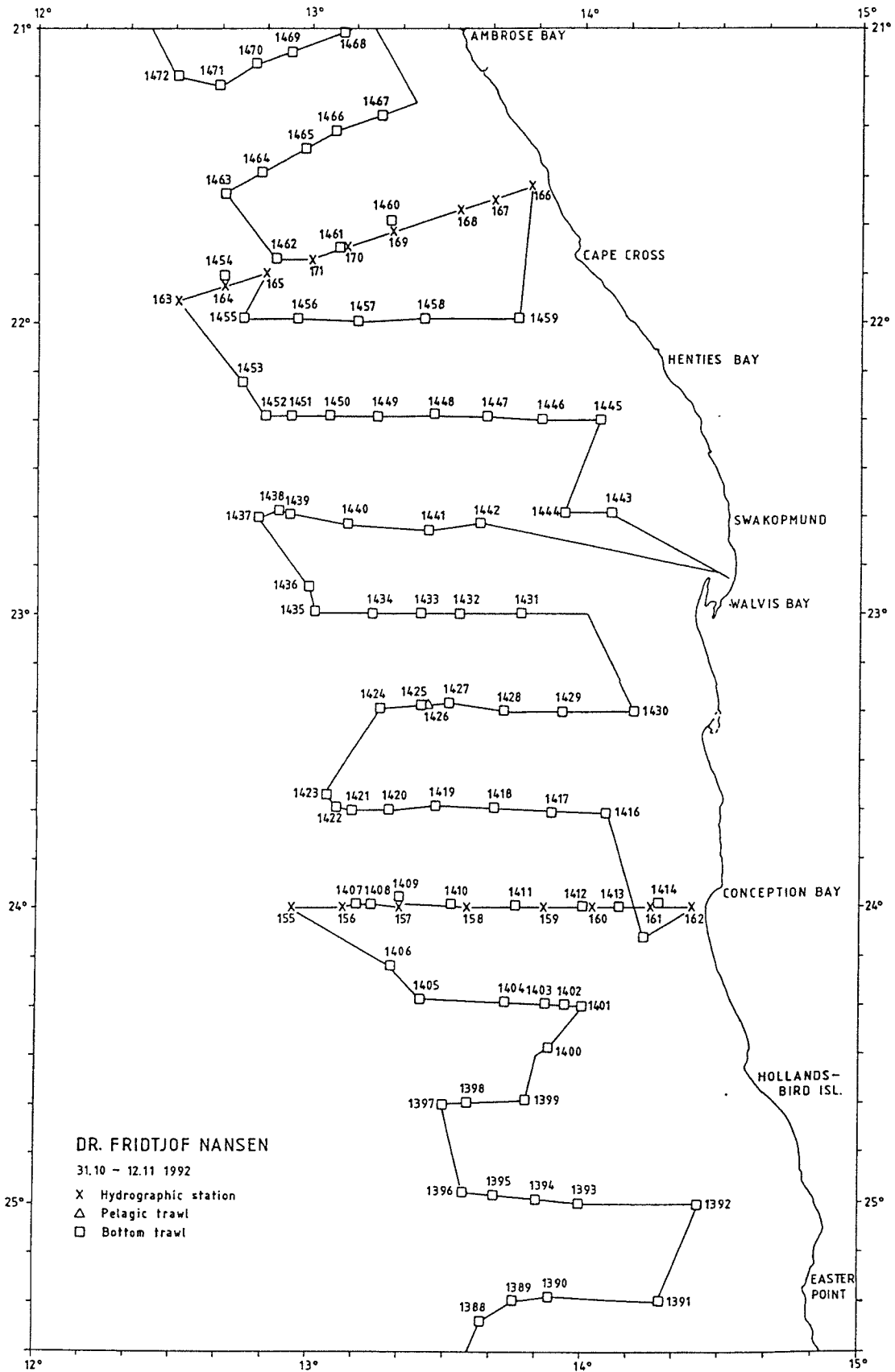


Figure 1b. Central Region, St. Francis Bay to Ambrose Bay. Course tracks, fishing stations and hydrographic profiles.

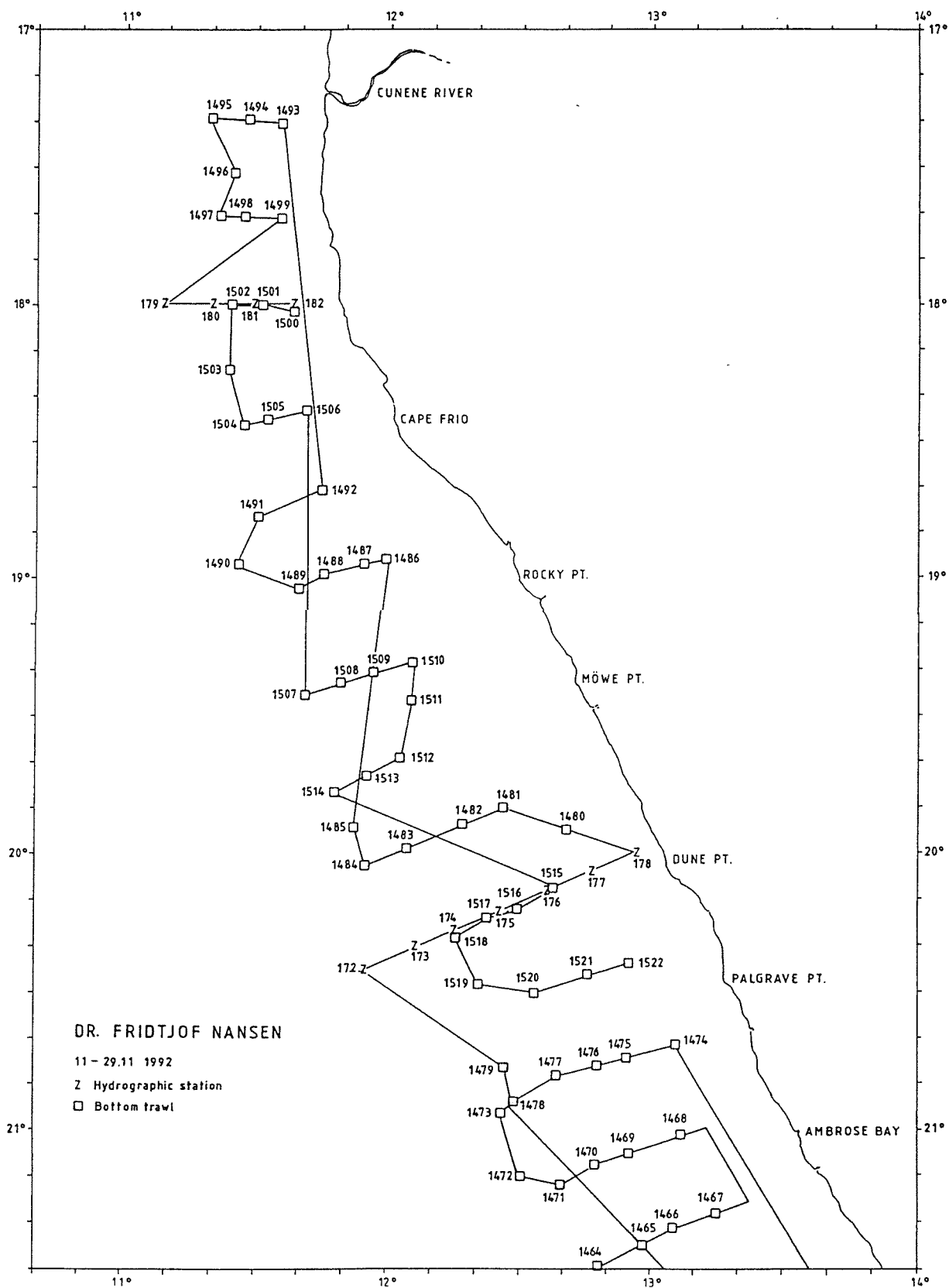


Figure 1c. Northern Region, Ambrose Bay to Cunene River. Course tracks, fishing stations and hydrographic profiles.

The work on the hake was retained off Ambrose Bay on the 23 November. In order to optimize daytime trawling and nighttime steaming, the survey net was modified leaving gaps during the northward coverage, to be completed when returning southwards. The vessel reached Walvis Bay on 30 November. The hydrographic profile off Dune Point was completed during the night of 24 November. The turning point off Cunene river was reached on 26 November. The standard hydrographic section at 18°S was completed during the night of 27 November. The weather conditions during the northern coverage were favourable.

2 HYDROGRAPHY

Figures 2a-c show the sea temperature at 4 m of depth as observed with the ships thermograph and Figures 3a-c show the distribution of temperature and salinity in the five hydrographic transects worked.

The chart of surface temperature distribution and the profiles show evidence of intensive upwelling all along the coast up to Cape Frio. Conditions are similar to those found November 1991 and in May 1992. The intensity of the upwelling is near correlated to the force of the southerly winds.

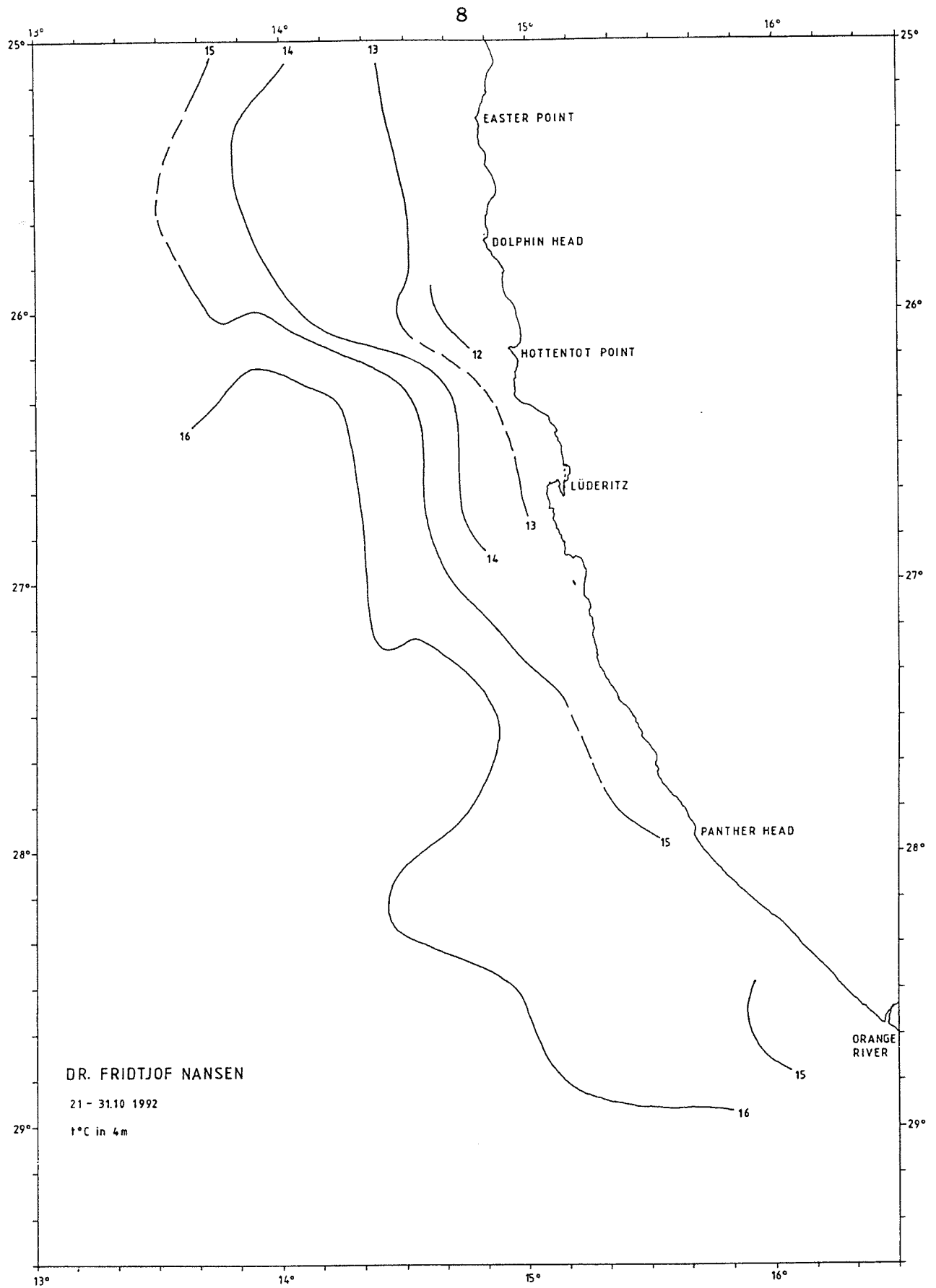


Figure 2a. Southern region. Distribution of sea temperature at 4 m of depth based on observations of the ships thermograph.

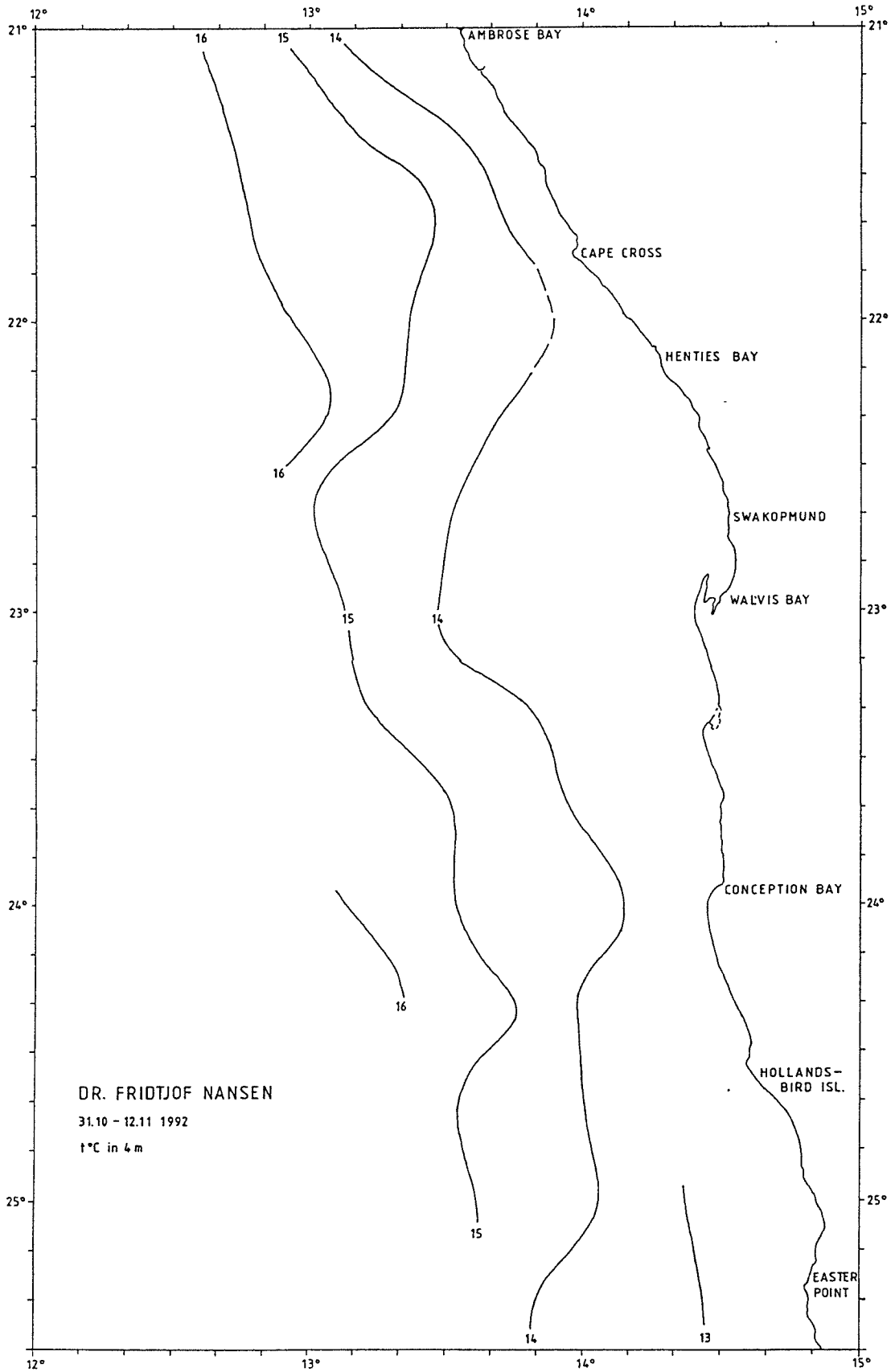


Figure 2b. Central region. Distribution of sea temperature at 4 m of depth based on observations of the ships thermograph.

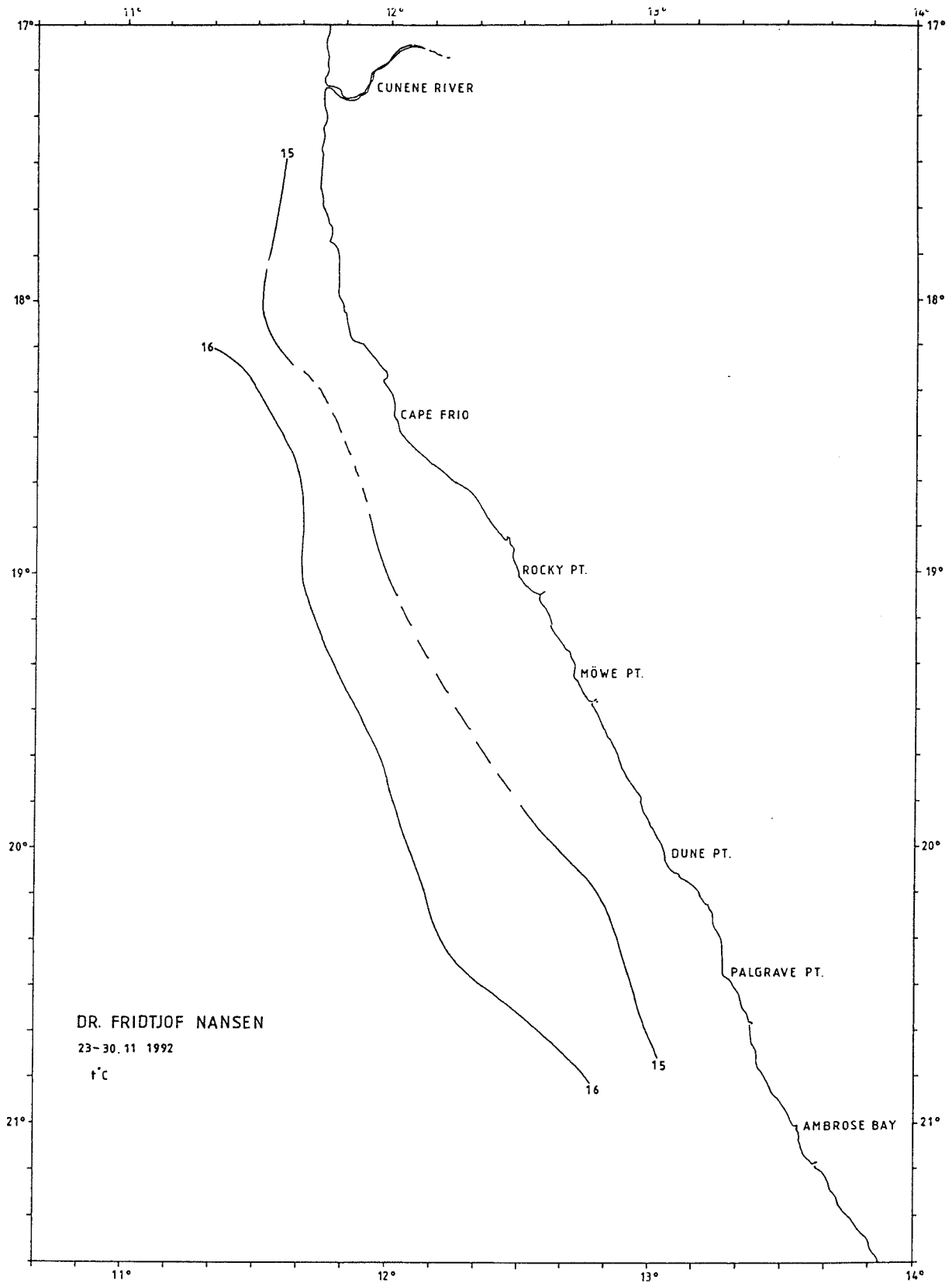


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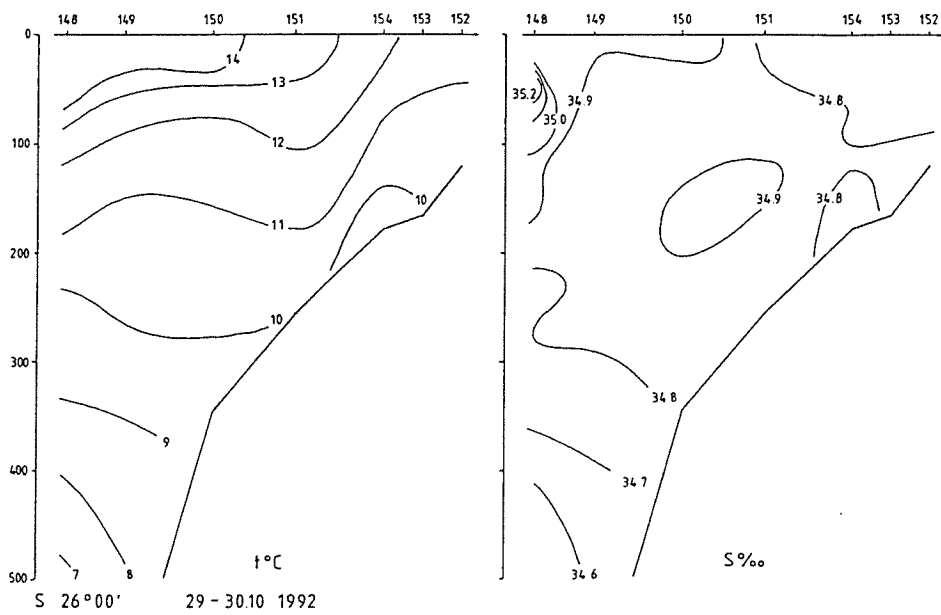
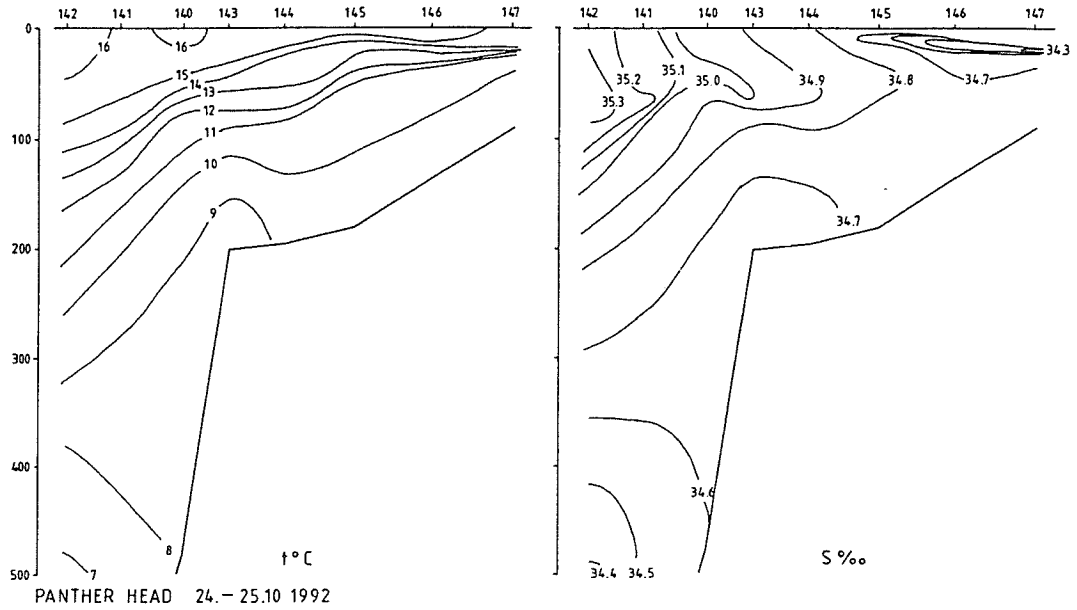


Figure 3a. Southern Region. Temperature and salinity in the standard profiles worked.

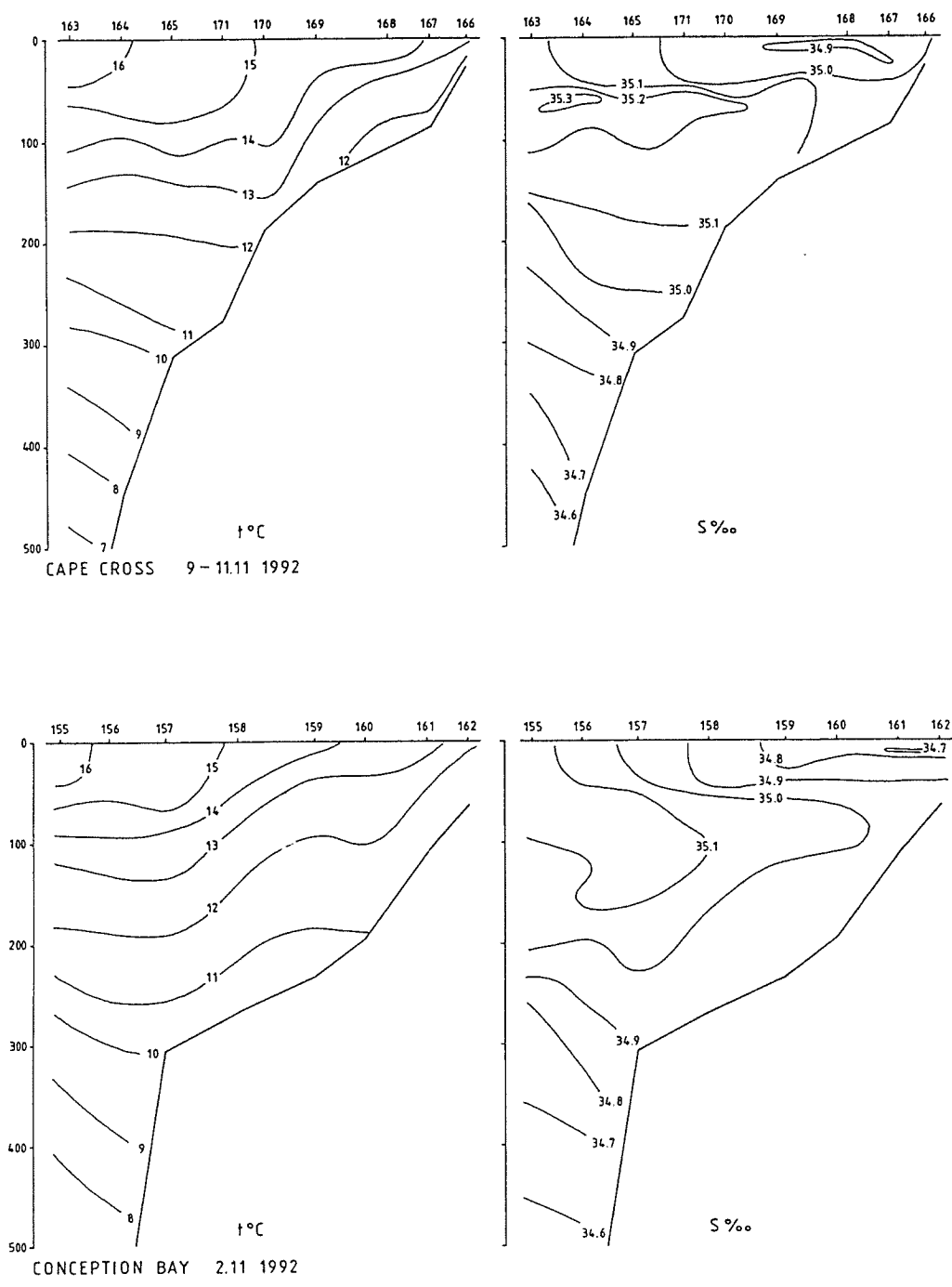


Figure 3b. Central Region. Temperature and salinity in the standard profiles worked.

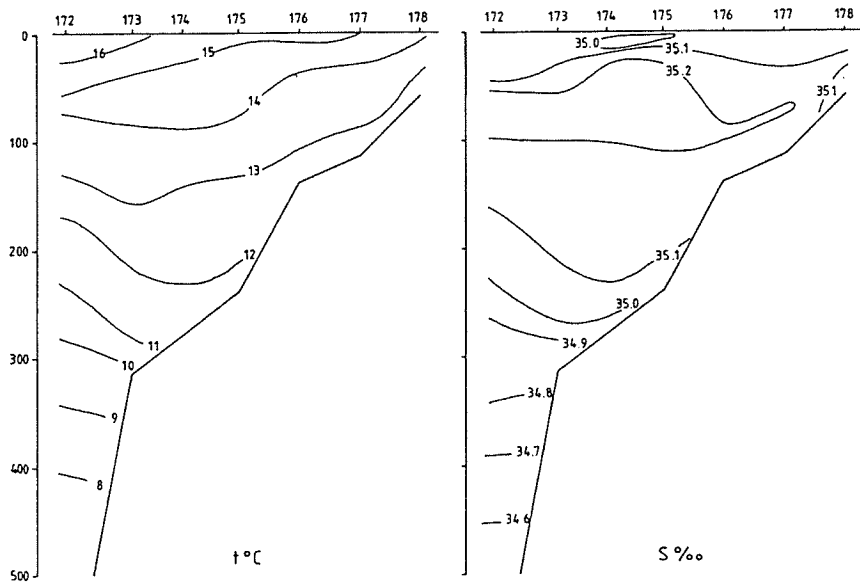
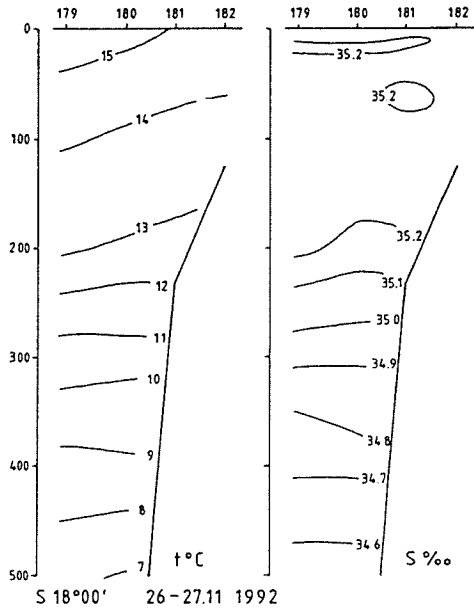


Figure 3c. Northern Region. Temperature and salinity in the standard profiles worked.