



Investigation of Deep Stratospheric Intrusions in the European Arctic

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Stratosphere-troposphere exchange processes have been extensively studied at middle and low latitudes, since they are of great importance for vertical trace gas transport in the atmosphere and may have a significant impact on tracer concentration trends both in the troposphere and the stratosphere. Little work is done so far on such exchange processes at high latitudes, although the coupling may be strongest there, especially in the winter. In the frame of an Arctic UTLS project, we have studied in detail two cases of stratospheric intrusions in winter and late summer 2005, as forecasted in the ECMWF operational products, one of which penetrated down to 2 km altitude. We will present the meteorological situation during the events, the development of the intrusions as observed with a series of radio- and ozonesondes and radars and the fate of the intruding airmasses using appropriate modelling tools. In addition, a statistical investigation of deep stratospheric intrusions in the European Arctic, based on three years of radio- and ozonesonde data will be given.