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The DAMOCLES ice buoy drift experiments 2007 and 2008

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Two buoy drift experiments were conducted in the framework of DAMOCLES in the Arctic Ocean to investigate the atmospheric forcing of sea ice (especially the dynamic forcing by cyclones) and to validate operational weather model analyses. During the DAMOCLES 2007 experiment 16 CALIB buoys were deployed in the central Arctic Ocean within a 400km x 400km array, centered around the French ship TARA in April 2007. Up to 9 months CALIB buoys delivered data of pressure, temperature and position in one-hourly intervals. During the DAMOCLES 2008 experiment 7 PAWS buoys were deployed in the Canadian part of the Arctic Ocean north of Ellesmere Island in April 2008. Two further PAWS were installed in autumn 2008 in the Beaufort Sea and the Laptev Sea. Since deployment the PAWS deliver data of pressure, air and ice temperature, relative humidity, wind speed and direction and position in three-hourly intervals. Analyses of buoy trajectories and measured data are presented. The impact of wind forcing is quantified by the ratio and the correlation function of the ice drift and wind speed and by the ice drift divergence. Wind forcing is classified with respect to characteristic atmospheric flow patterns. Buoy data are compared with the operational analyses of ECMWF, DWD and HIRLAM models in order to assess the quality of operational numerical weather prediction (NWP) models in representing the atmospheric forcing.