

EDDY FLUX MEASUREMENTS UNDER THE FIRST-YEAR SEA ICE  
IN THE GREENLAND SEA DURING THE NORTHEAST WATER  
POLYNYA (NEW) PROJECT, 1993 (ABSTRACT)

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As part of the Northeast Water Polynya (NEW) Project, measurements of turbulent eddy fluxes of momentum and heat under the sea ice were made with a three-dimensional ultrasonic current meter and a fast response temperature-conductivity meter in the Northeast Water Polynya region off Greenland during the 9th expedition of the RV POLARSTERN to the Arctic, from May 16 to August 4, 1993. Several ice camps were established on about 0.6 m-thick pack ice near the RV POLARSTERN during the expedition. The current meter and temperature-conductivity meter were deployed through a hole in the sea ice at depths of about 0.1 to 4 m below the ice-ocean interface during the sampling periods from several hours to over one day. The three-dimensional current regime and also turbulent heat and mass transfers at/near the ice-ocean interface are described. The current speed, friction velocity and turbulent oceanic heat flux from the ocean to the ice at the depth of 1 m below the ice-ocean interface reached  $18 \text{ cm s}^{-1}$ ,  $1.3 \text{ cm s}^{-1}$  and  $213 \text{ W m}^{-2}$ , respectively, at maximum over a one-day period in mid-June.

*(Received November 2, 1994)*