Geophysical Research Abstracts
Vol. 17, EGU2015-2072, 2015
EGU General Assembly 2015

A new method for the evaluation of the direct effect of the ship traffic on PAHs

Elena Gregoris (1,2), Silvia De Pieri (2), Elena Barbaro (1,2), Rossano Piazza (1,2), Andrea Gambaro (1,2), and Daniele Contini (3)

(1) Italian National Research Council (CNR), Institute for the dynamics of environmental processes (IDPA), Venezia, Italy (elena.gregoris@idpa.cnr.it), (2) Ca' Foscari University of Venice, Department of Environmental Sciences Informatics and Statistics, Venezia, Italy, (3) Italian National Research Council (CNR), Institute of Atmospheric Sciences and Climate (ISAC), Lecce, Italy

Emissions of exhaust gases and particles from ships can affect significantly the chemical composition of the atmosphere, local and regional air quality and climate. These emissions might have harmful effects on human health, since Mediterranean harbors are often located near or within the cities. Moreover ships and harbours emissions are currently increasing, due to the grow of tourism and trade, further amplifying this issue. International legislation and local agreements are mainly based on the use of low-sulphur fuel content, but also other chemicals, such as polycyclic aromatic hydrocarbons (PAHs), play an important role. Because of their low reactivity PAHs can persist in the environment for a long time; moreover they bioaccumulate, causing adverse effect on human health, such as reproductive and immune effects, developmental anomalies and cancer. This work is linked to the POSEIDON project (POllution monitoring of Ship Emission: an IntegrateD approach fOr harbor of the Adriatic basiN), that aims to quantify the atmospheric pollution generated by ship traffic and harbor activities in four port-cities of the Adriatic Sea (Brindisi, Venice, Rijeka, Patras). Here, a new method for the evaluation of the direct effect of ship traffic and harbour activities on polycyclic aromatic hydrocarbons is presented. In this method two high-volume samplers are operating: one of them collecting air from all directions; the other one is programmed to activate only when the wind is blowing from a specific sector (the harbour area). From the compared results, information about the effect of the harbour on the global PAHs concentration can be obtained. The method was applied in Venice in two summer sampling campaigns, in 2009 and 2012.