Integrating lightening information into real-time flash flood forecasting and warning procedures

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This work will combine the algorithm systems developed by the projects HYDRATE and FLASH to provide an assessment of the possibility of integrating lightening information into real-time flash flood forecasting and warning procedures. Realtime lightning and radar rainfall data will be used to extrapolate storm motion forward in time, based on their history over the last hour. This will afford advection of the lightning activity, convective cells and rainfall maxima, tracking the convective cells continuously. The system will provide a stream of information about cell history, i.e. the direction of motion, the velocity of the cells, and whether the cells are intensifying or decaying.

This information will be supplied to fully distributed hydrological models, in order to evaluate the gaining in short-term forecasting (lead time and reduction of uncertainty) permitted by the inclusion of lightening information. This work will be carried out based on data made available for a flash flood event, occurred in in Piemonte on 14-15 September 2006.