

TRacking Aerosol Convection interactions ExpeRiment (TRACER) Meeting (16-17 May 2023)
Aerosol, Cloud, Precipitation and Climate (ACPC) Initiative Meeting (17-19 May 2023)
Texas Southern University, Houston, TX

Tuesday, 16 May 2023 TRACER Science Workshop
Barbara Jordan – Mickey Leland School of Public Affairs Auditorium 114
All times Central Daylight Time (CDT)

*** indicates virtual presentation**

9:00 – 9:15		Welcome and Introduction
Conveners: Milind Sharma, Michael Jensen, Chongai Kuang		
9:15 – 9:25	*Michael Jensen (BNL)	Introduction and Overview of the TRACER+ field campaigns
9:25 – 9:35	*Greg McFarquhar(OU)	Aerosol Impacts on Convective Cloud Properties Observed during ESCAPE
9:35 – 9:45	*Takamichi Iguchi (UMD)	Analysis of the observed and simulated diurnal cycle of convection over Houston during the TRACER IOP
9:45 – 10:00	James Flynn (UH)	An Overview of TRACER-AQ in Houston
10:00 – 10:15	Daniel Rosenfeld (HUJ)	Contrasting CCN and respective cloud microstructure in TRACER as documented by remote sensing
10:15 – 10:30	Maria Zawadowicz (BNL)	Boundary Layer Aerosol Composition, Hygroscopicity and Source Apportionment in Houston, TX during the TRACER Campaign
10:30 – 10:45	BREAK	
Conveners: Sid Gupta, Michael Jensen, Chongai Kuang		
10:45 - 11:00	Pavlos Kollias (SBU)	Observations of Isolated Convective Cells from the ESCAPE field experiment
11:00 - 11:15	Marcus van Lier-Walqui (CU)	Lagrangian analysis of isolated cells during TRACER from observations and NU-WRF EPIC simulations: comparison of cell lifetime-relative polarimetric radar and lightning
11:15 - 11:30	Milind Sharma (TAMU)	Exploring the Influence of Meteorological Variability on Thunderstorm Updraft Characteristics Across Sea and Bay-Breeze Fronts: Insights from the TAMU TRACER Field Campaign
11:30 - 11:45	Eric Bruning (TTU)	Statistics of lightning and polarimetry in tracked cells during TRACER
11:45 - 11:55	*Zachary Mages (SBU)	Characteristics of Summertime Coastal Convection over Houston, Texas Using S-band Radar Observations
11:55 – 13:00	LUNCH	
Conveners: Maria Zawadowicz, TBD		

13:00 - 13:15	Markus Petters (NCSU)	Aerosol Mixing State and Eddy-Covariance Particle Flux Measurements during the TRACER Campaign
13:15-13:30	Rebecca Sheesley (BU)	Mapping VOCs across Houston during TRACER-MAP and TRACER-AQ
13:30 - 13:45	Seth Thompson (TAMU)	Mobile measurements of aerosol cloud-forming properties during the 2022 TRACER campaign
13:45 - 13:55	Allison Aiken (LANL)	Diverse Aerosol Sources & Processing in Houston: Insights into Mixed Black Carbon and Dust
13:55 - 14:05	*Joshin Kumar (WUSTL)	Intercomparison of aerosol light absorption measurements at La Porte during TRACER: Correcting for biases
14:05 - 14:15	*James Smith (UCI)	Ultrafine Aerosol Particle Formation in Houston during TRACER
14:15 - 14:30	Tamanna Subba (BNL)	Characterization of New Particle Formation Events during the TRACER Campaign
14:30 – 14:45	BREAK	
Conveners: Tamanna Subba, TBD		
14:45 - 15:00	Sascha Usenko (BU)	TRACER-BC2-SP2 Update and Future Plans
15:00 - 15:10	*Yuezhi Li (WUSTL)	Effects of aerosol composition on optical properties at La Porte, TX, during TRACER
15:10 - 15:20	*Jing Li (WUSTL)	Physical and chemical properties of aerosol particles in the ANC site during TRACER IOP
15:20 - 15:30	*Tania Gautam (PNNL)	Investigating secondary organic aerosols under convective clouds during TRACER-ARM campaign in SW Houston, Texas.
15:30 - 15:40	*Jingyi Chen (PNNL)	Role of Urban-rural Contrast in the Isolated Deep Convective Clouds during TRACER IOP
15:40 - 15:50	*Die Wang (BNL)	Characteristics of Sea-Breeze Circulation in Southeast Texas: Impacts on Surface and Boundary Layer Dynamics, Thermodynamics and Convective Clouds
15:50 – 16:00	Lee Tiszenkel (UAH)	Multicomponent new particle formation in urban Houston
16:00 – 18:00	POSTER SESSION	
V.Chandrasekar (CSU)		Overview of CHIVO radar observation during the ESCAPE/TRACER field campaign
Bo Chen (TAMU)		Cross-comparison Between Mini-micropulse Lidar and Drone-based In-situ Aerosol Measurement During Tracer Campaign
Min Deng (BNL)		Case Study of Sea breeze lifecycle from TRACER
Joe Galewsky (UNM)		Water vapor isotopic measurements during TRACER
Meghan Guagenti (BU)		Preliminary Results from TRACER-Tethersonde

Mark Harvey (TSU)	Spatiotemporal analysis of the PM _{2.5} concentration from air monitoring data around Houston, Texas USA
Jiaxi Hu (OU)	Development of a Novel Method for Estimation of KDP in Mixed-Phase Clouds using C-SAPR2 Data during the TRACER Campaign
Robert Jackson (ANL)	Corrected Moments in Antenna Coordinates product for CSAPR2 during TRACER
Petra Klein (OU)	Quantifying the thermodynamic impacts on the atmospheric boundary layer due to the sea breeze in the coastal Houston region
Ziyang (Nancy) Lei (TAMU)	Understanding the Impacts of Aerosol Physical and Chemical Properties on Ice Nucleation in Convective Clouds
Mariko Oue (SBU)	CSAPR2 high-temporal, high-vertical resolution cell tracking during TRACER
Minnie Park (BNL)	Joint Variability of Aerosol, Clouds, and Synoptic Meteorology over Southeastern Texas
Bruce Prince (TSU)	Computational Investigation of OH Radicals with Dimethyl Sulfide.
Stephen Saleeby (CSU)	Influence of Environmental Moisture on Aerosol Indirect Effects in Houston Convection
Michelle Spencer (OU)	Boundary-Layer Profile Observations, Sea-Breeze Events, and Implementation of PBL Height Algorithm During TRACER-CUBIC
Daniel Vrinceanu (TSU)	Spectral line shaping by exoplanetary atmospheres
Paul Walter (SEU)	Ozonesondes during the TRACER IOP
Yuxuan Wang (UH)	Using TRACER data to Evaluate High-Resolution Air Quality Models for Houston and Understand High Ozone Episodes
Subin Yoon (UH)	Trace Gas Measurements at the Houston Ship Channel during September 2021 and 2022
Nima Khorshidian (UH)	Cloud Formation and Precipitation over Texas: Improving Model Simulations using Observation Nudging and Detailed Microphysics

Wednesday, 17 May 2023 ACPC Workshop Day 1: TRACER and Deep Clouds
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9:00 – 9:15		Welcome and Introduction
Conveners: Stephen Saleeby, Minnie Park		
9:15 - 9:30	*Lin Zang (WU)	Observing aerosol primary convective invigoration and its meteorological feedback
9:30 - 9:45	*Thara Prabhakaran (IITM)	Microphysics-dynamics interaction in deep convection: Insights from CAIPEEX observations
9:45 - 10:00	*Alexander Khain (HUJ)	About mechanisms leading to convective invigoration
10:00 - 10:15	*Zengxin Pan (HUJ)	Significant warming caused by aerosol-induced expansion of tropical deep convective clouds
10:15 – 10:30	*David Romps (LBNL/UCB)	Air Pollution Unable to Intensify Storms via Warm-Phase Invigoration
10:30 - 10:45	Jiwen Fan (PNNL)	How does the high values of supersaturation in convective cores determine the convective invigoration by aerosols?
10:45 - 11:00	BREAK	
Conveners: Anita Rapp, Aryeh Drager		
11:00 - 11:15	*Lena Frey (KIT)	Using statistical emulation and k-means clustering to quantify microphysical uncertainties for hailstorms
11:15 - 11:30	*Annette Miltenberger (UM)	Impact of aerosol perturbation relative to other microphysics uncertainty in a deep convection and a warm-conveyor belt case
11:30 - 11:45	*Christian Barthlott (KIT)	Grid spacing effects on convection initiation and aerosol-cloud interactions: A case study of a supercell storm from the Swabian MOSES 2021 field campaign
11:45 - 12:00	*Luiz A. T. Machado (IFUSP/MPIC)	How Weather Events Modify Gases and Aerosol Concentrations in Central Amazonas
12:00 - 12:15	*Yuwei Zhang (PNNL)	Impact of wildfires and new particle formation on the convective clouds over the Amazon rainforest in dry season
12:15 - 12:30	Siddhant Gupta (BNL)	The Seasonal and Temporal Evolution of Isolated Deep Convection over the Amazon Rainforest
12:30 – 13:45	LUNCH	
Conveners: Jiwen Fan, Jiayi Hu		
13:45 - 14:00	Aryeh Drager (BNL)	Cold Puddles, Cold Pools, and Aerosol Loading
14:00 - 14:15	Anita Rapp (TAMU)	An Overview of TAMU TRACER and Preliminary Results
14:15-14:30	Jean Carlos Pena (UA)	Anthropogenic influence on thunderstorms in coastal urban environments

14:30 - 14:45	Mariko Oue (SBU)	Characteristics of deep convective cells observed by high-temporal, high-vertical resolution cell tracking using C-band polarimetric radars
14:45 - 15:00	Stephen Saleeby (CSU)	Baseline Cloud Resolving Model Simulations of the Golden TRACER Cases
15:00 - 15:30	DISCUSSION – TRACER MIP Cases	
15:45 – 16:00	BREAK	
16:00 – 17:00	Dr. Robert Bullard (Texas Southern University)	TSU Keynote Speaker
17:00 – 20:00	TSU Reception at University Museum	

Thursday, 18 May 2023 ACPC Day 2: Deep Clouds and Shallow Clouds/Natural Laboratories
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9:00 – 9:15	Welcome	
9:15 – 10:30	DISCUSSION: TRACER MIP Roadmap and Deep Clouds Wrap-Up	
10:30 – 10:45	BREAK	
Moderator: Johannes Mulmenstaedt, Rapporteur: Andrew Gettelman		
10:45 - 11:00	*P. Alinaghi (DUT)	Mesoscale Organization of Trade Cumulus Cloud Fields Buffers the Net Radiative Effect of Microphysical Variability
11:00 - 11:15	*Fabian Hoffmann (LMU)	A Note on Aerosol Processing by Droplet Collision-Coalescence
11:15-11:30	Matthew Christensen (PNNL)	Aerosols close stratocumulus cells and increase cloud lifetime
11:30 - 11:45	M. Wang (NU)	Influences of precipitation on marine warm cloud fraction
11:45 - 12:00	Zhanqing Li/Tianning Su (UMD)	A new approach to determine the aerosol-cloud-interaction by accounting for cloud-surface coupling: Discovery of a major source of uncertainty in determining the aerosol radiative forcing
12:00 – 13:00	LUNCH	
Moderator: Matt Christensen, Rapporteur: Xiaoli Zhou		
13:00 - 13:15	*Jingyi Chen (PNNL)	Predicting the Evolution of Shallow Cumulus Clouds with a Lotka-Volterra like Model
13:15 - 13:30	*Calvin Howes (UCLA)	Assessing Biomass-Burning Aerosol and Stratocumulus Interactions in WRF-Chem using ORACLES, CLARIFY, and LASIC observations in the Southeastern Atlantic
13:30-13:45	*Jianhao Zhang (UCB)	Understanding the effects of boundary layer aerosol on the evolution of cloud liquid and cloud fraction using an ensemble of diurnally resolved marine stratocumuli simulations
13:45 - 14:00	*Prasanth Prabhakaran (CIRES)	Effect of Intermittent Aerosol Forcing on Stratocumulus-to-Cumulus Transition
14:00 – 14:15	Daniel Rosenfeld (HUJ)	Temperature control of cloud adiabatic fraction and coverage
14:15 – 14:30	BREAK	
Moderator: Peter Manhausen, Rapporteur: Jake Gristely		
14:30 - 14:45	*Andrew Gettelman (PNNL)	The processes at the intersection of aerosol forcing and cloud feedback

14:45-15:00	*Xiaoli Zhou (CIRES)	Exploring low cloud and aerosol interactions in geostationary satellite observations and CESM: causal relationships and timescales
15:00-15:15	*Youtong Zheng (UH)	Using nudged GFDL AM4 to understand aerosol indirect effects on low clouds
15:15 - 15:30	Johannes Muelmenstaedt (PNNL)	Is the negative correlation between Nd and LWP causal? The GCM perspective.
15:30 - 15:45	*Po -Lun Ma (PNNL)	Toward credible predictions of aerosol-cloud interactions in Earth system models
15:45 – 16:00	BREAK	
Moderator: Matt Christensen , Rapporteur: Jingyi Chen		
16:00 - 16:15	*Isabel McCoy (UCB)	Aitken-mode Aerosol Influence on Mid-latitude Mesoscale Cloud Morphology
16:15 - 16:30	*Jake Gristely (CIRES)	Systematic Changes in Shallow Cumulus Cloud Field Evolution due to Shortwave 3D Radiative Responses
16:30 - 16:45	*Je-Yun Chun (UW)	The impact of the interaction of cloud microphysics and macrophysics with large-scale circulation on stratocumulus-to-cumulus transition
16:45 - 17:00	Michael Diamond (FSU)	Detection of cloud microphysics and albedo changes due to post-2020 marine fuel sulfur regulations within a major shipping corridor
17:00 - 17:30	Shallow Clouds and Natural Laboratories Discussion	
17:30 – 18:00	BREAK	
18:00 – 19:00	Maria Zawadowicz (BNL)	PUBLIC LECTURE: Clouds, Climate and Tiny Particles with Big Effects

Friday, 19 May 2023 ACPC Day 3: Shallow Clouds/Natural Laboratories
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Moderator: Michael Diamond, Rapporteur: Fabian Hoffmann		
9:00 – 9:15	*Chunsong Lu (NUIST)	A new approach for estimating entrainment and detrainment rates in shallow cumuli and its application in global cloud aircraft observations
9:15-9:30	*Fan Liu (WU)	Separating the impacts of fine and coarse aerosols on marine warm cloud properties and radiative effects
9:30-9:45	*Tom Goren (BIU/LU)	Overestimation of the Twomey effect in satellite observations due to cloud inhomogeneity
9:45-10:00	*Velle Toll (U.Tartu)	Anthropogenic aerosols glaciate supercooled clouds, induce snowfall and reduce cloud cover
10:00-10:15	*Eshtan Eytan (CIRES)	The “clear sky” in a cloudy atmosphere: from spectral high-resolution to broadband fluxes.
10:15-10:30	Peter Manshausen (UO)	Sensitivity of cloud properties to shipping aerosol across large emissions ranges
10:30 – 10:45	BREAK	
Moderator: Matt Christensen, Rapporteur: Tom Goren		
10:45 – 12:00	Shallow Clouds and Natural Laboratories Wrap-Up and Discussion	