



Heavy precipitation events during HyMeX SOP1 Intensive Observation Periods over Croatia: Evaluating CNRM-ALADIN52 regional climate model

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The Adriatic region is among the rainiest regions in Europe, usually affected by severe events such as heavy precipitation and flash floods. The first HyMeX Special Observation Period (SOP1) was conducted from 5 September to 6 November 2012. Our focus is on the six intensive observation periods (IOPs) during which heavy precipitation occurred in the eastern Adriatic and over the Dinaric Alps. Here, we analyzed MedCORDEX simulations of the CNRM-ALADIN52 regional climate model (RCM) forced by the ERA-Interim reanalysis. The performance of CNRM-ALADIN52 RCM in reproducing total precipitation amounts, near surface wind speed, temperature and mean sea level pressure was evaluated against E-OBS (daily gridded observational dataset in Europe), ERA-Interim reanalysis and the data from the observational network of the Meteorological and Hydrological Service, Croatia (DHMZ). CNRM-ALADIN52 successfully reproduced the spatial variability for all above-mentioned variables. The precipitation timing and the location of the maxima were reproduced in the model. In some cases, the performance of CNRM-ALADIN52 was rather successful in simulating the maximum precipitation amounts in comparison with the ERA-Interim reanalysis and E-OBS. However, the model was less successful to simulate heavy rainfall during the IOP2, when over 220 mm of precipitation were recorded in the city of Rijeka in the northern Adriatic. During IOP2 CNRM-ALADIN52 underestimated the total precipitation amount and was late in simulating the timing of the maximum rainfall over the target area.