

3DVAR assimilation of conventional and satellite data for improving the rainfall forecasts in the Eastern Mediterranean

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The present work investigates the potential in using a 3DVAR assimilation system to improve the quantitative precipitation forecasts issued by the atmospheric mesoscale model MM5 in the Eastern Mediterranean, and especially over the Greek Peninsula. For this purpose, 15 cases of severe rainfall that occurred within the period November 2002 to December 2003 over the study area are selected. For those dates both conventional measurements (i.e. surface observations and soundings) and satellite data from the SSM/I and QuikSCAT sensors are ingested into the 3DVAR system of MM5. For each case several simulations are performed in order to assess both the effects of the 3DVAR application and of the choice in the Background Errors (BE), which can be either global climatological BE or those calculated by a more expensive method developed at the National Meteorological Center (NMC). The statistical results of the comparison between the 3DVAR rainfall forecasts and the precipitation ground measurements suggest that no particular improvement is obtained when applying the 3DVAR system. Nevertheless, the results on a case-by-case basis reveal an improvement when implementing the 3DVAR system in some of the cases.