



Contribution ID: 47

Type: **Oral presentation**

On the relationship between lightning activity and convective cell severity

Tuesday, October 6, 2020 11:00 AM (20 minutes)

This presentation will provide an overview of the activities related to the combination and analysis of lightning and radar data conducted at MeteoSwiss. The first part of the presentation will be devoted to the analysis of the performance of the lightning jump algorithm that is implemented in real-time for nowcasting severe thunderstorms. It uses the total lightning rate from the operational network to identify the occurrence of lightning jumps inside each convective cell identified automatically by the TRT nowcasting system. In the second part, we will present an analysis of a large dataset of lightning and polarimetric weather radar data collected in the course of a lightning measurement campaign. The campaign took place in the summer of 2017 in the area surrounding the Säntis mountain, in the northeastern part of Switzerland. The area is a hotspot for lightning activity in Switzerland. For this campaign and for the first time in the Alps, a lightning mapping array (LMA) was deployed. In this study, we relate LMA very high frequency (VHF) sources data with collocated radar data in order to characterise the main features (location, timing, polarimetric signatures, etc.) of both the flash origin and its propagation path. We provide this type of analysis first for the entire dataset and then we stratify it into intra-cloud and cloud-to-ground flashes (and within this category positive and negative flashes) and also upward lightning. We show that polarimetric weather radar data can be helpful in determining regions where lightning is more likely to occur, namely in areas with a high extend in the vertical of hail and graupel, but that lightning climatology and/or knowledge of the orography and man-made structures is also relevant.

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