



## Spatiotemporal characteristics of precipitation in Colorado's mountains

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**Abstract.** Precipitation is often characterized and monitored using point gage records. Sparse gage networks in remote and rugged terrain, such as in Colorado, fail to capture the intricate precipitation patterns that occur in mountains. The distinct terrain can cause orographic and convective disturbances which can produce highly variable precipitation. Evaluation of these events is valuable in understanding the potential for hazardous storms. To better understand the spatiotemporally varying aspects of precipitation in Colorado we employ sub-hourly Multi-Radar Multi-Sensor (MRMS) precipitation estimates. MRMS is a radar-based spatially continuous quantitative precipitation estimate with a high spatiotemporal resolution for the contiguous United States. Regional precipitation frequency estimates are used to create thresholds to identify precipitation of interest and the related storms are delineated using the MRMS dataset. A catalog of events is developed for the 9-year archive of MRMS sub-hourly data. The rainfall intensity and spatial uniformity is evaluated along with the storm duration, areal extent, and velocity. Within this catalog of events, we observe regional and temporal trends. The evaluation of spatially continuous precipitation illuminates the flood potential and associated risks present throughout Colorado, including in remote high elevation areas.