



Observation of cyclone induced increase of semi-diurnal tidal/inertial oscillation of sea ice in the Fram Strait and the interior Arctic

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In March 2007, as part of the IPY, the Fram Strait Cyclone experiment (FRAMZY) took place in the region between Spitsbergen and Greenland. One goal of the experiment was the observation of water and ice drift by means of autonomous meteorological buoys, deployed over sea ice and in the open water. The ice buoys measured sea level pressure (SLP) and surface air temperature (SAT); the water buoys additionally measured the sea surface temperature (SST) in hourly intervals. The drift velocity was derived from hourly positioning of buoys. The spectral analysis of ice buoys drift yields a peak at a period of 12 hours, the semi-diurnal tidal/inertial oscillation frequency. Within three days, March 20 to 23, three small, but strong cyclones have passed the Fram Strait from South to North. After the last cyclone has passed the region the drift velocity components (u,v) have increased by a factor of 3. Obviously the cyclone has induced an increase of the sea ice oscillation. This increase of the oscillation amplitude was observed by all ice buoys, but not by the water buoys. The amplitude of the oscillation decreased with an e-folding time of about 2 days. After 7 days the oscillation reached again velocity oscillations comparable to those before the event. Results from a similar study based on a mesoscale ice buoy array around the North Pole within the DAMOCLES 2007 field experiment are presented.