

## ICES CM 2001/W:16

### **B. Helland-Hansen and F. Nansen's investigations in the Norwegian and Barents Seas 100 year ago – are their results still valid?**

Roald Sætre and Harald Loeng

One hundred years ago Fridtjof Nansen started the investigations in the Norwegian Sea, which later resulted in “The Norwegian Sea” by Helland-Hansen and Nansen in 1909. “Michael Sars”, the world’s first research vessel built for oceanographic research and named after Nansen’s father-in-law, carried out most of the observations during the five years 1900–1904. “The Norwegian Sea” is, as we see it, the first major ocean climate study of the North Atlantic. It considers the relation between oceanic heat fluxes and atmospheric climate as well as biological consequences of the ocean climate variability. We review some of their findings and compare with today’s knowledge, with special emphasis on transport processes.

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## ICES CM 2001/W:17

### **Volume transports in the upper layer west of Cape São Vicente, SW Portugal**

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Off the Iberian eastern boundary distinct winter and summer oceanographic regimes are governed by meridional displacements of the Azores High. Poleward flow at all depths features the winter situation whereas in summer a cool jet flowing towards the equator develops a geostrophic response of the upper ocean to northerly upwelling favourable winds, while deeper waters still flow poleward. Part of the flow turns eastward around Cape São Vicente to satisfy the potential vorticity conservation. The boundary discontinuity forces part of the equatorward jet to feed a major filament that stretches from the Cape. Filaments are relevant features in the exchange between the cold, upwelled, and nutrient-rich coastal and offshore waters. Estimations of 2D open ocean-equatorward jet exchanges are essential for the understanding of biologically related physical processes over the shelf area. Additionally, vertical forcing associated with frontal convergence and the meandering of a quasi-geostrophically adjusted upwelling jet embedded in an eddy field play a key role upon the patchy distribution of pelagic biota. In the present work the summer transport of the equatorward cold jet is estimated from historical hydrographic and *in situ* ADCP data. A 3D description of volume transports in the upper layer off southwestern Iberia is attempted.

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## ICES CM 2001/W:18

### **On the mechanisms behind salinity anomaly signals of the northern North Atlantic**

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Hydrographic time series from the Subarctic Gyre of the North Atlantic throughout the 20th century show oscillations in temperature and salinity at more or less regular intervals. Particularly, Great Salinity Anomalies have been described during the 1970s (Dickson *et al.*, 1988) and during the 1980s (Belkin *et al.*, 1998). The present paper analyses other hydrographic anomalies of less amplitudes than the Great Salinity Anomalies, and discusses possible generic mechanisms behind the fluctuations. Furthermore the ecological implications for the anomalies are discussed.

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