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The Mediterranean coastal orographic heavy precipitation field campaign within HyMeX

V. Ducrocq and the HyMex Executive Committee for SOP1 Team
CNRM-GAME, Toulouse, France (veronique.ducrocq@meteo.fr)

HyMeX (HYdrological cycle in the Mediterranean Experiment, http://www.hymex.org/) is an international program aiming at a better quantification and understanding of the water cycle in Mediterranean - with emphases on intense events - by monitoring and modelling the Mediterranean coupled system (atmosphere-land-ocean), its variability (from the event scale, to the seasonal and interannual scales) and characteristics over one decade in the context of global change. In particular, HyMeX aims at addressing key issues related to (1) the water budget of the Mediterranean basin, (2) the continental hydrological cycle and related water resources, (3) heavy precipitation and flash-flooding and (4) intense air-sea exchanges produced by severe regional winds and cyclogeneses. HyMeX aims also at monitoring vulnerability factors and adaptation strategies developed by different societies to accommodate the impacts of climate change and intense events.

The aim of the talk is to present an update of the program implementation regarding the observation and modelling strategy for heavy precipitation over the mountainous Mediterranean coastal regions. The general observation strategy is based on a three-level nested observation scheme: (1) a Long-term Observation Period (LOP, 2010-2020) to gather and provide observations on the whole coupled system in order to analyze the seasonal-to-interannual variability of the water cycle and to estimate the water budget, (2) Enhanced Observation Periods (EOP) for both budget and process studies lasting several years and (3) Special Observation Periods (SOP) lasting several months. The observation strategy of the EOP/SOP dedicated to heavy precipitation and flash-flooding will be presented as well as the associated modelling activities. HyMeX will constitute a unique test-bed for new-generation convection-permitting ensemble prediction and data assimilation systems in order to advance the predictability of these high-impact weather events.