



Vertical Distribution of Air Pollutants in the Inn Valley Atmosphere in Winter 2006

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In order to obtain a three dimensional picture of the distribution of air pollutants in the Inn valley (Tirol, Austria) in wintertime, the field campaign INNOX (NO_x-structure in the Inn Valley during High Air Pollution) was carried out in January/February 2006. For this purpose, continuous ground based measurements were performed. Additionally, vertical profiles of various air pollutants and meteorological parameters were measured throughout the whole valley atmosphere on six selected days. A tethered balloon was used for carrying meteorological devices as well as the inlet line of ground level online instruments in order to analyze the lowest atmospheric layers up to 180 m AGL (above ground level). At higher altitudes a research aircraft from MetAir (<http://www.metair.ch>) was operated. Preliminary results show a shallow, highly polluted layer in the morning. Around midday concentrations on the valley floor decrease which indicates some vertical air exchange despite thermally stable conditions. Results from the aircraft measurements, showing strong vertical and horizontal gradients with extended values along the sunny side of the valley up to 1000 m AGL, support this idea. However, this vertical mixing due to thermally or dynamically driven slope and valley winds is not strong enough to renew the valley air volume and therefore does not lead to a sustainable reduction of pollutant concentrations.