Organic aerosols and their impact on biogeochemical cycles and climate.

Presenting Author: **Maria Kanakidou**, Environmental Chemical Processes Laboratory, Department of Chemistry, University of Crete, Greece, mariak@uoc.gr

Co-Authors: **Stelios Myriokefalitakis**, IERSD, National Observatory of Athens, Pentali, Greece
**Georgios Fanourgakis**, Environmental Chemical Processes Laboratory, Department of Chemistry, University of Crete, Greece
**Marios Hatziparaschos**, Environmental Chemical Processes Laboratory, Department of Chemistry, University of Crete, Greece
**Kostas Tsigaridis**, 3- Center for Climate Systems Research, Columbia University, 2880 Broadway, and NASA Goddard Institute for Space Studies, 2880 Broadway, New York, NY 10025, USA
**Athanasios Nenes**, School of Chemical & Biomolecular Engineering and School of Atmospheric Sciences, Georgia Institute of Technology, Atlanta, GA, 30332-0340, USA; National Observatory of Athens, P. Penteli 15236, Athens, Greece
Foundation for Research and Technology – Hellas, Greece

Abstract:

In the atmosphere organics are a complex mixture of compounds of variable chemical, physical and optical properties. Depending on their sources and their atmospheric fate, they also have variable content in C, H, O, N. Therefore, organics are involved in the biogeochemical cycles of trace elements and are recycled between the atmosphere, the terrestrial biosphere and the ocean.

In the present study we investigate the contribution of organics to the global burden of cloud condensation nuclei and of ice nuclei, as well as to the nutrients atmospheric global cycles, using a global 3-dimensional chemistry transport model able to account for multiphase chemistry in the atmosphere, the major aerosol components as well as the nitrogen, iron and phosphorus nutrients.

Uncertainties related to the chemical, biological and physical process understanding or to the process parameterizations in the models are discussed.