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[U-04_29AM2]Frontiers of Atmospheric Science: Airborne Research of Earth Science

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In order to advance the atmospheric science and other Earth science fields, it is crucial to establish the Earth observation system by introducing a dedicated aircraft in addition to ground-based and satellite measurement systems. Aircraft measurements can cover the whole troposphere and have advantages in the measurements of wide range of parameters, precision/accuracy, and temporal/spatial resolutions. A goal of this session is to discuss the important results obtained in previous aircraft experiments and expected results in the future aircraft experiments on the atmospheric science and other Earth science fields.

12:15 PM - 12:25 PM

[U04-P01_PG]Aerosol particles collected using aircrafts from anthropogenic sources and biomass burning and electron microscopy

3-min talk in an oral session

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Keywords:Electron microscope, East Asia, Northwest US, A-Force, BBOP, MILAGRO

Aerosol particles collected during four sampling campaigns using aircrafts were analyzed using transmission electron microscopes (TEM). The samples were collected from two A-Force campaigns in 2013 (winter and summer) conducted in Japan and Korea, BBOP campaign in 2013 in the USA, and MILAGRO campaign in 2006 in Mexico. These campaigns aim to characterize aerosol particles from regional transportation, biomass burning, and both. The samples collected using aircrafts are useful for characterization of particle agings, especially changes of their mixing states, from emissions as the aircrafts can chase plumes of different aging periods. An example of such aerosol-particle aging is tar ball formation in biomass burning smoke. Tar ball is spherical, organic aerosol particles commonly from combustion smoke of a wide range of biomass burning. At the early stage of the emission, tar balls are liquid but as they age in the smoke, they become solid and spherical. Sets of biomass burning aerosol samples with different aging stages collected using an aircraft revealed such processes in atmosphere. I will also discuss the samples collected over Japan during the A-Force campaigns.

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