



Impact of Aerosols on the Evolution of a Medicane in November 2011

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If and how natural and anthropogenic aerosols influence high impact weather is still an open question. Consequently, it is not known whether it is necessary to take into account this impact in numerical weather prediction models. A depression, which produced heavy precipitation over France and Italy at the beginning of November 2011, was converted into a system with tropical features when it reached the Mediterranean Sea. Such systems are named medicane. They occur once in a while mainly in the autumn and winter months. In our study we will focus on the development of the medicane that occurred in November 2011. Simulations of such systems were done before, but the possible impact of sea salt and dust was not investigated yet. Applying COSMO-ART we simulate the effect of sea salt on the evolution of the medicane, the track, and precipitation as a first step. We do a triple nesting where the highest horizontal resolution is 2.8 km. For the microphysics we use a two-moment-scheme where not only the mass concentration but also the number concentration of hydrometeors is treated explicitly. Locally a strong impact of aerosol particles on precipitation was found. In comparison with observation the accumulated precipitation is in better agreement if sea salt is concerned.