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# High-temporal resolution observations of the thermal and kinematic vertical structure in the Arctic boundary-layer during ASCOS

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Over the Arctic Ocean, the Arctic boundary layer (ABL), loosely defined as extending from the surface to the top of the omnipresent Arctic inversion, is the location of processes producing interactions between free tropospheric events above and the surface of the Arctic sea ice below. Previous observational studies have shown the presence of transient synoptic and mesoscale disturbances that impact the ABL and the surface energy budget of the sea ice. These impacts occur through processes associated with changes in the local stability, cloud macro and microphysical structure, and spatial variability of surface conditions. These processes have time scales ranging from an hour or less to the synoptic time scales (3-4 days). Recent remote sensing and rawinsonde observations obtained during the month-long Arctic Summer Clouds Ocean Study (ASCOS), conducted near the North Pole in August-September 2008, will be examined for evidence of these processes. These observations include those from a 60 GHz scanning radiometer, a 449 MHz wind profiler, a S-band cloud and precipitation radar, a 8 mm cloud radar, and a Scintec phased array sodar. Other than the 4X daily rawinsondes, the observations have a temporal resolution of Ĩ min to 1 hour. Time-height data of temperature, wind, cloud outlines, turbulence, and derived parameters (e.g., Richardson number) are combined from the different sensors and examined for basic ABL structures and transition events. Transitions will be linked to synoptic events revealed from satellite images and aircraft data.