ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Εθνικόν και Καποδιστριακόν Πανεπιστήμιον Αθηνών

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Αίθουσα Συνεδριάσεων *του Τμήματος Φυσικής (2ος όροφος, απέναντι από τη Γραμματεία)*

Θέμα: Modeling and Remote Sensing of Atmospheric Aerosols

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Abstract

Atmospheric aerosols are a major component of climate variability. These may include desert dust, volcanic ash, biomass smoke, pollen and anthropogenic emissions and each aerosol type is associated with different physicochemical properties and different atmospheric impacts. Research interest on this subject is twofold. First, a direct concern is related with the timely and accurate description of aerosols for mitigation purposes and risk assessment. Second, the interactions of airborne aerosols with weather and climate are a subject of intense research in atmospheric science due to their role in radiative transfer and cloud processes.

In this seminar we present recent findings and improvements regarding the nature of aerosol interactions in the atmosphere, their representation in numerical models and the development of new synergies between remote sensing and modeling activities in this field. Remote sensing measurements of weather and aerosol properties are currently available from a variety of spaceborne sensors (e.g. MSG/SEVIRI, MODIS, OMI, CALIPSO) and also from ground based instruments (e.g. EARLINET network, PollyXT lidars, Brewers network, AERONET sunphotometers). These measurements are used for both assimilation purposes and for the evaluation and fine tuning of atmospheric modeling simulations. We present examples of the synergies between remote sensing of mineral dust, fire hot spots, volcanic emissions and numerical atmospheric models (WRF, RAMS, NMM, FLEXPART, HYSPLIT) from various

research studies and experimental campaigns. Fine tuning of the simulations and source-receptor analysis techniques allow the improved description and forecast of atmospheric transport. Finally we discuss future plans regarding the advances in remote-sensing / modeling synergies in both the directions of risk management and atmospheric / climate considerations.

About Dr. Stavros Solomos

Stavros Solomos received his B.Sc. in Physics, M.Sc. in Environmental Physics / Meteorology and PhD in Meteorology / Atmospheric Modeling from the University of Athens, Greece in 2001, 2003 and 2011 respectively. Since 2013, he is a Postdoctoral Researcher at the Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing (IAASARS) of the National Observatory of Athens (NOA). During 2006-2013 he worked as research associate at the Atmospheric Modeling and Weather Forecasting Group at the University of Athens. He is an expert on atmospheric modeling and his research focuses on natural aerosols and their impacts on weather and climate (e.g. desert dust, sea salt, biomass, volcanic ash), severe atmospheric phenomena (e.g. hurricanes, floods, haboobs), air pollution and satellite data assimilation. As a researcher he has participated in more than 20 international projects related to atmospheric physics. He has twenty (22) publications in peer review journals (h-index=7 source: ISI Web of Knowledge) and more than 50 presentations in environmental scientific conferences. He is an active reviewer in 9 scientific journals. He has received the 2010 EURASAP Young Researchers 1st Award at the 31st NATO/SPS ITC and the 2014 Copernicus Masters best service award as a member of the FireHub team of NOA. He is responsible for the weather, dust and smoke modeling services at IAASARS/NOA.