



Preliminary analysis of the Intensive Observation Period events occurred in Italy during the HyMeX campaign

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HyMeX (Hydrological cycle in the Mediterranean eXperiment) is a project aimed at a better understanding and quantification of the hydrological cycle and related processes in the Mediterranean. As a part of HyMeX, Special Observation Periods (SOPs) are dedicated to provide detailed and specific observations to study key processes leading to orographic precipitation (ORP), heavy precipitation events (HPEs), and flash flood events (FFE) in certain Target Areas (TAs). Informed by numerical weather forecasts and standard observations, Intensive Operation Periods (IOPs) are declared during the SOPs. Specific observations in the TAs are provided by operational measurements (ground meteorological networks, soundings, and remote-sensing instruments), coupled with specific measurements during IOPs from several instruments, such as disdrometers, sodars, lidars, research radars, extra soundings, etc. In this paper an overview is presented of the HyMeX IOPs in Italy during SOP1 (5 September – 6 November, 2012). The Hydro-Meteorological sites of interest were: Liguria-Tuscany (LT), northeastern Italy (NEI) and central Italy (CI).

Typical situations encountered for HPEs in LT involved upper-level southwesterly flow with low-level moist southerly or southeasterly flow over the Tyrrhenian and the Ligurian Sea. Highlights include a measurement of 300 mm/24h of rain at the border between Liguria and Emilia on Sept. 26, 2012 during IOP7b. For NEI region, HPEs mainly occurred with upper level southwesterly flow ahead of advancing troughs with low-level moist southerly or southeasterly flow over the Adriatic Sea. Highlights include 120 mm/24h of rain in Friuli Venezia Giulia on Sept. 12, 2012 during IOP2. For CI region, HPEs and FFEs, a slowly propagating cut-off low centered over southern Italy was observed; the associated easterly flow on the north side of the cut-off low would frequently bring moisture into east central Italy from the Adriatic Sea. Highlights include an event with very intense convective cells producing more than 150 mm of rain in several hours in Abruzzo on Sept. 14, 2012 in IOP4; extensive flood occurred in this case. The ongoing analyses of these cases will shed light on the complex chain of events that determines the timing, location and intensity of HPEs over complex orography in the vicinity of maritime air masses and on the forecasting ability of the different meteorological models implemented for the campaign.