High resolution climatology
- towards climate change services

Verification of thunderstorm warnings over Piemonte Region

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In this study the authors have verified three different model-based post-processing procedures that ARPA Piemonte weather forecasters use as strong thunderstorm indicators (first guess). The output of the post processing procedures are also compared versus the real alerts issued by the forecasters. The period considered in the analysis is from May to September of the years 2007, 2008 and 2009. The rainfall observations come from the Piemonte very high resolution network (over 450 pluviometers) and CESI-SIRF lightning data. Automatic thunderstorm post-processing arise from COSMO-I7, the operational mesoscale model developed in the framework of the COSMO Consortium (see www.cosmo-model.org for a comprehensive description of the model and its related development activities). The atmospheric instability fields of the model (K index, CAPE, SLI, etc.) have been used to build a procedure which gives a probability of heavy thunderstorm (defined as a thunderstorm with a precipitation of 40mm/3h and at least one lightning) over each warning area every 6h up to +72h.