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Using satellite observations (IASI/METOP, A-Train) to analyze the impact of fire emissions on air quality

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Observations of trace gases and aerosols from satellite remote sensing provide essential information on pollution emissions and transport. IASI/METOP allows the global monitoring of several key species for atmospheric chemistry analysis, with unprecedented spatial sampling and coverage. Its ability to detect a large series of species within fire plumes has recently been demonstrated, and could significantly improve current evaluation of the impact of such extreme pollution events on air quality. Aerosol observations from several remote sensors on board satellites of the A-Train (MODIS, POLDER/PARASOL, CALIOP/CALIPSO) are also now commonly used for the analysis of the long-range transport of pollution.

In this presentation, we will discuss the information provided by the carbon monoxide (CO) retrievals, one of the main species measured by IASI, on fire emissions transport mechanisms and pathways. Therefore, IASI retrievals will be compared to simulations from the CHIMERE regional chemistry and transport model for the case study of the large fires which burned in Greece during August 2007. We will then present an analysis of the constraint provided by IASI on chemistry within the transported plumes using the retrievals for the shorter lived species and for ozone.

Finally, the IASI observations will be coupled to the aerosol observations from the PARASOL mission in order to assess the impact of this specific fire event on air quality in the Euro-Mediterranean region (both PM2.5 and ozone).