

Predicting local winds in a deep Alpine valley under fair weather conditions

Abouzar Ghasemi and Juerg Schmidli

Goethe University Frankfurt, Institute for Atmospheric and Environmental Sciences, Geosciences/ Geography, Germany
(ghasemi@iau.uni-frankfurt.de)

Thermally driven local winds under fair weather conditions often dominate the wind climatology in mountainous regions. These local winds are observed in all seasons in deep valleys, such as the Rhone valley in south-western Switzerland. Previous numerical studies using COSMO-DWD model nicely showed a considerable improvement, going from 2 to 1.1 km resolution for numerical weather prediction of local weather in the Alpine wide valleys. However, for a particular station called Sion located in a wide valley (Rhone valley), a little improvement in the mean diurnal evolution of the simulated along-valley winds was found. In this study we take a closer look at the wind development in Sion, investigating the impact of different forcing such as topography, radiation, turbulence parametrization and soil model. Furthermore, performing LES the physical phenomena causing this discrepancy will be discussed.