



Assimilation of lightning data for the improvement of quantitative precipitation forecasts in the frame of FLASH project.

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The Mediterranean Sea is a relatively small and rather warm body of water which is surrounded by three major continents. According to many studies, the Mediterranean is one of the major centers of electrical activity during the cold period of the year for the Northern Hemisphere. In the frame of the EU/FP6-funded FLASH project (Observations, analysis and modeling of lightning activity in thunderstorms, for use in short term forecasting of flash floods), the use of data provided by ZEUS lightning detection network operated by the National Observatory of Athens for data assimilation purposes has been explored. Namely, the study focuses on the assimilation of lightning data as a tool to improve the quantitative precipitation forecasts in the Mediterranean. For that purpose, a number of storm cases that occurred in the area have been selected and MM5 non-hydrostatic model was used for the model experiments. Lightning is used as a proxy for the presence of absence for deep convection. The model convective parameterisation scheme (Kain-Fritch) is forced to produce convection there where lightning indicated storms, while it is prevented from producing spurious convection there where no lightning was observed. The resulting experiments are compared with the control runs while both are validated against the available observations for their precipitation forecast skill.