

Water-vapour variability over the mountainous island Corsica during the HyMeX field campaign

N. Kalthoff¹, B. Adler¹, M. Kohler¹, A. Wieser¹, U. Corsmeier¹, C. Kottmeier¹, D. Lambert², O. Bock³

¹ Institut für Meteorologie und Klimaforschung (IMK-TRO), Karlsruher Institut für Technologie (KIT), Karlsruhe, Germany
(norbert.kalthoff@kit.edu)

² Laboratoire d'Aérodynamique, Université de Toulouse, Toulouse, France

³ LAREG / IGN, Marne-La-Vallée, France

During the HyMeX field campaign, performed in late summer and autumn 2012 in the western Mediterranean Sea, the mobile observation platform KITcube was installed on the Corsican Island to investigate the spatial distribution and temporal evolution of water vapour over complex terrain. Humidity and its spatial variability are considered as decisive for the development of deep convection. The microwave radiometer measurements and radiosoundings, installed in the centre of the island and on the coast, are used to interpret the Integrated Water Vapour (IWV) data derived from the routine GPS network.

While the IWV data showed a similar behaviour at all sites during periods dominated by large scale events, distinctive spatial differences occurred on convective days with weak background winds. The strongest diurnal cycle was observed in the centre of the island (Corte) while the diurnal cycle was much weaker on coastal sites - especially on the western coast. Radiosounding data revealed that the spatial differences are mainly caused by thermally driven circulations, like slope and valley winds, as well as processes like topographic and advective venting.