



Station M, the Eulerian Observatory of the Norwegian Sea

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Having performed daily oceanographic measurements in the deep Norwegian Sea since 1 October 1948, Ocean Weather Ship Station (OWS) M, at unchanged position (66°N , 02°E), can present the longest existing homogeneous time series from the deep ocean. Station M is operating above the eastern margin of the Norwegian Sea deep basin where the western branch of the Norwegian Atlantic current is entering the area. The location proved to be strategic both for studying the Atlantic inflow and the Norwegian Sea Deep Water. The OWS M is operated by the Ocean Weather Ship “Polarfront” and the Norwegian Met Office (met.no) has the overall responsibility. The hydrographic programme is carried out by Geophysical Institute, the University of Bergen.

With the expansion of civil aviation and growing understanding of the impact of aerological observations on weather forecasts after World War II, ICAO (The International Civil Aviation Organization) demanded a greater network of aerological stations, primarily in the North Atlantic. In 1946 a plan for a network of 13 ocean weather stations in the North Atlantic was set forth under the auspices of ICAO. The Stations were to supply meteorological services, search and rescue services, and navigational aids to aircraft. The USA, Canada and eight European countries should be responsible for operating the stations, which were referred to by letters from A to M. Norway was to operate station M (phonetic name Mike) in the Norwegian Sea, with financial backing from Sweden and Great Britain. ICAO attempted to organize an international oceanographical research programme for the weather ships, but failed due to lack of interest, shortage of money and difficulties in procuring the necessary scientific equipment. In Norway, a country which held great traditions in oceanographical research,

a small group of three scientists, led by the oceanographer Håkon Mosby, took upon themselves to implement an extensive research programme on station M. Mosby implemented a routine programme within physical oceanography, including serial observations of temperature, salinity, and (since 1953) oxygen weekly at standard depths to 2000 meters, and serial observations of temperature and salinity at standard depths down to 1000 meters 3 or 4 times a week. This programme has been running continuously since 1 October 1948 to this very day only hampered by occasionally extreme weather. The method of obtaining temperature and salinity observations (Nansen bottles with reversing thermometers) has not changed significantly either so the time series are indeed homogeneous.

In this presentation I will present scientific results using the 60 years long hydrographical time series. In the most recent years, the deep hydrographic record at OWS M has provided a fascinating glimpse of the delicacy-of-balance of deep exchanges between the Norwegian Sea and the surrounding seas. The upper 1000 m has experience a strong freshening since the arrival of the Great Salinity Anomaly in the 1970s. During the recent years the salinity and temperature of the Atlantic water entering Arctic have increased.