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PO-BASIN ATMOSPHERIC COMPOSITION DURING THE PEGASOS FIELD CAMPAIGN (SUMMER 2012): EVALUATION OF ninfa/aodeM SIMULATION WITH IN-SITU e REMOTE SENSING OBSERVATIONS

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Within the EU project PEGASOS one of three field campaigns took place in the Po Valley during the summer of 2012. Photochemistry, particle formation, and particle properties related to diurnal evolution of the PBL were investigated through both in-situ and airborne measurements on board a Zeppelin NT air ship. In addition, 3-D air quality modeling systems were implemented over the Po valley for the summer 2012 to better characterize the atmospheric conditions, in terms of meteorological parameters and chemical composition.
In this work, we present a comparison between atmospheric composition simulations carried out by the modeling system NINFA/AODEM with measurements performed during the PEGASOS field campaign for the period 13 June – 12 July 2012. NINFA (Stortini et al., 2007) is based on the chemical transport model CHIMERE (Bessagnet et al., 2008), driven by COSMO-I7, the meteorological Italian Limited Area Model, (Steppeler et al., 2003). Boundary conditions are provided by Prev'air data (www.prevair.org), and emission data input are based on regional, national and European inventory. Besides, a post-processing tool for aerosol optical properties calculation, called AODEM (Landi T. C. 2013) was implemented. Thus, predictions of Aerosol Optical Depth and aerosol extinction coefficient were also used for model comparison to vertical-resolved observations. For this experiment, NINFA/AODEM has been also evaluated by using measurements of size-segregated aerosol samples, number particles concentration and aerosol optical properties collected on hourly basis at the 3 different sampling sites representative of urban background (Bologna), rural background (San Pietro Capofiume) and remote high altitude station (Monte Cimone 2165 ma.s.l.).). In addition, we focused on new particles formations events and long range transports from Northern Africa observed during the field campaign.

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