Current and future boundary layer measurements at AWIPEV

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Session: atmospheric sciences / boundary layer measurements

Presentation: oral

In this presentation an overview of boundary layer (BL) measurements at the AWIPEV station is given. Radiosounding profiles from 2003 to 2011 have been analyzed to obtain the BL altitude at stable, near-neutral and unstable conditions. It was found that during winter months the BL height can frequently be derived by surface based inversions. A statistics of their occurrences, altitudes and temperature depths is given. Normally they are up to 65m (75%-quantile) altitude and less than 1.8K (75%-quantile) deep. During summer the BL altitude can frequently be obtained by the "parcel method" (the altitude to which convective rising air parcels starting from the ground get.) Again a statistic for summer conditions is given. Even during unstable conditions the BL altitude is normally below 490m (75%-quantile).

In the second part katabatic outflows from the Broeggerbreen glacier south-west of Ny-Ålesund are discussed. During these events flux measurements by Eddy-Covariance method become wrong. These outflows are the main local disturbance in our Eddy-Covariance data detected so far. Nevertheless knowledge of small-scale disturbances of BL measurements in Kongsfjord is needed for the future. AWI will install a new weather mast at the old pier to measure conditions over the sea and estimate the spatial extend of the Broeggerbreen outflows. Further, additional flux estimates should be conducted at this site.

Moreover new equipment as a radiometer, a wind lidar and our sounding systems will be used to derive a vertical column of meteorological properties and analyze the interaction between synoptic and local effects on the BL.

Ny-Ålesund Science Managers Committee 11th Seminar, October 9-11, 2013
National Research Council Rome - Italy
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