1.43 SNOWFALL FORMATION AND ENHANCEMENT PROCESSES IN TWO CONTRASTED MOUNTAIN RANGES: THE ALPS AND THE TAEBAEK MOUNTAINS

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Understanding snowfall formation and enhancement processes in the atmosphere is crucial to correctly forecast the precipitation intensity. Particularly in mountainous regions, the interaction between the large-scale atmospheric flow and the topography can lead to snowfall enhancement or even to local-scale snow formation. To understand the microphysical processes at play, a synergistic use of remote-sensing and in-situ measurements is needed. Moreover, to contrast the processes in two different mountain ranges, a similar instrumental setup is required. Past field campaigns in the Alps and in the Cascade mountains allowed to understand how similar baroclinic systems interplay with a mountain barrier. Here we analyse the measurements from two field campaigns where the meteorological conditions were very contrasted. The Valais2016 campaign took place in the Swiss Alps from Nov. 2016 to May 2017. An X-band polarisation scanning radar was deployed at a low altitude, while a W-band cloud profiler and a Multi-Angle Snowflake Camera (MASC) were installed higher up in the mountains. The ICE-POP 2018 campaign is an international experiment, which took place in the Taebaek Mountains to support the PyeongChang2018 Olympic and Paralympic Winter Games. A similar configuration as during Valais2016 was deployed, while multiple remote-sensing and in-situ instruments from international research groups completed the setup. Our analysis shows that in the Alps precipitation systems interact with the topography and snowfall is enhanced by aggregation and riming. In the Taebaek mountains, winter are dry, windy and cold and we did not observe much large-scale precipitation systems during the winter months. However, snowfall can form locally in shallow orographic clouds and is hence more challenging to forecast. In particular, the availability of supercooled liquid water can be decisive and lead to graupel showers. A detailed analysis of the contrasted polarimetric and Doppler radar signatures in both environments will be presented