

ATS/CIRA Colloquium

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**Aerosol research at a global air pollution hotspot – the Po
Valley, Italy**

Hosted by A.R. Ravishankara and Jeff Pierce

Friday, April 3, 2015

**ATS room 101; Discussion will begin at 11:15am
Refreshments will be served at 10:45am in the weather lab**

The Po Valley is a hot spot for air pollution both for the emission sources due to the intense industrial, agricultural and trading activities and the orography of the Valley, surrounded on three sides by high mountain ranges, that favors the accumulation of particulate and gaseous pollutants in the lower levels of the atmosphere. The Po Valley is an ideal natural laboratory to study the interaction of anthropogenic aerosol particles with gas and liquid phase (multiphase chemistry), since a wide range of temperature and relative humidity conditions occur in the different seasons of the year, while a relatively low PBL dynamics makes the system stable over long periods, causing recirculation and stagnation of the air.

I will show very recent results from several experiments carried out over the last years within the Supersito Project, funded by the regional government and the PEGASOS European project. Source apportionment of organic aerosol (OA) from five field campaigns carried out in different seasons linking three field sites at rural, urban and mountain locations, show that the contribution of biomass burning (primary and secondary sources) is dominant in the cold and transition seasons, while the OA concentration during summer is dominated by a background level due to regional transport and pollutant recirculation over the Valley and, to a lesser extent, local nocturnal chemistry forming a fraction of secondary OA accumulating with similar mechanism as ammonium nitrate, mainly due to the presence of liquid water.

The results of a long time series (20 years) of fog chemistry will also be presented, evidencing the large reduction of the fog frequency in the Po Valley and the concomitant reduction of the concentration of dissolved chemical species in fog droplets and of the free acidity.

Link to colloquium videos and announcement page: <http://www.atmos.colostate.edu/dept/colloquia.php>