

Monday, 6/23/2025	Theme: Cloud Science Accomplishments and Future Direction Presentations/posters on: <ol style="list-style-type: none"> 1. Recent accomplishments in planetary cloud/aerosol investigations through modeling, remote observations, or experimental methods. 2. Expectations of future missions to Venus, Titan, Mars, Uranus that may include aerosol and cloud investigations, goals, and objectives.
8:00 AM	Interaction between virtual and in-person participants
8:45 AM	Welcome/Introduction – Mike Pauken
9:00 AM	Keynote Address – Speaker: Dr. Brian Toon (In-person), Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder Planetary parallels: commonalities in planetary clouds
	<u>Planetary Cloud/Aerosol Focus Talks</u>
	Earth
10:00 AM	<ol style="list-style-type: none"> 1. How big does a cloud chamber need to be (and why): The Aerosol Cloud Drizzle Convection Chamber (ACDC2), Will Cantrell (In-person)
10:30 AM	<ol style="list-style-type: none"> 2. A Fully Unified Representation of Turbulence, Convection and Clouds in a Global Atmospheric Model, Joao Teixeira (In-person)
11:00 AM	<ol style="list-style-type: none"> 3. Laser-based diagnostics for clouds in the Pi Convection-Cloud Chamber, Suryadev Singh (In-person)
11:30 AM	Lunch Break
	Venus
12:30 PM	<ol style="list-style-type: none"> 1. Bolide-induced Cloud Formation at Venus, Kevin McGouldrick (In-person)
1:00 PM	<ol style="list-style-type: none"> 2. Volcanic Emission iNvestigation Utilizing Single-particle In-situ Automated Nephelometry (VENUSIAN), Chris Carr (In-person)
1:30 PM	<ol style="list-style-type: none"> 3. First Results from the AFN Measurements during the VENUSIAN Mission, Darrel Baumgardner (Remote)

2:00 PM	Mars 1. Mesospheric CO ₂ -ice clouds on Mars: insights from the Mars Climate Sounder, Marek Slipski (In-person)
2:30 PM	2. Climate and weather patterns of mesospheric clouds on Mars, Ashwin Braude (In-person)
3:00 PM	3. Retrievals of CO ₂ Cloud Opacity Using Mars Climate Sounder Observations, Robert Stevens (In-person)
3:30 PM	Afternoon Break
3:45 PM	Titan 1. Simulating the Production of Ice Clouds in Titan's Stratosphere using an Idealized Tracer Scheme in a Three-Dimensional General Circulation Model, Nicholas Lombardo (In-person)
4:15 PM	Gas Giants 1. Optical constants of laboratory-produced analogs of the red chromophores in Jupiter's atmosphere, Lora Jovanovic (In-person)
4:45 PM	Exoplanets 1. Nanoparticle Surface Energy Measurements and Implications for Silicate Cloud Nucleation and Condensation in Hot Exoplanet Atmospheres, Megan Householder (In-person)
6:30 PM	Early Career Mixer Event – Kings Row Pub, Old Town Pasadena

Tuesday, 6/24/2025	Theme: How to Achieve Progress in Cloud Science Presentations/posters on: <ul style="list-style-type: none"> 1. Developments in modeling techniques, instrumentation, laboratory investigations, or remote sensing techniques. 2. Needs for ground-based test facilities to support future planetary cloud/aerosol investigation related missions.
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	Afternoon session: Discussion on how the PCARF can be used by the community to advance planetary cloud investigations.
8:00 AM	Interaction between virtual and in-person participants
8:15 AM	Remote poster participants - lightning talks (Prepare 2-3 slides about their posters to present online)
	<u>Cloud / Aerosol Investigation Methods</u>
	Remote Sensing
9:00 AM	1. Optical and Geometrical Thickness of Clouds Using Space-Based High-Resolution Oxygen Absorption Spectroscopy: From Marine Strato-Cumulus to Tropical Cyclones, Anthony Davis (In-person)
9:30 AM	2. Using Machine Learning to Study Jupiter's Colorful and Dynamic Atmosphere, Emma Dahl (In-person)
	In Situ Measurements
10:00 AM	1. Investigation of the apparent anomalous cooling of soot during laser-induced incandescence, Stephen Robinson-Enebeli (In-person)
10:30 AM	2. Model-Based Estimation of Environmental Parameters in Indian Ports: A Non-Modeling, In Situ Approach, Chaitali Thali (Remote)
11:00 AM	3. Effect of Climate Forcing Parameters on Coastal Regions Due to Marine Aerosols: An In Situ Observation Study, Nandakumar S K (Remote)
11:30 AM	Lunch Break
	<u>Cloud / Aerosol Investigation Methods</u>
	Modeling
12:30 PM	1. PlanetCARMA Chamber Mode: A Microphysics Model to Simulate PCARF Experiments, Erika Barth (In-person)
1:00 PM	2. 3D Modelling of Heterogeneous Chlorine Chemistry on Martian Atmospheric Aerosols, Paul Streeter (Remote)
1:30 PM	3. Artificial warming of Mars using manufactured aerosols: First step to a second biosphere on Mars? Ashwin Braude (In-person)
	Laboratory Investigations

2:00 PM	1. Unveiling Contrasts in Mixed Black Carbon Aerosol Properties: Condensation vs. Coagulation, Cyprien Jourdain (In-person)
2:30 PM	2. Optical Constants of Pluto Aerosol Analogs and their Use to Investigate the origins of Pluto's Dark Surface Materials, Ella Sciamma-O'Brien (In-person)
3:00 PM	Afternoon Break
3:15 PM	PCARF Chamber – Update (In-person) <ul style="list-style-type: none"> 1. Overview of the Planetary Cloud Chamber - Mike Pauken 2. PCARF Chamber Design - Luca Valdarno 3. PCARF Chemical Feed System - Marcel Veismann 4. Instrumentation Systems - Dejian Fu/Rahul Kushwaha 5. Computational Fluid Dynamics Study of Turbulent Rayleigh-Bénard Convection in Jovian Planets' Gases for the Planetary Cloud Aerosol Research Facility, Ebenezer Ashimolowo
4:30 PM	Research proposal development guidelines Form collaboration groups
5:00 PM	Evening Poster Session
	<ul style="list-style-type: none"> 1. Reactive uptake of SO₂ in H₂SO₄ droplets using a single particle levitation method under Venus- analogous conditions, Soma Ubukata (In-person) 2. Meteorological dynamics at Jezero Crater: a comparative study of perseverance rover data and Mars climate models during dust storm season, Manasa M J (Remote) 3. Satellite System Design and Algorithms for Targeted Cloud Measurements, Mary Dahl (In-person) 4. Measurement of Nanoparticle Volume and Density in the Aerosol Phase, Cyprien Jourdain (In-person) 5. Unveiling mars' clouds: NASA's remote sensing mission, Sreyas S S (Remote)

	<p>6. Investigation of the Radiative Impact and Transport of Martian Aerosols Using MarsWRF, Hartzel Gillespie (In-person)</p> <p>7. Instrumentation for In-Situ Analysis of Venus Aerosol, Caroline Dang (Undecided)</p> <p>8. Phytoplankton Biodiversity on the Georgian Black Sea Coast, Sophio Nikolaishvili (In-person)</p> <p>9. Atmospheric Structure Investigation and NephEx 2.0: Planetary in situ measurements of clouds/aerosols, differential atmospheric pressure and temperature, Vandana Jha (In-person)</p> <p>10. A Perspective on Using Cloud Microphysics to Interpret Exoplanet Spectra and Diagnose Climate, Victoria Hartwick (In-person)</p> <p>11. The Extraterrestrial Stokes Number, Fred Brechtel (In-person)</p> <p>12. Remote Sensing of Cloud Characteristics in the Indian Monsoon Region, Ramesh Penki (In-person)</p> <p>13. Origin and Evolution of Ice Percolation, Saurabh Nath (In-person)</p>
6:30 PM	Workshop Dinner at Athenaeum, Caltech

Wednesday, 6/25/2025	<p>Theme: Path Forward</p> <p>Break into small groups to discuss research proposals that would utilize PCARF and other facilities. Focus on connecting experimental investigations with numerical simulation, remote sensing, and instrument development.</p>
8:00 AM	Interaction between virtual and in-person participants
8:15 AM	In-person poster participants – lightning talks (Prepare 2-3 slides about your poster to present online)
	<p><u>Breakout Sessions for Path Forward</u></p> <p>1. How can we address the questions raised in the decadal survey?</p>

	2. What kinds of research can we be conducted using the PCARF facility or other cloud chamber facilities?
9:00 AM	3. What kind of instrument development is needed for future investigation of clouds and aerosols in planetary atmospheres including remote observations and in situ measurements? 4. Looking ahead to the next Decadal Survey, what are the important science questions related to planetary clouds and aerosols that we should be setting up with white papers?
12:00 PM	Lunch Break
1:00 PM	Breakout session debriefs, Q&A
3:00 PM	Closing Remarks
3:15 PM	Caltech Aerosol Lab Tour