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Characteristics of ice drift and surface sea currents in the Western Barents Sea by the data of ice tracking buoy (May-September 2008)

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Drifting ice will influence the environmental loads of offshore structures designed for the development of Stockman hydrocarbon deposit in the Barents Sea. For the estimates of ice loads on offshore structures it is useful to have information about characteristics of sea ice drift in the Barents Sea with temporal resolution in several minutes. This time represents the duration of the interaction of ice ridges and icebergs with offshore structures. Ice drift trajectories in the Barents Sea have many corner points and loops realized with semidiurnal frequency due to the coupled influence of wind, sea currents and tides on the drifting ice. Ice drift velocities and accelerations were collected with GPS data from Iridium ice tracking buys (Oceanetic model 703). Two buoys were installed in drifting ice in Barents sea on 8th of May 2008 during the UNIS expedition by RV Lance. One of the buys was working only one day. The other buy with its GPS coordinates every twenty minutes until September 17, 2008. With the data obtained we reconstructed the trajectory of the buoy and, consequently, the trajectory of ice drift. In this work trajectories of the buoy and the expedition ship were plotted on map. The area covered by the buoy is between 75° and 77°30´ North and 18° and 31° East. On the 22d of July the buoy was gone out of ice (according to the ice maps, obtained from http://www.seaice.dk/) but was floating till 17 of September, when transmitted the last signal. Velocities and accelerations of the buoy were calculated. The wind factor was calculated using these values and wind data (obtained from http://eklima.met.no, Hopen station). We also analyzed the data about GPS positions of the ship, wind data and ADV data for sea current in ice adjacent layer collected for 8-12 May when Lance was moored in the drifting ice.