

## The Atmosphere Observing System (AOS): Future Observations for the Study of Coupled Aerosol-Cloud-Convection-Precipitation Interactions

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The Atmosphere Observing System (AOS) will provide key information for use in Earth System science and applications such as improving predictions of climate change and weather, mitigating natural hazards, and improving agricultural assessment. The AOS represents two of the five designated observables from the 2017 NASA Earth Science Decadal Survey: aerosol particles (A) as well as clouds, convection, and precipitation (CCP). The planned observing system has undergone multiple iterations. Currently, AOS is comprised of contributions from NASA, the Japanese Aerospace Exploration Agency (JAXA), the Canadian Space Agency, the Centre National D'Etudes Spatiales (CNES), and likely the Agenzia Spaziale Italiana (ASI). AOS will include space-borne and suborbital observation platforms. AOS is expected to deliver a comprehensive suite of observations to address aerosol-cloud-precipitation interactions, with science objectives focused cloud feedbacks; the dynamics and structure of convective systems and properties of the aerosol particles; phase partitioning and precipitation formation in frozen and mixed-phase clouds; aerosol microphysical and optical properties. AOS will better characterize atmospheric processes affecting air quality; aerosol particle vertical distribution and processing by clouds and precipitation; and aerosol particle direct and indirect effects.

The project is currently in the formulation phase (known as Phase A) during which requirements will be finalized, designs for lidar and Doppler cloud radar will be studied and possibly solicited, and an architecture plan defined. This talk will describe the science of AOS, the mission architecture and measurement capabilities, as well as current status.