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Interdisciplinary Observations of a Transition Month at an Arctic Observatory

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The International Arctic Systems for Observing the Atmosphere (www.iasoa.org) is a voluntary consortium that facilitates science that is based on the analysis strategies of length (multi-decadal records), breadth (synoptic observations across the pan-Arctic region) and depth (interdisciplinary integration of multiple data sources). At the Tiksi Hydrometeorological Observatory the depth is represented by a wide range of measurements of the properties of the atmosphere and the underlying surface that are collected in-situ including meteorology, atmospheric chemistry and gases, aerosols, cloudiness, surface energy exchanges, soil temperature structure, and snow cover. For the month of September 2013 measurements collected during the fall freeze up period are presented. The month was characterized by 3 precipitation events, one warm event and one cold event, a steady decrease in mean daily temperatures from +10 to -5 degree C, an episode of enhanced equivalent black carbon, a decrease in surface heat fluxes from diurnal cycling to zero, general overcast through the month with only brief clearing periods, and a general increase in surface ozone levels. The different measurements are examined for cause and effect relationships during a rapid transition from polar day to polar night conditions for this coastal Arctic site.