**Understanding the effects of chemical composition on hygroscopicity and CCN activity**

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These measurements will study of the effects of pollution on the chemical composition, hygroscopicity, and CCN activation of aerosol. They will take place at the T1 site during the campaign. For these studies, two sets of measurements will be performed:

- *Ultrafine composition, hygroscopicity and CCN activity.*
  These measurements of ultrafine aerosol, or those with spherical equivalent diameters smaller than 100 nm, can be applied to models of gas-particle partitioning to test our current understanding of hygroscopicity, particularly for aerosols that contain a significant carbonaceous fraction. The critical supersaturation measurements will be useful to establish closure in the chemical composition; combined with the hygroscopicity measurements, one can also estimate the solubility of the organic species contained within the aerosol.
- *CCN composition, hygroscopicity and CCN potential.*
  In tandem with the ultrafine aerosol measurements in Mexico City, we propose to measure the composition, hygroscopicity and critical supersaturation of aerosol that would typically form droplets in clouds. Cloud droplets often form from aerosol particles that are larger than a characteristic size, which strongly depends on cloud dynamical parameters (primarily updraft velocity or cooling rate), the aerosol size distribution, mixing state and chemical composition.

In support of both studies, we will also be measuring aerosol surface tension using a hi-vol sampler followed by laboratory analysis with a tensiometer.