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Lightning-based temporal propagation and cloud-life adjustment of MW-estimated precipitation fields: Application to a FLASH project case study

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The close connection between lightning occurrences and convection makes them interesting for nowcasting applications. As a matter of fact, there are weak statistics supporting their widespread use for quantitative precipitation estimation, while the usefulness of information related with the position and frequency of lightning strokes arises forcefully by the visual inspection of maps. On the contrary, microwave-based precipitation retrieval techniques, recognized as good tools to quantify the instantaneous rainfall amount, suffer from low spatial and most low temporal resolution related to the orbital characteristics of the low earth observation (LEO) satellites accommodating MW sensors.

Within the framework of the European Union FP6 FLASH project, a new synergism between those data sources is investigated to extrapolate the evolution of the AMSU-based instantaneous rainfall maps by applying physical assessments concerning the electrical properties of evolving convective systems derived by available lightning ground network data. Focusing on a scattered-convection event occurred in central Italy, the skill of the tool will be shown by comparing its outputs versus frequent ground radar measurements.