2024 AGU Fall Meeting
NASA Earth Science Technology Office (ESTO)
ESTO-Affiliated Presentations, Posters, and Events *(all times EST)*

iPoster Gallery *(all week)*

Online Poster SY01-09: ***Predictive Urban Air Toxics Analytics and Community Engagement for Equity and Environmental Justice***
- Pratyush Muthukumar (Dawn Comer)

Monday, December 9

Poster A11I-1708 (8:30-12:20, Hall B-C Poster Hall)
Field Results from the Compact Hyperspectral Air Pollution Senor–Demonstrator (CHAPS-D) - William H Swartz

Poster A11J-1736 (8:30-12:20, Hall B-C Poster Hall)
Calculating evapotranspiration from predicted temperatures to forecast annual wildfire CO2 emissions - Sirisha Sirisha (Milton Halem)

Poster A11Q-1885 (8:30-12:20, Hall B-C Poster Hall)
Ocean Color Remote Sensing Comparisons with AERONET-OC During Different Water Clarity Conditions in the Chesapeake Bay
- Samantha Smith (Stephanie Schollaert Uz)

POSTER SESSION A11S (8:30-12:20, Hall B-C Poster Hall)
Remote Sensing of the Planetary Boundary Layer from Ground, Air, and Space I Poster; Conveners: Amin Nehrir, Carol Anne Clayson, Kelly Lombardo, Jeffrey Piepmeier

A11S-1933 – ***Design and Initial Results from the Airborne Microwave Barometric Radar and Sounder (MBARS) Test Flights***
- Matthew McLinden

A11S-1936 – ***Enhancing Planetary Boundary Layer Observing System Trades with GNSS-RO Sampling in TAT-C*** - Paul Grogan

A11S-1937 – ***First Observations from the Airborne Hyperspectral Microwave Sounder CoSMIR-H*** - Rachael Kroodsma

A11S-1939 – ***From the Tropics to the Poles – Boundary Layer Moisture and Height Variability Observed from Airborne Differential Absorption and High Spectral Resolution Lidar***
- Amin R Nehrir

A11S-1946 – ***Optimal Estimation IR Sounder Retrievals of the Planetary Boundary Layer with a Generative AI Prior***
- Adam Milstein

A11S-1951 – ***Physical Retrieval of PBL Thermodynamic Fields from Next-Generation Hyperspectral Microwave Sensors***
- Yaping Zhou (Antonia Gambacorta)

A11S-1955 – ***The Hyperspectral Microwave Photonic Instrument (HyMPI): Technology Developments for Improved Planetary Boundary Layer Sounding*** - Fabrizio Gambini (Gambacorta)

A11S-1956 – ***Ultra-Wideband RF Photonics Spectrometer for Planetary Boundary Layer Sensing*** - Mehmet Ogut (Murakowski)

Poster G11C-3504 (8:30-12:20, Hall B-C Poster Hall)
A Six-axis Optomechanical Inertial Sensing and Navigation System for Future Mass Change Missions - Andrea Nelson (Felipe Guzman)

Poster G11C-3511 (8:30-12:20, Hall B-C Poster Hall)
Inertial Sensing and Navigation Systems Based on Opto-Mechanical Accelerometers for Future Gravity Field Missions
- Mohanad Warrayat (Felipe Guzman)

Poster GC11H-0038 (8:30-12:20, Hall B-C Poster Hall)
Emulating NASA ModelE Shared Socioeconomic Pathways (SSPs) Simulations with a Convolutional Neural Network
- John Mekus (Gavin Schmidt)

Presentation NG11A-06 (9:20-9:30, Marquis 12-13)
Enabling Uncertainty Quantification and an Extended Forecast Window using Deep Learning Ensembles for Atmospheric Composition
- Jennifer Sleeman (Emma Knowland)

Poster NH13F-2328 (13:40-17:30, Hall B-C Poster Hall)
Integrating Innovative Observations into Coupled Wildfire Models
- Kyle Hilburn

Poster GC13F-0257 (13:40-17:30, Hall B-C Poster Hall)
Evaluating High-Resolution Downscaled Climate Products with the Open Climate Workbench - Hugo Lee

Poster H13H-1105 (13:40-17:30, Hall B-C Poster Hall)
Integrating Remote Sensing and the DSSAT Model with Near-Real-Time Data Assimilation for Improved Decision Support
- Meijian Yang (Gavin Schmidt, Alexander Ruane)

Presentation A14C-08 (17:12-17:21, 152A Convention Center)
Sea Surface Air Pressure Retrieval with MBARS
- Bing Lin (Matthew McLinden)

Presentation IN14B-09 (17:20 - 17:30, Marquis 12-13)
Real-time Web-based Visualization and Analytics of Petascale Climate Data from the Cloud: Equity as a Tide that Lifts All Boats
- Valerio Pascucci (Hugo Lee)

Tuesday, December 10

Poster GC21W-0178 (8:30-12:20, Hall B-C Poster Hall)
Integrating Observations and Models for Food Security and Health Applications in a Coastal Region - Stephanie Schollaert Uz

Poster A21I-1883 (8:30-12:20, Hall B-C Poster Hall)
TEMPO at Night - James Carr

Poster H21U-0936 (8:30-12:20, Hall B-C Poster Hall)
Enhanced Temporal Resolution of Passive Microwave Remote Sensing of Clouds and Precipitation using Small Satellites: Temporal Experiment for Storms and Tropical Systems (TEMPEST) Missions
- Steven C Reising

Presentation G21A-08 (9:40-9:50, Marquis 3-4)
Performance Demonstration of Gravitational Reference Sensors for Satellite Geodesy using a Torsion Pendulum - John Siu (John Conklin)

Presentation NS22A-02 (10:35-10:45, 146 A Convention Center)
Multi-frequency signals of opportunity (SoOp) remote sensing of soil moisture: Field validation experiments - James L Garrison

Presentation NS22A-04 (10:55-11:05, 146 A Convention Center)
High Resolution Polarimetric Remote Sensing for Improved Characterisation of Terrestrial Surfaces and Processes
- Delwyn Moller (Chris Ruf)

Presentation NS22A-06 (11:20-11:30, 146 A Convention Center)
New Lidar Techniques for Measurement of Snow Properties
- Carl S Weimer

Presentation H22G-04 (11:10-11:25, 145 A Convention Center)
Confluence, the operational cloud pipeline predicting global scale discharge using the SWOT satellite
- Travis Simmons (Colin J Gleason)

TOWN HALL TH23I (12:30-13:30, Salon C Convention Center)
NASA Earth Science Division Town Hall

Poster IN23A-2189 (13:40-17:30, Hall B-C Poster Hall)
Automating Map-Making through Enhanced Geographic Information Extraction Using Retrieval-Augmented Generation (RAG) with Large Language Model (LLM) - Zifu Wang (Phil Yang)

Presentation A24G-01 (16:00-16:20, Room 202B)
Designing Observing System Simulation Experiments for the Atmospheric Planetary Boundary Layer - Derek J Posselt

Presentation A24G-04 (16:40 - 16:50, Room 202B)
Benefits of Irregular Spatio-Temporal Sampling Approaches for Passive Microwave Observations of the Planetary Boundary Layer: Performance Simulations, OSSEs, and Instrument Concepts
- William Blackwell

Presentation A24G-05 (16:50-17:00, Room 202B)
Evaluating Earth-Observing Satellite Sampling Effectiveness Using Kullback-Leibler Divergence - Negin Esmaeili (Paul Grogan)

Presentation A24G-07 (17:10-17:20 Room 202B)
New Angles on the PBL: Potential and Limitations of Space-borne Atmospheric Tomography for Characterizing the Planetary Boundary Layer - Linda Forster (Mark Richardson)

Wednesday, December 11

Poster B31H-1362 (8:30-12:20, Hall B-C Poster Hall)
FireSense: Supporting operational partners through co-development
- Jacquelyn K Shuman

Poster B31H-1364 (8:30-12:20, Hall B-C Poster Hall)
UAS Measurement Platform to Fill a Critical Knowledge Gap on Wildland Fires - Jennifer Fowler

Poster B31H-1375 (8:30-12:20, Hall B-C Poster Hall)
Pyro-Atmosphere Infrared Sounder (PIRS): A Sub-Kilometer Spatial Resolution Hyperspectral Infrared Sounder for Wildland Fire-Atmosphere Interaction - Sun Wong

Poster B31H-1376 (8:30-12:20, Hall B-C Poster Hall)
Near real-time detection of wildland fire thermal and gas emissions from UAV-based multispectral infrared imagers
- James Oliver Thompson

Poster B31H-1379 (8:30-12:20, Hall B-C Poster Hall)
Flame Finder: Illuminating Obscured Fire through Smoke with Attentive Deep Metric Learning - Fatemeh Afghah

Poster G31B-3332 (8:30-12:20, Hall B-C Poster Hall)
The quest for 10 cm precision from space: Satellite stereo-lidar data fusion for precise 3D measurement of the Earth's changing surface
- David Shean

Poster G31B-3336 (8:30-12:20, Hall B-C Poster Hall)
Improved Digital Surface Model derivation in vegetation landscapes through simulation and fusion of satellite stereo-photogrammetry and laser altimetry - Ameni Mkaouar (David Shean)

Poster Session IN31D (8:30-12:20, Hall B-C Poster Hall)
Novel Observing Strategies for a Changing Planet
Conveners: Ben Smith, Nicolas Longepe, James Parr, Michael M. Little

Poster IN31D-2035 – ***Mapping Earth's Changing Surface and Overlying Vegetation Structure using a Novel Observing Strategy (NOS)*** - Andrea Donnellan (Steve Chien)

Poster IN31D-2036 – ***A Snow Observing Strategy to Integrate Observations and Modeling*** - Melissa Wrzesien (Carrie Vuyovich)

Poster IN31D-2037– ***Advanced Satellite Scheduling Strategy for Snow Water Equivalent (SWE) Monitorin***g
- Hadis Banafsheh (Paul Grogan)

Poster IN31D-2042 – ***Scientific Target Prioritization with the Intelligent Long Endurance Observing System (ILEOS)***
- Sarah A Strode (Meghan Saephan)

Presentation H32F-01 (10:20-10:30, 103A-B Convention Center)
Fluorescence Lidar for Ocean Research: investigation to identify and characterize marine debris - Madeline Cowell

Poster C33A-0404 (13:40-17:30, Hall B-C Poster Hall)
Class X: Automatic Image Labeling Tool for Cryospheric & Multi-Domain Research - Theodore N Spanbauer (Phil Yang)

Poster G33B-3365 (13:40-17:30, Hall B-C Poster Hall)
Optomechanical inertial sensors and their applications to Earth and Planetary science - Felipe Guzman

Presentation IN33E-04 (14:40 - 14:50, Marquis 3-4)
The Thematic Observation Search, Segmentation, Collation and Analysis (TOS2CA) System: Serving Data and Visualization Tools for User-Defined Physical Phenomena - Brian Knosp

Presentation A34B-08 (17:10-17:20, 147A Convention Center)
Vertical Wind and Drop Size Distribution Retrieval with a G-band Doppler Radar - Nitika Yurk (Ken Cooper)

TOWN HALL TH35J (18:00-19:00, Salon C Convention Center)
NASA Earth Science in Action

Thursday, December 12

Poster A41U-1924 (8:30-12:20, Hall B-C Poster Hall)
Gigatraj: An Atmospheric Trajectory Model
- Leslie Lait (Thomas Grubb)

Poster GC41H-0032 (8:30-12:20, Hall B-C Poster Hall)
REMIR (Reduced Envelope Multispectral Infrared Radiometer): integration, preliminary testing, and flight campaign planning for an airborne demonstrator for future Sustained Land Imaging
- Michael S Veto

Poster GC41M-0103 (8:30-12:20, Hall B-C Poster Hall)
Spatial Aggregation by Delineating Agroecological Zone for Regional Crop Growth Modelling in Corn Yield Prediction
- Yuxin Miao (Alexander Ruane)

Presentation NH41B-02 (8:40-8:50, Archives Marriott Marquis)
Simulating the impacts of regional wildfire smoke on ozone using a coupled fire-atmosphere-chemistry model
- Derek Vincent Mallia (Kyle Hilburn)

Hyperwall Talk (10:45-11:00, NASA Exhibit)
NASA ESTO: Launchpad for Novel Earth Science Technologies
- Michael Seablom

Poster B43A-1520 (13:40-17:30, Hall B-C Poster Hall)
Systematic Study of Uncertainty Quantification for Deep Learning Models in Air Quality Applications - Anusha Malarvizhi (Phil Yang)

Poster B43B-1528 (13:40-17:30, Hall B-C Poster Hall)
Ecological Modeling of Tree Mortality in the Sierra Nevada
- Gary B Doran (Seungwon Lee)

Presentation IN43C-05 (14:50-15:00, Marquis 3-4)
Climate PAL: Enhancing Accessibility of Climate Model Data through Conversational AI - Sonia Cromp (Gavin Schmidt)

Presentation U44A-02 (16:27-16:47, Ballroom A/Convention Center)
New initiatives for maximizing the utility of Climate Modeling for mitigation and adaptation at NASA GISS - Gavin Schmidt

TOWN HALL TH45C (18:00-19:00, Capitol/Congress Marriott Marquis)
NASA's Early Career Research Program Paving the Way

TOWN HALL TH45I (18:00-19:00, Liberty I-K Marriott Marquis)
NASA Sea Level Change Team: Turning Research into Action

Friday, December 13

Poster B51H-1614 (8:30-12:20, Hall B-C Poster Hall)
Machine Learning Models of Fuel Moisture Content with Custom Loss Functions - Jonathon Hirschi (Kyle Hilburn)

Poster B51H-1616 (8:30-12:20, Hall B-C Poster Hall)
Generative Algorithms for Initial Wildfire Progression Conditioned on Active Fire Satellite Measurements and Terrain Height
- Bryan Shaddy (Kyle Hilburn)

Poster GC51V-0263 (8:30-12:20, Hall B-C Poster Hall)
Reference DEM Generation over Ice Sheets and Ice Caps from Multi-Sensor Data Fusion - Benjamin Eaton Smith (David Shean)

Poster GC51V-0265 (8:30-12:20, Hall B-C Poster Hall)
The Next Generation NASA Airborne Imaging Radar (AIRSAR-NG) under development in support of Surface Topography and Vegetation Targeted Observable Incubation - Yunling Lou

Poster IN51D-2395 (8:30-12:20, Hall B-C Poster Hall)
TERRAHydro: An AI-based Framework for Land Surface Digital Twins
- Mahmoud Saeedimoghaddam (Craig Pelissier)

Poster Session IN51E (08:30-12:20, Hall B-C Poster Hall)
Advanced Digital Twin Information Systems and Earth Action I
Conveners: Kenneth Ranson, David Considine, Pierre-Marie Brunet, Chaowei Phil Yang, and Daniel Duffy

Poster IN51E-2407 – ***Multi Target Learning Advances State-of-the-Art Accuracy in Land Surface Modeling***
- Mahmoud Saeedimoghaddam (Craig Pelissier)

Poster IN51E-2409 – ***Visualizing Earth Science Climate Model and Digital Twin data in XR*** - Thomas Grubb

Poster IN51E-2410 – ***Open-Source Framework for Earth System Digital Twins*** - Nga Chung (Thomas Huang)

Poster IN51E-2411 – ***Bayesian transport maps: Digital twin technology for probabilistic emulation of Earth-system models***
- Jonathan Hobbs (Matthias Katzfuss)

Poster IN51E-2412 – ***Challenges and Opportunity of Digital Twin***
- Chaowei Phil Yang

Poster IN51E-2414 – ***Dasymetric Mapping for Vulnerable Coastal Population Risk Assessment Using an Open Data Cube in Hampton Roads, Virginia*** - Tom Allen

Poster IN51E-2415 – ***Towards an Actionable 'Wildfire Digital Twin as a Service'*** - Milton Halem

Poster IN51E-2416 – ***Development of a Digital Twin Model for Agriculture*** - Rajat Bindlish

Poster IN51E-2417 – ***EcoPro: Digital Twin for Ecological Projection*** - Seungwon Lee

Poster SY51D-2597 (8:30-12:20, Hall B-C Poster Hall)
Managing Large-scale Atmospheric and Oceanic Climate Data for Efficient Analysis and On-the-fly Interactive Visualization
- Aashish Panta (Hugo Lee)

Presentation GC51C-05 (9:06-9:14, Salon-H Convention Center)
A Virtual Agricultural Innovations Laboratory (AVAIL) – combining NASA resources for multi-perspective decision support for Iowa Corn and beyond - Alexander Ruane

Presentation GC51B-06 (9:25-9:35, Salon-C Convention Center)
Disentangling the Natural and Anthropogenic Drivers of Changes in Extreme Sea Levels since 1900
- Sönke Dangendorf (Tom Allen)

Poster GC53G-0428 (13:40-17:30, Hall B-C Poster Hall)
Crop Yield Estimates from Land Agriculture Information System for Agriculture Guidance
- Pang-Wei Liu (Alexander C Ruane)

Poster GC53H-0442 (13:40-17:30, Hall B-C Poster Hall)
Evaluating NASA's Statistically Downscaled Products to Assess FEMA's National Risk Index in Oklahoma Under a Changing Climate
- Hugo Lee

Poster OS53C-0795 (13:40-17:30, Hall B-C Poster Hall)
Flood Resilience: Real-Time Sensor Integration and Advanced Hydrodynamic Modeling for Norfolk, Virginia
- Navid Tahvildari (Tom Allen)

Presentation A53AA-02 (14:13-14:16, eLightning Theater 1)
EViz: A Toolkit for Simplifying Earth System Models Data Visualization and Workflows
- Carlos Cruz

Session IN53C (14:10-15:40, Marquis 3-4 Marriott Marquis)
Advanced Digital Twin Information Systems and Earth Action II
Conveners: Kenneth Ranson, David B Considine, Chaowei Phil Yang, Pierre-Marie Brunet, and Daniel Duffy

Presentation IN53C-01 – ***Intelligent Systems and Digital Twin Technologies for Earth Science*** - Jacqueline Le Moigne

Presentation IN53C-04 – ***Development of a Coastal Zone Digital Twin*** - Jeff Walter

Presentation IN53C-05 – ***Development of a Digital Twin Model for Wildfire: Leveraging Spatiotemporal AI for Predicting Wildfire Progression*** - Mohammad Pourhomayoun (Dawn Comer)

Presentation IN53C-08 – ***Advancing Progress on Earth System Digital Twins through an Integrated AI-Enabled Framework***
- Deepthi Raghunandan (Craig Pelissier)

Presentation GC54E-01 (16:00-16:10, Salon-H Convention Center)
Cryospheric Science Activities Towards Achieving NASA's Surface Topography and Vegetation Targeted Observable
- Brooke Medley

Presentation GC54E-03 (16:20-16:30, Salon-H Convention Center)
Hydrology from mountains to the sea: Measurements hydrologists desire versus what they can have.
- Marc Simard

Presentation GC54E-05 (16:40-16:50, Salon-H Convention Center)
A data fusion approach to generate sub-meter accuracy DEMs and orthoimages from VHR-stereo imagery
- Shashank Bhushan (David E Shean)

Presentation GC54E-06 (16:50-17:00, Salon-H Convention Center)
Advances in Developing a Novel Radar for High-Resolution 3-Dimensional Structure Measurements
- Lauren Wye