

Master thesis, Supervisor: Nevio Babic (Bianca Adler, Alexander Gohm)

Investigation of cross-valley circulations in the Inn Valley using aircraft measurements collected during the CROSSINN project

Over complex terrain, such as the European Alps, many questions remain unanswered regarding the coupling and feedbacks between the Mountain Atmospheric Boundary Layer and the overlying free troposphere, particularly concerning the extent to which the presence of orography underneath potentially alters the turbulent exchange pathways of momentum, heat and pollutants. In mountain valleys, specifically the Inn Valley, Austria, cross-valley circulations have previously been hypothesized to serve as one of such pathways which still remain poorly sampled and thus poorly understood. From August to October 2019, IMK-TRO scientists conducted the CROSSINN project in the Inn Valley, with the goal of adequately sampling such circulations using a suite of instrumentation comprised of the IMK-TRO KITcube platform, as well as in-situ measurements collected by an aircraft. As most of the ground-based measurements were conducted on a transect across the Inn Valley, the aircraft data are in particular crucial for assessing the along-valley variability of the flow.

We seek a motivated and ambitious **MSc candidate** whose primary focus will be the processing and interpretation of the aircraft measurements, as these represent a key link in assessing the spatial extent of cross-valley circulations in the Inn Valley. Once all the aircraft data have been adequately post-processed, the candidate will next (i) apply different analysis tools to make inferences about the mean character of the along- and cross-valley flow, and ii) analyse and interpret the high-frequency aircraft data in relation to the other ground-based measurements gathered during CROSSINN.