## Sensitivity study of a local numerical fog prediction system

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Accurate and reliable information on expected visibility conditions at the airport of Thessaloniki-Greece, is of high importance, concerning safety and operational expenses for the airport and the airway companies. On the other hand, the life cycle of fog involves complex interactions among dynamical, turbulent, microphysical and radiative processes that are still not fully understood. Therefore, the implementation of a numerical fog simulation-prediction model could be a very helpful tool, for understanding in depth the physical processes involved in the different stages of fog formation and consequently to accurately forecast fog conditions.

The main objective of this effort is to investigate and address the sensitivity of the one dimensional COBEL-ISBA (COuche Brouillard Eau Liquide - Interactions Soil Biosphere Atmosphere) local model to different microphysics, planetary boundary layer and surface schemes of the WRF-ARW regional non-hydrostatic atmospheric model at the "Macedonia" airport of Thessaloniki. High-resolution numerical experiments regarding the fog event that was formed on the 6$^{th}$ January 2010 at the airport were performed with the latest version 3.2 of the WRF-ARW regional atmospheric model. The fog was quite thick, with estimated minimum visibility reaching 100 m and it was extended to an area covering the whole airport and the surroundings, that is up to a radius of 5 km. This fog event persisted for about 8 hours. Different combinations of the Mellor-Yamada Nakanishi-Niino (2.5 level) TKE and the Bougeault and Lacarrere TKE boundary layer schemes with microphysics schemes and the Monin-Obukhov (Jannjic Eta) and Mellor-Yamada Nakanishi-Niino surface-layer schemes, have been investigated in order to assess the predictability and the overall performance of the COBEL-ISBA model. The numerical results, regarding meteorological parameters, such as, air temperature, relative humidity and horizontal visibility, have been compared with actual measurements and the findings, have been evaluated and discussed.

This work describes and evaluates an ensemble approach, which is designed to quantify the sensitivity of COBEL-ISBA model to different physical parameterizations of the WRF-ARW model at the airport of Thessaloniki.

## Geochemical characteristics of the amphibolites (ophiolitic metabasites) from the Serifos metamorphic core complex, Attic-cycladic metamorphic belt, Cyclades, Greece

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Half of the surface outcrop of the Serifos island (NW Cyclades, Attic-Cycladic Metamorphic Belt) is composed of a volcano-sedimentary sequence regionally metamorphosed to greenschists facies. This unit consists of, mainly carbonate-rich metasediments, alternating with silicate-rich layers with chlorite and mica-rich layers and enclose a wide variety of metabasites: amphibolite blocks and mafic schists (with minor relict blueschists facies assemblages, now retrogressed to greenschists). The origin of the amphibolites (ophiolitic metabasites) within the Attic-Cycladic Metamorphic Complex (ACMC) remains enigmatic due to the disrupted occurrence of these rocks that makes difficult to constrain the structural relationship of these rocks with their host rocks and their tectonic significance. This study documents preliminary geochemical data (major-and trace elements) of the amphibolites interlayered within the Serifos Greenschist Unit. A comparative geochemical study of these rocks with other meta-ophiolite rocks from similar structural occurrences in other Cycladic islands, is attempted. On the basis of petrographic and major - trace element