

SJØMIL - the section Torungen-Hirtshals across the Skagerrak between Norway and Denmark

The Torungen-Hirtshals transect consists of 12 stations between Norway and Denmark across the Skagerrak. The distance between the stations is mainly about 10km (5 nautical miles). About 70% of all water entering the North Sea also circulate into the Skagerrak. These waters return along the Norwegian coast along with Baltic waters flowing through the Kattegat and a significant supply of fresh water comes from local rivers within the Skagerrak coast. The transect is a remarkable indicator of changes in climate, nutrients and planktons associated with the composition of water masses in the Skagerrak.

The transect covers the surface currents The Norwegian Coastal Current (off Torungen) and the West-Jutland Current (off Hirtshals) in addition to Atlantic deep-water inflow at the southern slope of the Norwegian Trench and the more stagnating bottom waters. The Norwegian Trench is more than 700m deep with a sill at about 350m off Rogaland, and the bottom water is exchanged irregularly with 1-5 year intervals.

The transect is visited every month, and time series exist from the early 1950's.

The indices of temperature and salinity for the four listed water masses is calculated by averaging the values over an area within the routinely monitored hydrographical fixed section.

Water mass	Stations (n. mi. from Torungen/Norway)	Depth (m)
The Norwegian Coastal Current	1-10	0-20
The West-Jutland Current	52-57	0-20
Atlantic water	30-35	100-200
Bottom water	15-30*	500-bottom

Table 1. Stations and depths applied in calculating the indices for temperature and salinity for the different water masses in the Skagerrak. *Monitoring bottom waters is mainly from station 20 and at 600m depth.

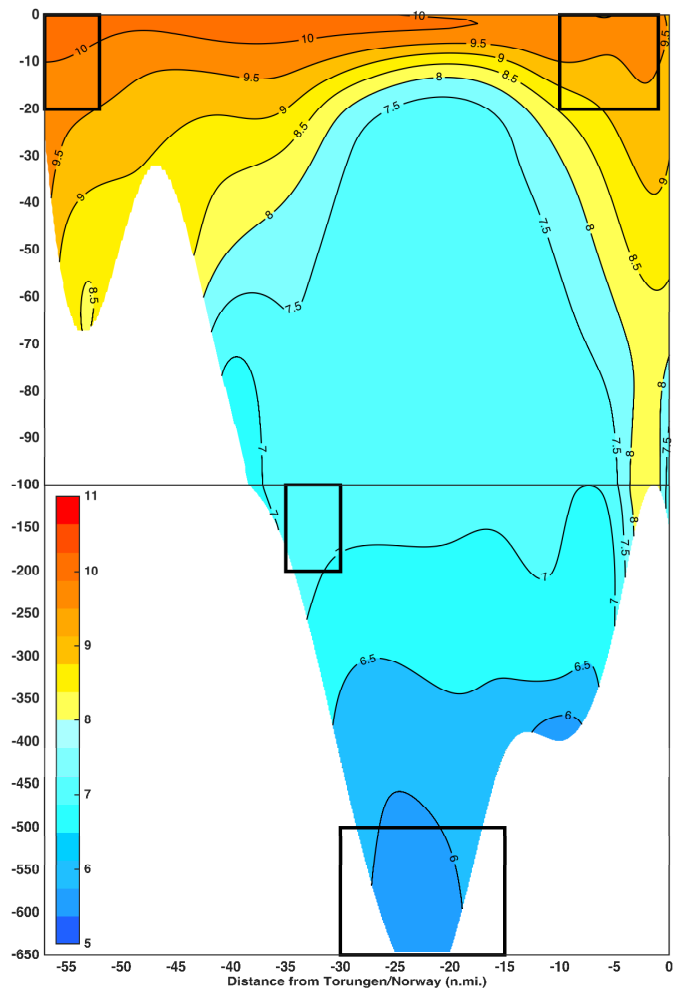


Figure 1. Mean temperature from the Torungen-Hirtshals transect across the Skagerrak based on the period 1981-2010. The horizontal axis denotes the distance from Torungen/Norway in nautical miles, and the vertical axis denotes depth (notice that the vertical axis is compressed for depths below 100m). The black rectangles denote stations and depths for calculation of indices within the water masses.

References:

Albretsen J, Aure J, Sætre R & Danielssen DS (2012) Climatic variability in the Skagerrak and coastal waters of Norway. *ICES J. Mar. Sci.*, 69: 758-763.

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