



## **Transport of the water vapour in the winter Arctic lowermost stratosphere during LAUTLOS campaign in Sodankyla, Finland**

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LAUTLOS / WAVVAP campaign held in February 2004 in Sodankyla (Northern Finland) was focused on intercomparison of the water vapour balloon-borne techniques in the upper troposphere and lower stratosphere. The data provides opportunity to analyze transport processes that regulate the distribution of the water vapor in the Arctic tropopause region. While transport of the stratospheric air into the troposphere has been studied in a number of papers, transport of the tropospheric air into the stratosphere, that is the main focus of our study, is investigated much less, especially in the Arctic region. The measurements are analyzed in combination with the ECMWF operational analysis. Our results demonstrate that episodes of high water vapour mixing ratio observed during the campaign up to 2 km above the tropopause are related to penetration of the tropospheric air into the lowermost arctic stratosphere a few days earlier. While water vapour mixing ratios from the measurements and the ECMWF analysis are in reasonable agreement, the analysis sometimes is not able to resolve small-scale features visible in the measurements. It is demonstrated however, that such features can be retrieved from the ECMWF data using tracer advection method.