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High Impact Atmospheric Processes in the Mediterranean

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Preface

High Impact Atmospheric Processes in the Mediterranean

Keywords: Atmospheric processes; Mediterranean

This Special Issue of Atmospheric Research is entitled “High Impact Atmospheric Processes in the Mediterranean” and hosts selected papers that were presented at the 13th Conference of Meteorology, Climatology and Atmospheric Physics (COMECAP 2016), held in Thessaloniki, Greece, from 19 to 21 September 2016. The title reflects the wide range of papers presented on various atmospheric processes taking place in the Mediterranean.

The first paper in this Special Issue is a Review Paper entitled “Reviews and perspectives of high impact processes in the Mediterranean”. In this paper, processes that are significant in terms of impacting the weather and related hydro-meteorological hazards in the Mediterranean, along with some current related research activities are reviewed. The topics reviewed were selected on the basis of their spatiotemporal extent, focusing on those which are identifiable at the synoptic scale but also those which widely affect the Mediterranean basin and are conducive to much attention from the public or the scientific community. Also, future perspectives of such processes are presented with focus on future climatic trends.

The above Review Paper is followed by seventeen research papers, as follows:

- Ten planetary boundary-layer (PBL) parameterization schemes in the Weather Research and Forecasting (WRF) model have been evaluated by Tymvios et al. with respect to temperature and wind forecasts for typical summer conditions in the eastern Mediterranean island of Cyprus. An ensemble of twenty-two simulations was performed, for a combination of the ten PBL and compatible surface layer parameterization schemes; each of the setups has been evaluated in view of forecasting skill and other statistical indices. Comparison of the model results with measurements from eight sites in Cyprus revealed significant differences in forecast skill, during both daytime (unstable conditions) and nighttime (stable conditions). The time series produced by the simulations were assessed against observations, in an effort to identify biases and skills in the forecasting ability of the model.

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