

Severe Convection Nowcasting in the Alpine region: the approach of COALITION

Luca Nisi, Igor Giunta, Paolo Ambrosetti

*Federal Office of Climatology and Meteorology MeteoSwiss
Via ai Monti 146, 6605 Locarno-5-Mont, Switzerland
luca.nisi@meteoswiss.ch*

(Dated: 23th September 2011)

Abstract

The study proposes heuristic object-oriented model referred to as COALITION (Context and Scale Oriented Thunderstorm Satellite Predictors Development). Based on an innovative methodology the COALITION model combines data from different applications (e.g. Meteosat Second Generation, Nowcasting SAF, Radar Nowcasting Products, Numerical Weather Prediction models). The best information of convective processes is synergistically used with the aim to increase the lead time in nowcasting severe convection.

Taking into account the dynamic of the convection processes (i.e. convection phase) a better prediction of the storm cells evolution is expected. Furthermore the orographic forcing will be considered as a convection trigger mechanism, particularly important over complex terrain like the alpine region. In fact, NWP models have difficulties to assimilate and control important gradient fields needed for predicting severe convection processes and for issuing early warnings in complex terrain.

The COALITION algorithm merges severe convection predictors with evolving thunderstorm properties: the storm evolution is the result of couplings between convective signatures (objects) and environments. Some selected thunderstorm attributes (e.g. CTT, VIL) are considered as indicators of convection intensity. The forecast of the evolution of such indicators is the basis for forecasting a more general evolution of the thunderstorm.

In this poster the approach and the results of the COALITION modules are presented and discussed.