A new transportable polarimetric X-band radar for accurate rainfall measurement in Alpine basins

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Rainfall estimation in alpine areas using classical C-band weather radar is often limited by several factors such as beam blockage, poor visibility, strong ground clutter contamination. Measurements using compact X-band radars have been strongly limited in the past due to relevant attenuation by rain. Nowadays, the use of the differential phase shift ΦDP to correct for attenuation and its range derivative KDP, which is less sensitive then radar reflectivity to Drop Size Distribution variability, can significantly improve accuracy in rainfall estimation. This work aims at characterizing the first measurements collected by a new transportable X-band radar with polarimetric capabilities, managed by Arpa Piemonte.