# Experiences with >50'000 crowd-sourced hail reports in Switzerland

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In this contribution, we present our experiences with applying Citizen Science in hail research. In hail research, crowdsourced reports bridge the gap between heuristically defined radar hail algorithms, which are automatic and spatially and temporally widespread, and hail sensors, which provide precise hail measurements at fewer locations. With the hail size reporting function in the app of the Swiss National Weather Service MeteoSwiss, app users can report the presence and size of hail by choosing a predefined size category. Since May 2015, the app has gathered >50'000 hail reports from the Swiss population. This is an unprecedented wealth of data on the presence and approximate size of hail on the ground.

We filter the reports automatically for plausibility. The filters check for minimum radar maximum reflectivity fields using a neighborhood method, remove duplicate reports, obvious artificial patterns, and limit the temporal gap between event and submission time. Except for the largest size category, the filters seem to be successful. After rigorously filtering the reports, 49% of all reports remain, which we compare to hail size reports from the European Severe Weather Data Base (ESWD) and two operationally used radar hail detection and size estimation algorithms POH (probability of hail) and MESHS (maximum expected severe hail size). The comparison suggests that POH and MESHS are defined too restrictively and that parts of hail events are missed by the algorithms. Although there is significant variability between size categories, we found a positive correlation between the reported hail size and the radar-based size estimates.