# AVVISO DI SEMINARIO

***Martedì 26 gennaio 2016, ore 11***

***Dipartimento di Fisica e Astronomia, Via Irnerio 46, Aula A***

## Balloon-borne aerosol measurements with the aerosol counter LOAC in the troposphere and in the stratosphere

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LOAC (Light Optical Aerosol Counter) is a new small optical particle counter/sizer of 300 grams designed to fly under all kinds of balloons. The measurements are conducted at two scattering angles: the first one, at 12°, is used to determine the aerosol particle concentrations in 19 size classes within a diameter range of ~0.2-100 μm; the second angle, at 60°, is used to discriminate between different types of particles dominating different size classes. The sensor particularly discriminates wet or liquid particles, mineral dust, soot carbon particles and salts.

LOAC is used under all kinds of balloons: tethered, meteo sounding, open stratospheric, and boundary-layer pressurized drifting balloons. Observation domains include the atmospheric surface layer, the boundary layer, the free troposphere and the stratosphere up to more than 35 km in altitude. Operations encompass a variety of environments: the Arctic (Iceland), the Mediterranean basin, the mid-latitudes (France and Canada), the tropical region (Reunion Island) for stratospheric measurements, and urban areas (Paris, France; Vienna, Austria) for boundary layer tropospheric measurements.

30 LOAC were launched under sounding and boundary layer balloons in summer 2013 above the Northern Mediterranean basin to study sand plume events. One LOAC is launched with sounding balloons every two weeks from France since the end of 2013 to monitor the stratospheric variability content in terms of concentrations and aerosol natures. Several flights were conducted at polar and tropical latitudes to study specific events, as polar vortex and volcanic plumes. Permanent measurements are also conducted in Paris from a tethered balloon since 2013 to better document pollution events.

Main results obtained during these campaigns will be presented and discussed in terms of size distribution and nature of the aerosols, and variability on the concentration contents. In particular, we will present new results on the unexpected detection of solid large particles in the stratosphere.