



Investigation of the atmospheric boundary layer in the Laptev Sea area by means of ground-based remote sensing techniques and regional climate simulations

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In the winter season 2014/2015 a field campaign at the Tiksi observatory (71°38N, 128°52E) was carried out by the University of Trier with support of the Arctic and Antarctic Research Institute (AARI) and the GEOMAR Kiel in framework of the interdisciplinary Transdrift project. One goal of the campaign is to help to improve the understanding of processes within the Arctic stable boundary layer (SBL). Within the SBL, there are several important phenomena and processes like low level jets, surface and lifted inversions, the development of the mixing height or the determination of the energy balance, which can be best investigated with a mix of high-resolution ground-based remote sensing systems and flux tower measurements. We used a SODAR/RASS, a scintillometer, a ceilometer as well as the local flux tower to investigate the SBL for the Arctic winter. In addition, regional climate model simulations using the COSMO-CLM (consortium for small-scale modelling – climate limited area modelling) driven by Era-interim reanalysis data have been performed. Results are shown for measurements of the mixing height, surface energy fluxes and low level jets events as well as comparison between the measured data with COSMO-CLM and Era-interim.