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# Mean Temperature Conditions off Fyllas Bank/West Greenland

by

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## Abstract

Based on temperature observations from 1963 onwards the mean autumn temperature profile and the temperature anomalies for the years 1983 and 1984 are considered. The 1984 data reveal a warming of the water column with regard to the previous year. The amount of temperature increase varies with depth.

## Introduction

During the early eigthies Greenland has experienced a series of anomalous cold winters which led to extreme cooling of the water masses west off Greenland (Stein and Buch, 1985a). As part of her oceanographic cruise to East- and West Greenland (fig. 1) RV "Walther Herwig" completed station 4 of the Fyllas Bank section (c.f. Stein and Buch, 1985b; Stein, 1985) on October 28, 1984. For the present paper the hydrographic data collected by RV "Adolf Jensen" on December 5, 1984 were taken since the greatermost part of the data base originates from measurements done during November, early December. From this 21 years time series mean temperatures and temperature anomalies are calculated.

## Results and Discussion

Fig. 2 displays the mean temperature profile at station 4 of the Fyllas Bank section (right) and the temperature anomaly at the standard depths (left). Dashed lines indicate the anomaly of 1983 autumn conditions.
Within the upper 20 m of the profile a slight increase in temperature can be observed, anomalies are up to 0.3° C higher than in the previous year. Much more expressed the warming is observed at mid depths 75m to 200m (1.8C at 150m depth). With regard to the layer of maximum influence of the Irminger component of the West Greenland Current (300 m to 500 m) the thermal situation has not changed significantly. At 600 m and 800 m depth, however, the warming exceeds the r.m.s. deviation of the mean profile. The extremely cold conditions in the surface layer (up to 2.7°C below normal) observed in December 1984 made the waters off West

Greenland predisposed to sea ice formation, so it seemed probable that West Greenland should experience the third heavy ice winter in succesion. But during November-December 1984 the meteorological conditions over Greenland changed and the winter 1984-85 became one of the mildest in 10 years. During the winter the temperatures of the surface layer still was well below 0° C but great formations of sea ice was avoided.

References

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Stein, M., and E. Buch, 1985a: 1983 - An unusual year off West Greenland ? Arch Fischwiss. 36 (1/2): 81-95.

Stein, M., and E. Buch, 1985b: Short Time Variability off Fyllas Bank/West Greenland NAFO SCR Doc. 85/VI( (in press)

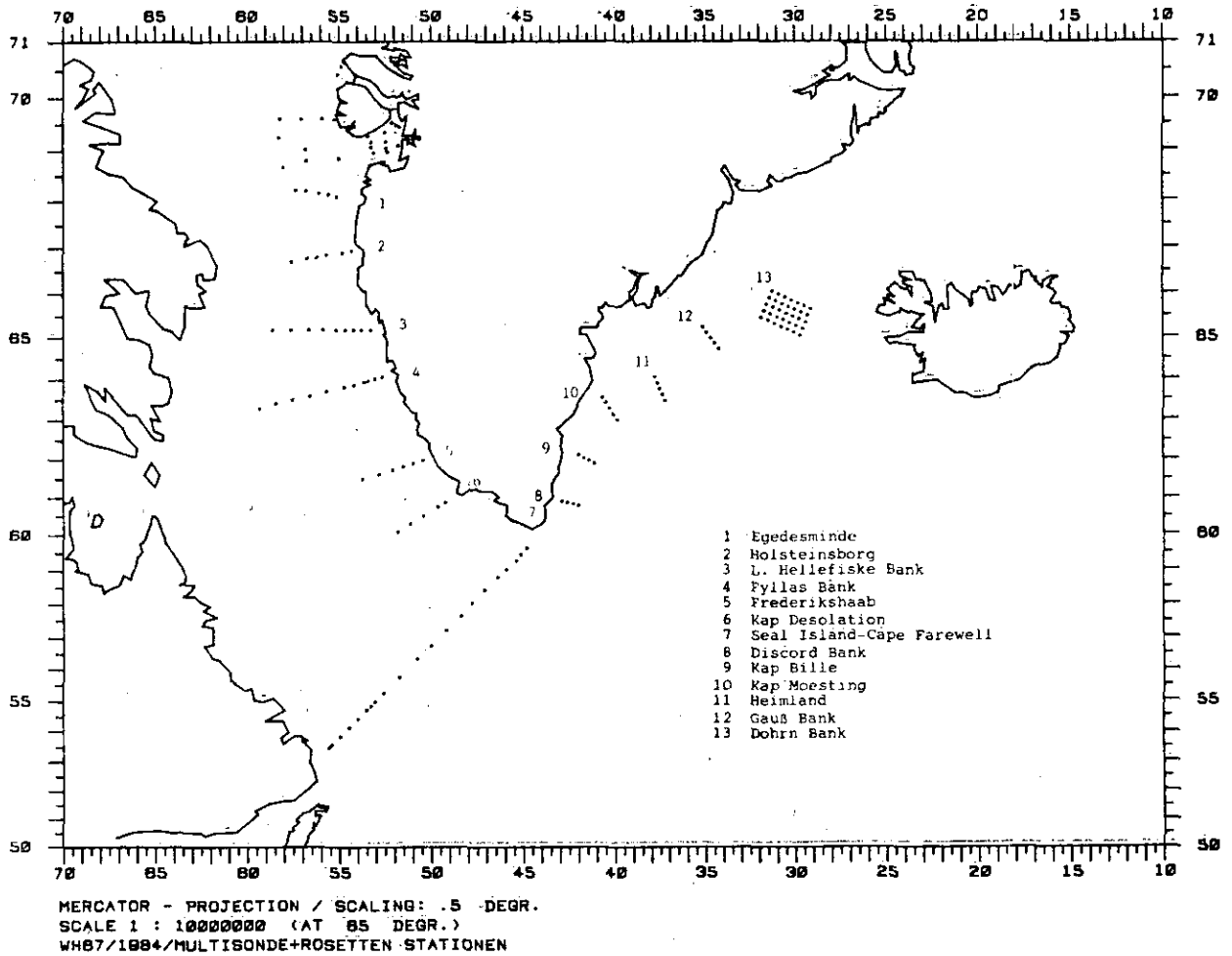


Fig. 1 Location of oceanographic stations during cruise 67 of RV "Walther Herwig" (9 October - 22 November 1985)

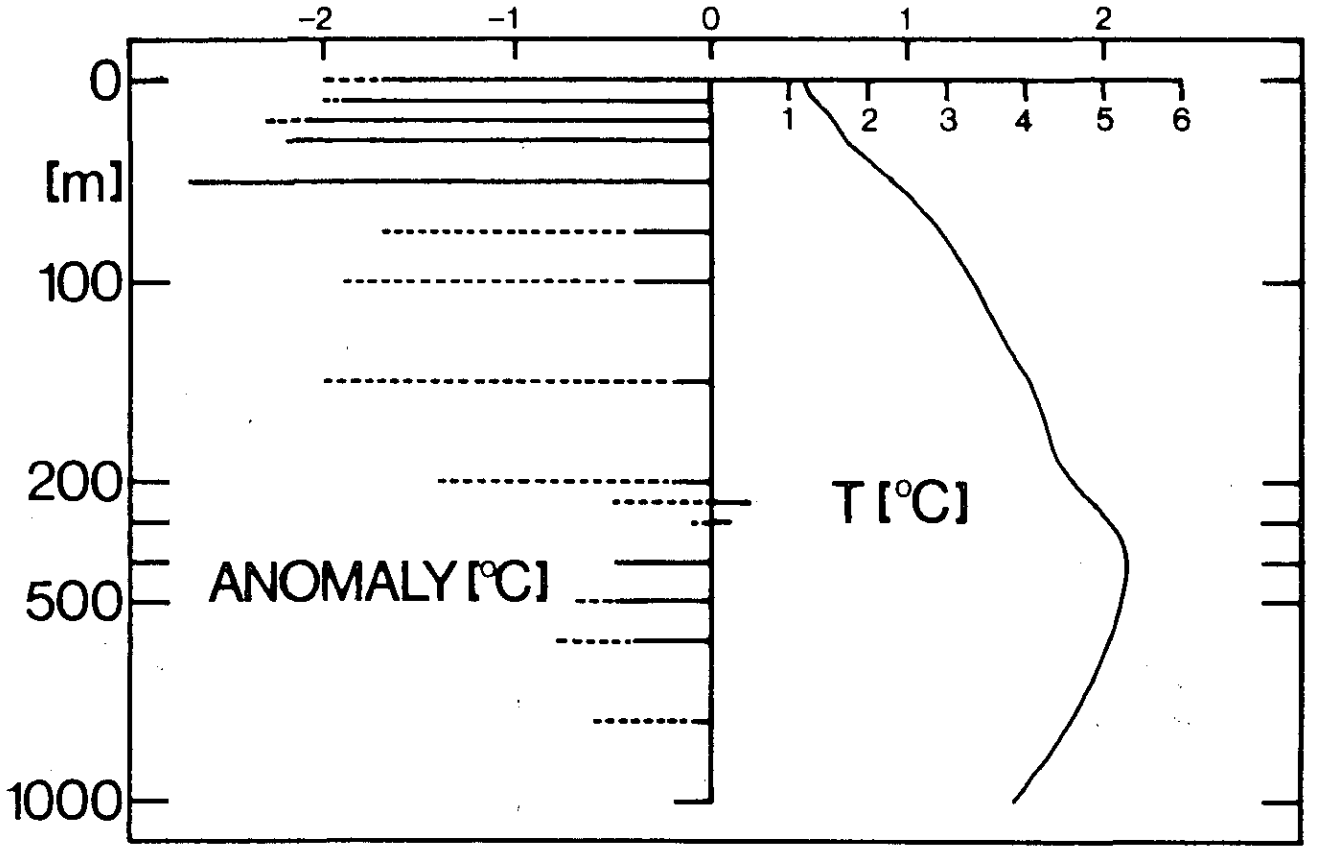


Fig. 2 Mean temperature profile (right) and temperature anomaly (left) at station 4 of the Fyllas Bank Section (standard depth data)