

ACTIVATE: Instruments

Instruments: All instruments required for ACTIVATE science objectives are mature (TRL 9); these advanced, active and passive remote sensing and in situ instruments provide a low-risk, high-impact approach for both obtaining critical atmospheric measurements to relate aerosols, clouds, and meteorology, and improving models. ACTIVATE also provides a unique opportunity to evaluate the ability of a new compact airborne radiometer to provide an additional cloud liquid water path measurement. ACTIVATE includes a suite of multi-scale models and a diverse science analysis and modeling team with broad expertise in integrating airborne and satellite data to advance our knowledge of aerosol-cloud-meteorology interactions. **The ACTIVATE team brings together experts in airborne in situ and remote sensing measurements and analyses, model development, satellite retrievals, and field campaign leadership.**

Measurements/Instruments	Organization
NASA HU-25 Falcon	
In-situ aerosol properties	NASA LaRC
In-situ cloud microphysics	NASA LaRC
Cloud water and cloud droplet residual particles	NASA LaRC
State variables and winds	NASA LaRC
Diode Laser Hygrometer (DLH) and trace gases	NASA LaRC
NASA B-200 King Air	
Research Scanning Polarimeter (RSP)	NASA GISS
High Spectral Resolution Lidar (HSRL-2)	NASA LaRC
Dropsondes	NASA LaRC
Profiling Airborne Microwave Radiometer (PAMR)	University of Miami
Models	
Organization	
DHARMA (LES)	NASA GISS
GISS-E3 (SCM and Global)	NASA GISS
GEOS-5 and GEOS-Chem	NIA/NASA LaRC
FLEXPART	NIA/NASA LaRC
WRF (LES and CRM)	PNNL
E3SM (SCM and Global)	PNNL
CAM5 (SCM and Global)	PNNL/UA

The primary instruments planned for **ACTIVATE** are:

- High Spectral Resolution Lidar-2 (HSRL-2)
- Research Scanning Polarimeter (RSP)
- Dropsondes
- Langley Aerosol Research Group Experiment (LARGE) aerosol optical and microphysics
- LARGE cloud probes and cloud water collection
- Diode Laser Hydrometer (DLH) water vapor
- Turbulent Air-Motion Measurement System (TAMMS) winds