

Group of Numerical Applications in the Atmosphere

Department

Department of Environmental Physics and Meteorology.

Main Team Members

- Maria Tombrou, Associate Professor
- Elissavet Bossioli, Physicist, PhD - Laboratory Staff at the Physics Department of the NKUA
- Aggeliki Dandou, Physicist, PhD - Laboratory Staff at the Physics Department of the NKUA
- Anna P. Protonotariou, Physicist, PhD - Laboratory Staff at the Physics Department of the NKUA
- Kostantinos V. Varotsos, Physicist, PhD
- Giorgos Papaggelis, Physicist - MSc, PhD student at the Physics Department of the NKUA
- Georgia Methimaki, Physicist - MSc student at the Physics Department of the NKUA

Short Description

Atmospheric Boundary layer: Mean and turbulence characteristics of wind flow over complex topography (MM5, WRF); Large Eddy Simulations over heterogeneous surfaces (LES coupled with Land surface Model (LSM)); Urban Meteorology-Mitigation strategies (WRF-UCM). **Physical and chemical processes of air masses:** Atmospheric and chemical modeling of gases and aerosols in local-mesoscale (online WRF-Chem, Camx)/global scale (Geos-Chem); Synergistic effect of different emission sources on air quality (e.g. biomass burning; biogenic); Impact assessment of climate change on air quality (Geos-Chem); Experimental campaigns of gas and chemical composition of aerosols and meteorological parameters over Aegean Sea

Selected Publications

- Dandou A., M. Tombrou and N. Soulakellis, (2009), 'The influence of the city of Athens in the evolution of the sea-breeze front', *Boundary-Layer Meteorology*, doi: 10.1007/s10546-008-9306-x.
- Bossioli E., Tombrou M., Karali A., Dandou A., Paronis D., Sofiev M., (2012), Ozone production from the interaction of wildfire and biogenic emissions: a case study in Russia during spring 2006, *Atmos. Chem. Phys.*, 12, 7931-7953, Doi:10.5194/acp-12-7931-2012.

- Papangelis G., Tombrou M., Dandou A., Kontos T., 2012: 'An urban "green planning" approach utilizing the Weather Research and Forecasting (WRF) modeling system. A case study of Athens, Greece', *Landscape and Urban Planning*, 105, 174-183, doi:10.1016/j.landurbplan.2011.12.014
- Protonotariou A.P., Effie Kostopoulou, Maria Tombrou, Christos Giannakopoulos, European CO budget and links with synoptic circulation based on GEOS-CHEM model simulations, *Tellus B*, 2013, 65, <http://dx.doi.org/10.3402/tellusb.v65i0.18640>.
- Varotsos, K. V., M. Tombrou, and C. Giannakopoulos (2013), Statistical estimations of the number of future ozone exceedances due to climate change in Europe, *J. Geophys. Res. Atmos.*, 118(12), 6080–6099, doi:10.1002/jgrd.50451.

Research Projects (της τελευταίας 5ετίας, μέχρι 5 το πλήθος)

- "AEGEAN-GAME", European Facility for Airborne Research (EUFAR) Integrating Activity (227159) funded by EC 6 under FP7, 2011.
- "On the estimation of future air-quality due to climate change in Europe", Co-financed by the European Social Fund (ESF) and Greek national funds through the Operational Program "Education and Lifelong Learning" of the (NSRF) - Research Funding Program: Heraclitus II, 2010-2013.
- "AERAS-EtS (Chemical and physical processes of atmospheric Aerosol over the Aegean Sea during Etesian and Saharan events)" within the framework of the Action "Supporting Postdoctoral Researchers" of the Operational Program "Education and Lifelong Learning", co-financed by the European Social Fund (ESF) and the Greek State, 2012-2015.
- Study of gaseous and particulate species at South Aegean Sea (Santorini-Finokalia) during the Etesians, 2013