



Near surface characteristics of foehn winds

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Downslope windstorms occur commonly in mountainous regions around the world. Their importance is particularly great for air traffic, as well as wind energy, air pollution but also for ice shelf stability in the Antarctica, or deep water formation of the mountainous coasts. In this work we will focus on the foehn type of downslope windstorms and examine its near surface turbulence characteristics in the Inn Valley, Austria. The foehn in the Inn Valley has been extensively studied throughout the past century, especially in several intensive campaigns. However, the smaller scale turbulence characteristics have only received limited attention.

Here we present results from foehn episodes spanning over a year of data. The turbulence measurements at 5 stations within the Inn Valley, Austria as part of the i-Box project are used for the analysis. The general near surface turbulence characteristics of these events are examined and the characteristic scales of dominant transport are determined. Their dependence to horizontal heterogeneity is investigated both on the mesoscale and sub-mesoscale. Special focus is placed on the question of energy balance closure during foehn episodes and the influence of advection.