

An Overview of the TRacking Aerosol Convection interactions Experiment (TRACER)

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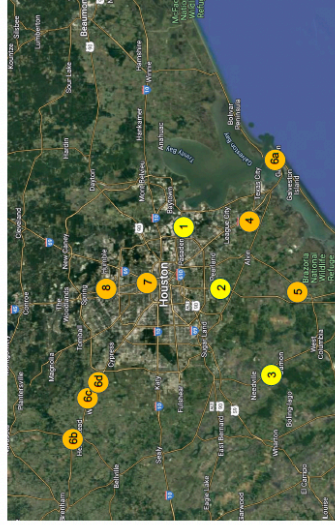
1. RESEARCH OBJECTIVES

The influence of aerosols on deep convective strength, precipitation and radiative properties has been an area of active research for more than 20 years. Despite these focused research efforts, debate continues regarding the magnitude of these aerosol effects and the conditions under which they play a significant role on convective cloud lifecycle. The TRACER campaign was aimed at collecting a comprehensive set of measurements of convective cloud microphysics, environmental thermodynamics and aerosol chemical and physical properties that will be combined with ensembles of state-of-the-art cloud-resolving model simulations to address these uncertainties in our understanding of the aerosol-convection interactions and the underlying cloud and aerosol lifecycles.

The humid subtropical climate and coastal urban environment of the Houston, TX region, provide significant numbers of isolated convective clouds with large and diverse aerosol sources providing an excellent setting for the study of aerosol-convection interactions.

2. THE TRACER CAMPAIGN

Houston, TX region
October 2021 – September 2022
June – September 2022 [Intensive Operational Period]



1. Main TRACER Site (AMF1) – La Porte, TX
2. C-SAPR Site – Pearland, TX
3. ARM Ancillary Site – Guy, TX
4. UH Coastal Center (UAV, CUBIC)
5. Lemon Reservoir (UAV)
- 6a. Seawolf Park, Galveston, TX (TAMU)
- 6b. Hempstead, TX (TAMU)
- 6c. Waller, TX (TAMU)
- 6d. Hocksley, TX (TAMU)
7. Moody Tower, University of Houston
8. Aldine, TX (CUBIC)

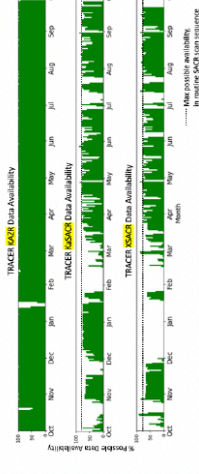
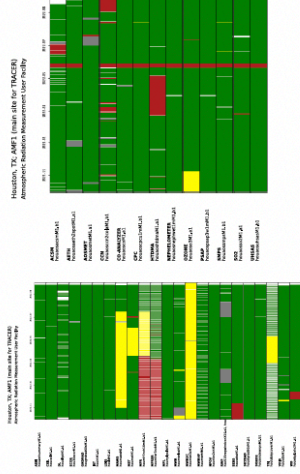


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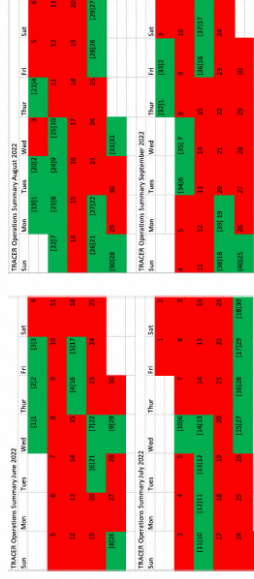
3. (SOME) TRACER MEASUREMENT PLATFORMS



3. SUMMARY OF ARM DATA



4. SUMMARY OF ARM IOP OPERATIONS



5. INTERAGENCY PARTNERSHIPS

TRACER-Air Quality (AQ) – Sep '21
NASA and TCEQ

Experiment of Sea breeze Convection, Aerosols, Precipitation and Environment (ESCAPE) – 31 May – 27 June '22

NSF
Convective cloud – Urban Boundary layer Experiment (CUBE) – Summer '22

NSF
TRACER AQ2 – Summer '22
TCEQ

