

Model studies of heavy precipitation events in the western Mediterranean during the HyMeX campaign (2012)

High impact weather events in the western Mediterranean basin can provoke locally high precipitation rates which cause floods and landslips. These events mostly occur from September to November.

In autumn 2012 the international field campaign HyMeX (Hydrological cycle in Mediterranean Experiment) took place in the western Mediterranean. It provides a wide dataset to study heavy precipitation events. At the end of September 2012, a very prominent mesoscale convective system - causing huge damage and several casualties - affected the Spanish, French and Italian Mediterranean coasts.

Our goal is to distinguish between different processes which led to uncertainties in forecast for this HyMeX case, especially on the grid cell scale (e.g. mesoscale flow and diabatic processes). To study the case, several different simulations were carried out. In order to study involved physical precesses, we performed a high resolution run of the German COSMO (Consortium of small scale modeling) model (horizontal resolution of 2.8km), which was validated with different kinds of HyMeX measurement data . To investigate the impact of a stochastic convection scheme, the recently developed Plant-Craig scheme was implemented in a coarser COSMO simulation (horizontal resolution of 7km). In this way, we performed an ensemble analysis of the heavy precipitation event. An emphasis of this study lays on different settings of the stochastic convection scheme and its results in precipitation intensity, timing and distribution.