# 2019 AGU Fall Meeting

## NASA Earth Science Technology Office (ESTO)

## ESTO-Funded and ESTO-Affiliated Presentations, Posters, and Events

### Monday, December 9

**Poster A11R-2880** (8:00-12:20, MS Poster Hall)
***The North Atlantic Aerosols and Marine Ecosystems Study (NAAMES): Overview and Findings*** – Chris Hostetler

**Poster Session A11O** (8:00-12:20, MS Poster Hall)
***Data Assimilation and Inverse Modeling of the Atmospheric Composition II Posters*** – Daven Henze, Chair

**Poster A11T-2825** (8:00-12:20, MS Poster Hall)
***First airborne observations of the Planetary Boundary Layer by the Compact Midwave Imaging System*** – Michael Kelly

**Poster Session B11F** (8:00-12:20, MS Poster Hall)
***Advances in the Application of Remote Sensing for Biodiversity Monitoring: Integrating Data Across Scales and Technologies VI***
– Keith Gaddis, Gary Geller, William Turner, Michael Little (Conveners)

**Poster B11F-2400** (8:00-12:20, MS Poster Hall)
***Satellite Data Fusion of XCO2 using Compressive Sensing and Deep Learning*** – Sai Sree Laya Chukkapalli (Milt Halem)

**Poster IN11D-0684** (8:00-12:20, MS Poster Hall)
***Analysis Ready and Interoperable: Taming Multi and Hyperspectral Imagery*** – Anne Wilson

**Poster IN11D-0685** (8:00-12:20, MS Poster Hall)
***- Cloud Native Data Processing and Visualizations Techniques for Earth Science Data*** – Ajinkya Kulkarni (Helen Conover)

**Presentation IN11A-06** (9:00, MW 2018 L2)
***Four Years of Progress in Analytic Center Frameworks: Lessons Learned*** – Michael Little

**Presentation A11A-06** (9:15, MW 3002 L3)
***Accelerating MPAS-A model radiation schemes on GPUs using OpenACC*** – Zhifeng Yang (Milt Halem)

**Presentation G11A-08** (9:45, MS 160 Upper Mezz)
***Combining observations of GNSS and astronomical sources: Can you see both through a single lens?*** – Jonathan York

**Presentation IN12A-06** (11:20, MW 2018 L2)
***Moving toward a cloud native High-Performance Computing environment for Earth Science*** – Daniel Duffy

**Town Hall TH13C** (12:30-13:30, MW 3005 L3)
***NASA's Decadal Survey Designated Observable Mission Study: Surface Deformation and Change*** – Andrew Molthan, Paul Rosen, Batuhan Osmanoglu, Gerald Bawden, Stephen Horst, Ala Khazendar and Jeanne Sauber

**Poster IN13B-0707** (13:40 - 18:00, MS Poster Hall)
***Aiming for Autonomously Sustainable Solution for Spatiotemporal Analysis*** – Thomas Huang

**Poster IN13B-0714** (13:40 - 18:00, MS Poster Hall)
***NEXUS Hyper Grid: Analytics Engine Scalable for Climate Model Evaluation*** – Joseph Jacob (Thomas Huang)

**Poster IN13C-0729** (13:40 - 18:00, MS Poster Hall
***PARGEO: Cloud-Ready Pervasively Parallel Analytics and Climate Science*** – Brian Wilson (Thomas Huang)

**Session B13A** (13:40-15:40, MW 3005 L3)
***Advances in the Application of Remote Sensing for Biodiversity Monitoring: Integrating Data Across Scales and Technologies I***
– Keith Gaddis, Gary Geller, William Turner, Michael Little (Conveners)

**Presentation B13A-08** (15:25, MW 3005 L3)
***NeMO-Net: The Neural Multi-Modal Observation and Training Network for Global Coral Reef Assessment*** – Ved Chirayath

**Session B14A** (16:00-18:00, MW 3005 L3)
***Advances in the Application of Remote Sensing for Biodiversity Monitoring: Integrating Data Across Scales and Technologies II***
– Keith Gaddis, Gary Geller, William Turner, Michael Little (Conveners)

**Presentation A14G-07** (17:30, MW 3010 L3)
***Validation of the Vapor In-cloud Profiling Radar (VIPR)***
– Richard Roy (Matt Lebsock)

**Presentation G14A-02** (16:15, MS, 160 Upper Mezz)
***The NASA CYGNSS Small Satellite Constellation*** – Chris Ruf

**Session IN14A** (16:00-18:00, MW 2018 L2)
***New Observing Strategies for Monitoring Water Resources and Events***
– Jacqueline Le Moigne, Michael Little, Gerald Bawden, Benjamin Smith (Conveners)

**Presentation IN14A-02** (16:15, MW 2018 L2)
***Applications of emerging technologies in climate downscaling and hydrologic modeling for water resources*** – Andy Wood

**Presentation IN14A-05** (17:00, MW 2018 L2)
***Raincube Mission: One Year in Space*** – Ousmane Sy (Eva Peral)

**Presentation IN14A-07** (17:30, MW 2018 L2)
***Autonomous Scheduling of Agile Spacecraft Constellations with Delay Tolerant Networking for Monitoring Transient Precipitation and Urban Floods*** – Sreeja Nag

**Presentation NG14A-07** (17:30, MW 2010 L2)
***Lessons Learned in Simulation-Based Uncertainty Quantification for Satellite Retrievals*** – Jon Hobbs

**Presentation A14G-08** (17:45, MW 3010 L3)
***Airborne Lidar Observations of Water Vapor Profiles and Planetary Boundary Layer Heights with the NASA High Altitude Lidar Observatory (HALO)*** – Rory Barton-Grimley (Amin Nehrir)

### Tuesday, December 10

**Poster GH21B-1215** (8:00-12:20, MS Poster Hall)
***Using Earth Observations within a Health Management Information System for Improving Malaria Decision Support*** – John Beck

**Poster IN41C-0876** (8:00-12:20, MS Poster Hall)
***Innovative Technologies Development for Future NASA Earth Science Missions*** – Marge Cole

**Poster NG21B-0935** (8:00-12:20, MS Poster Hall)
***Using Nonlinear Data Assimilation to Answer Questions of Cause and Effect in Convective Storms*** – Derek Posselt

**Poster NH21C-0978** (8:00-12:20, MS Poster Hall)
***Earthquake and Tsunami Nowcasting and Forecasting Using Shannon Information Theory*** – John Rundle (Andrea Donnellan)

## Tuesday, December 10, continued

**Session B21A** (8:00-10:00, MW 3005 L3)
***Advances in the Application of Remote Sensing for Biodiversity Monitoring: Integrating Data Across Scales and Technologies III***
– Keith Gaddis, Gary Geller, William Turner, Michael Little (Conveners)

**Presentation B21A-01** (8:00, MW 3005 L3)
***NASA's AIST Program advances information technology to support research into Biodiversity and Ecological Forecasting***
– Ian Brosnan

**Presentation B21A-02** (8:15, MW 3005 L3)
***Very high-resolution commercial optical remote sensing products for biodiversity monitoring*** – Margaret Wooten (Chris Neigh)

**Presentation B21A-03** (8:30, MW 3005 L3)
***NG UAV Spectral Systems and Analytics for Monitoring the Diversity and Dynamics in Vegetation Function*** – Petya Campbell

**Presentation A21F-04** (8:45, MW 3002 L3)
***Changes in Orographic Precipitation Across Scales*** – Ethan Gutmann

**Session B22A** (10:20-12:20, MW 3005 L3)
***Advances in the Application of Remote Sensing for Biodiversity Monitoring: Integrating Data Across Scales and Technologies IV***
– Keith Gaddis, Gary Geller, William Turner, Michael Little (Conveners)

**Session A22A** (10:20-12:20, MW 2000, L2)
***Data Assimilation and Inverse Modeling of the Atmospheric Composition I*** – Daven Henze, Chair

**Presentation C22A-08** (12:05, MW 2008 L2)
***Remote Sensing of Ice Sheet Internal Temperatures Using Ultra-Wideband Microwave Radiometry*** – Joel Johnson

**Town Hall TH23B** (12:30-13:30, MW 2002 L2)
***NASA Earth Science Division Town Hall*** – Sandra Kauffman, Paula Bontempi, Jack Kaye, Eric Ianson, Lawrence Friedl, Pamela Millar, Patricia Jacobberger-Jellison (Presenters)

**Poster A23J-2947** (13:40-18:00, MS Poster Hall)
***Estimation of Fuel Moisture Content Based on Integrating Surface and Satellite Observations Using Machine Learning***
– Branko Kosovic

**Session B23F** (13:40-18:00, MS Poster Hall)
***Advances in the Application of Remote Sensing for Biodiversity Monitoring: Integrating Data Across Scales and Technologies V Posters***
– Keith Gaddis, Gary Geller, William Turner, Michael Little (Conveners)

**Poster B23K-2456** (13:40-18:00, MS Poster Hall)
***Vulnerability of the taiga-tundra ecotone: predicting the magnitude, variability, and rate of change in structure at the Arctic edge of the boreal forest*** – Amanda Hildt Armstrong (Batu Osmanoglu)

**Poster GC13H-1260** (13:40-18:00, MS Poster Hall)
***Foehn Winds on the Antarctic Peninsula: Climatology and Impacts on Surface Melt from 1979-2018*** – Matt Laffin (Charlie Zender)

**Poster PP23F-1708** (13:40-18:00, MS Poster Hall)
***Effect of Fuels and Forest Structure on Daily Emissions and Smoke Production from the Rim Fire*** – Leland Tarnay (Janice Coen)

**Session IN23C** (13:40-15:40, MS eLightning Theater III)
***New Observing Strategies for Monitoring Water Resources and Events II eLightning*** – Jacqueline Le Moigne, Michael Little, Gerald Bawden, Benjamin Smith (Conveners)

**Presentation IN23C-12** (13:40-15:40, MS eLightning Theater III)
***A synthetic comparison of observation constellation configurations with the goal of global snow mass characterization*** – Bart Forman

**Presentation IN23C-15** (13:40-15:40, MS eLightning Theater III)
***Evaluation of snow observation data using an OSSE framework***
– Rhae Sung Kim (Bart Forman)

**Presentation IN23C-19** (13:40-15:40, MS eLightning Theater III)
***New Observing Strategies (NOS) for Future NASA Earth Science Missions*** – Jacqueline Le Moigne

**Presentation IN23C-20** (13:40-15:40, MS eLightning Theater III)
***Recent Progress and Development in Energy Efficient and Smart in situ Wireless Sensor Networks: SoilSCAPE*** – Ruzbeh Akbar

**Town Hall TH25D** (18:15-19:15, MW 3004 L3)
***NASA Surface Topography and Vegetation Incubation Community Forum*** – Ben Phillips, Hank Margolis, Michael Falkowski, Blaize Denfeld

## Wednesday, December 11

**Poster C31B-1520** (8:00-12:20, MS Poster Hall)
***Feasibility of Estimating Ice Sheet Internal Temperatures Using Ultra-Wideband Radiometric Measurements***
– Yuna Duan (Joel Johnson)

**Poster C31C-1559** (8:00-12:20, MS Poster Hall)
***Combined active and passive Ultra-wide band remote sensing of Polar ice sheet temperature profiles – Leung Tsang (Joel Johnson)***

**Poster H31J-1843** (8:00-12:20, MS Poster Hall)
***Towards a multi-Variate, multi-sensor assimilation framework over snow-covered terrain in Colorado*** – Lizhao Wang (Bart Forman)

**Poster H31J-1846** (8:00-12:20, MS Poster Hall)
***Pitfalls and perils of machine learning-based passive microwave brightness temperature data assimilation over terrestrial snow in High Mountain Asia*** – Yonghwan Kwon (Bart Forman)

**Poster H31J-1847** (8:00-12:20, MS Poster Hall)
***Enhancing terrestrial snow mass estimation via assimilation of AMSR-E brightness temperature spectral differences using the Catchment land surface model and support vector machine regression***
– Jing Wang (Bart Forman)

**Poster S31G-0501** (8:00-12:20, MS Poster Hall)
***Targeted Postseismic Observations of the M6.4 and M7.1 Ruptures of the Ridgecrest Earthquake Sequence***
– Andrea Donnellan

**Flash Talk** (1:30, NASA Exhibit)
***SigNals of Opportunity P-band Investigation (SNoOPI)***
– James Garrison

**Poster C33E-1635** (13:40-18:00, MS Poster Hall)
***Preliminary results from SWESARR SnowEx Snow-off Flights***
– Batu Osmanoglu

**Poster C33E-1640** (13:40-18:00, MS Poster Hall)
***C-band synthetic aperture RADAR (SAR) backscatter dependence on snow-mass related information***
– Jongmin Park (Bart Forman)

**Presentation A33D-06** (14:55, MW 3008 L3)
***EPAMS Profiler and Ceilometer Network***
– Vanessa Caicedo (Milt Halem)

**Poster PA33D-1122** (13:40-18:00, MS Poster Hall)
***Complementary Use of Synthetic Aperture Radar and High-res Optical Imagery for Flood Monitoring***
– MinJeong Jo (Batu Osmanoglu)

**Presentation A34F-07** (17:30, MW 3004 L3)
***Transfer Learning to Generate True Color Images from GOES-16***
– Thomas Vandal (Rama Nemani)

## Thursday, December 12

**Poster Session A41U** (8:00-12:20, MS Poster Hall)
***The Current and Future Scientific Impact of Small Satellites on Space Missions II Posters*** – Charles Norton, David Klumpar, William Swartz, Pamela Millar (Conveners)

**Poster A41U-2674** (8:00-12:20, MS Poster Hall)
***Earth Science Impact of Global Measurements from Microwave Atmospheric Sounders on Closely-Spaced CubeSats: The TEMPEST Mission*** – Steven Reising

**Poster A41U-2675** (8:00-12:20, MS Poster Hall)
***Rainfall Estimation from TEMPEST-D CubeSat Observations: A Machine Learning*** – Chandrasekar Radhakrishnan (Steven Reising)

**Poster A41U-2676** (8:00-12:20, MS Poster Hall)
***HyTI: High spectral and spatial resolution thermal imaging from a 6U CubeSat*** – Robert Wright

**Poster A41U-2677** (8:00-12:20, MS Poster Hall)
***SNOOPI: A New Method for Spaceborne Remote Sensing of RZSM and SWE*** – James Garrison and Rashmi Shah

**Poster A41U-2678** (8:00-12:20, MS Poster Hall)
***The Stratospheric Aerosol and Gas Experiment (SAGE) IV Pathfinder*** – Michael Obland

**Presentation U41A-01** (8:04, MS 303-304 L3)
***100 Years of Computational Technologies Have Enabled Advances in Earth and Space Sciences*** – Michael Little

**Presentation U41A-07** (9:28, MS 303-304 L3)
***A Retrospective Analysis of an Epistemological Computer Simulation That Framed the Design of the US Global Operational Observing Systems for the Past 50 Years and Future Decade***s
– Milt Halem

**Presentation H42D-02** (10:35, MW 3022 L3)
***Imaging Ocean Microplastic Dynamics from Space*** – Chris Ruf

**Flash Talk** (1:30, NASA Exhibit)
***CHPS and REMI and the Future of Land Imaging***
– Thomas Kampe and Dennis Nicks

**Flash Talk** (1:40, NASA Exhibit)
***Peering Inside of Hurricanes and Typhoons to Sense Rain and Moisture from a Small, Nimble CubeSat*** – Steven Reising

**Poster H43M-2243** (13:40-18:00, MS Poster Hall)
***Towards assimilation of terrestrial water storage derived from GRACE and ground-based GPS into a land surface Model*** – Gaohong Yin

**Panel Session A43F** (13:40-15:40, MW 3002 L3)
***The Current and Future Scientific Impact of Small Satellites on Space Missions I*** – Charles Norton, David Klumpar, William Swartz, Pamela Millar (Conveners)

**Presentation A43F-02** (13:54, MW 3000 L3)
***Potential Impact of RainCube-like radars in CubeSats for Cloud and Precipitation Space Missions*** – Ousmane Sy (Eva Peral)

**Flash Talk** (2:20, NASA Exhibit)
***Signals of Opportunity: Utilizing all the Electromagnetic Spectrum for Earth Observation*** – Rashmi Shah

**Flash Talk** (2:30, NASA Exhibit)
***RainCube: First Cloud and Precipitation Radar in a CubeSat***
– Ousmane Sy

**Presentation A43D-04** (14:35, MW 3004 L3)
***Airborne Lidar Observations of Water Vapor, Methane, and Aerosol/Cloud Profiles with the High Altitude Lidar Observatory***
– Amin Nehrir

**Town Hall TH45D** (18:15-19:15, MW 3004 L3)
***NASA Planetary Boundary Layer Incubation Community Forum***
– Gail Jackson, Amber Emory, Tsengdar Lee, Barry Lefer (Presenters)

## Friday, December 13

**Poster A51M-2721** (8:00-12:20, MS Poster Hall)
***Using Lidar and Machine Learning to Identify Planetary Boundary Layer Heights*** – Jennifer Sleeman (Milt Halem)

**Poster GC51E-1111** (8:00-12:20, MS Poster Hall)
***A multispectral imaging radiometer for high spatial and spectral resolution thermal infrared observations*** – Michael Veto (David Osterman)

**Poster GC51O-1098** (8:00-12:20, MS Poster Hall)
***Simulation-Based Error Assessment for AIRS Near-Surface Temperature Retrievals: A Machine Learning Approach*** – Shen (Jon Hobbs)

**Poster H51S-1753** (8:00-12:20, MS Poster Hall)
***A Super Resolution Convolutional Neural Network approach for simulating NASA's SMAP Radar observations from Radiometer Data***
– Phuong Nguyen (Milt Halem)

**Presentation IN52A-04** (10:20, MW 2018 L2)
***COVERAGE: A Platform Enabling Research and Applications for GEO***
– Jorge Vasquez (Thomas Huang)

**Presentation A52A-07** (11:50, MW 300 L3)
***Sensible heat (not longwave radiation) fluxes dominate local melt events in Greenland*** – Wenshan Wang (Charlie Zender)

**Poster IN53B-0733** (13:40-18:00, MS Poster Hall)
***Compressive Geospatial Analytics*** - Ramin Ayanzadeh (Milt Halem)

**Presentation GC54C-01** (16:00, MW 2007 L2)
***Towards operational monitoring of facility-scale methane emissions with aircraft and satellites*** – Riley Duren

**Presentation C54B-02** (16:15, MW 2006 L2)
***Correlation Radiometry to Remotely Measure the Freshwater Lake Icepack Thickness*** – Mohammad Mousavi (Roger De Roo)