Impact of SST on heavy rainfall events on eastern Adriatic during SOP1 of HyMeX

The season of late summer and autumn is favourable for intensive precipitation events (IPEs) in the central Mediterranean. A study examines how precipitation patterns change in response to different SST forcing. We focus on the IPEs that occurred on the eastern Adriatic coast during the first HyMeX Special observing period (SOP1, 6 September to 5 November 2012). The operational forecast model ALADIN uses the same SST as the global meteorological model (ARPEGE from Meteo France), as well as the forecast lateral boundary conditions (LBCs). Results of the SST assessment show that SST in the eastern Adriatic was overestimated by up to 10 K during HyMeX SOP1 period. Then we examine the sensitivity of 8 km and 2 km resolution forecasts of IPEs to the changes in the SST during whole SOP1. Forecast runs in both resolutions are performed for the whole SOP1 using different SST fields prescribed at initial time and kept constant during the model forecast.

Influence of surface roughness on downslope windstorms and mountain waves

Here we analyse the effect of surface friction in the framework of the ALADIN System, particularly the version used for operational forecast at 2 km horizontal grid spacing with ALARO physics package and non-hydrostatic dynamics. The problem is analysed using the real terrain and real meteorological conditions. Surface friction is controlled via the surface roughness field. In order to assess the relative importance of the surface friction to the turbulence scheme, experiments with two different turbulence schemes were performed: I) a pTKE scheme and II) more advanced TOUCANS, which includes additional prognostic equation for total turbulence energy, as well as the anisotropy effects among other.

Results of nowcasting 10 m wind and 2 m relative humidity

Nowcasting using INCA in Croatia

The mainframe computer was upgraded by 10 nodes (60 cores) reaching 48 nodes (288 cores).

Hardware upgrade

The operational model version used is AL38T1 with ALARO physics for 8, 4 and 2 km resolution forecasts. Operational forecasts run for:
- 8 km res, 360 sec, 4 times per day, 3D-Var and surface OI, 3h cycling, to 72 hours, LBCs: IFS, 73 lev.
- 4 km res, 180 sec, hydrostatic, 4 times per day, up to 72 hours, 3D-Var and surface OI, 3h cycling, LBCs: IFS, 73 lev.
- 2 km dynamical adaptation, 60 sec time-step, hourly, up to 72 hours.
- 2 km non-hydrostatic run, 60 sec time-step, using AL36T1 with available ALARO developments, from 06 UTC up to 24 hours.

Hardware upgrade

The mainframe computer was upgraded by 10 nodes (60 cores) reaching 48 nodes (288 cores).