



photo: Harald Stark

Overview of phase 2 surface measurements during HI-SCALE

Jim Smith (on behalf of the ground-based HI-SCALE team)

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ARM/ASR PI Meeting



Ground-based measurements during HI-SCALE

Phases I and II:

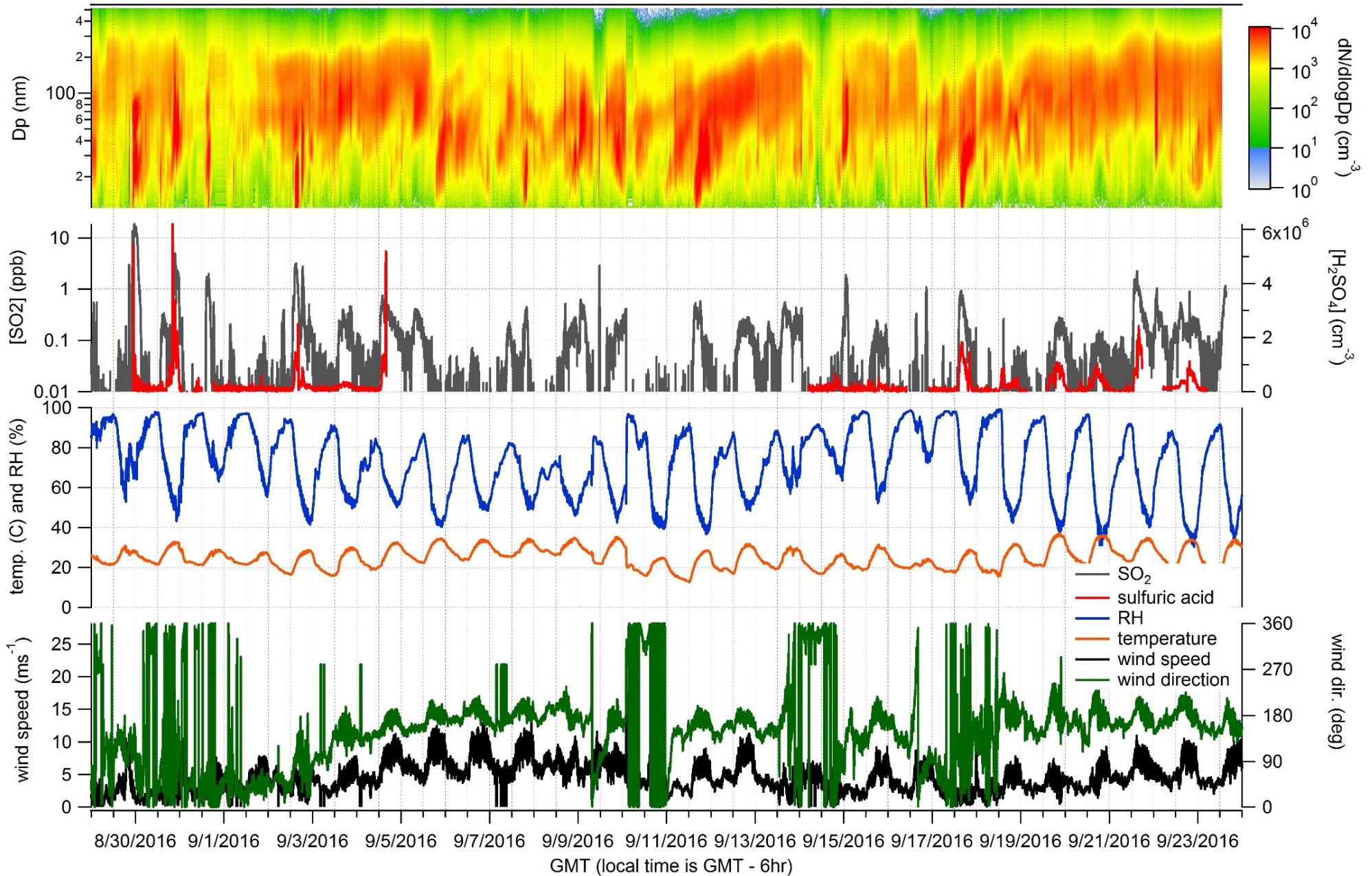
- ▶ SMPS (size distribution; Shilling, PNNL)
- ▶ PTR-MS (VOCs; Shilling, PNNL)
- ▶ HR-ToF-AMS (PM1 composition; Alexander, EMSL)
- ▶ SPLAT II (single particle composition; Zelenyuk, EMSL)
- ▶ Particle size distribution to 1.5 nm (Kuang, Brookhaven NL)

Phase II only:

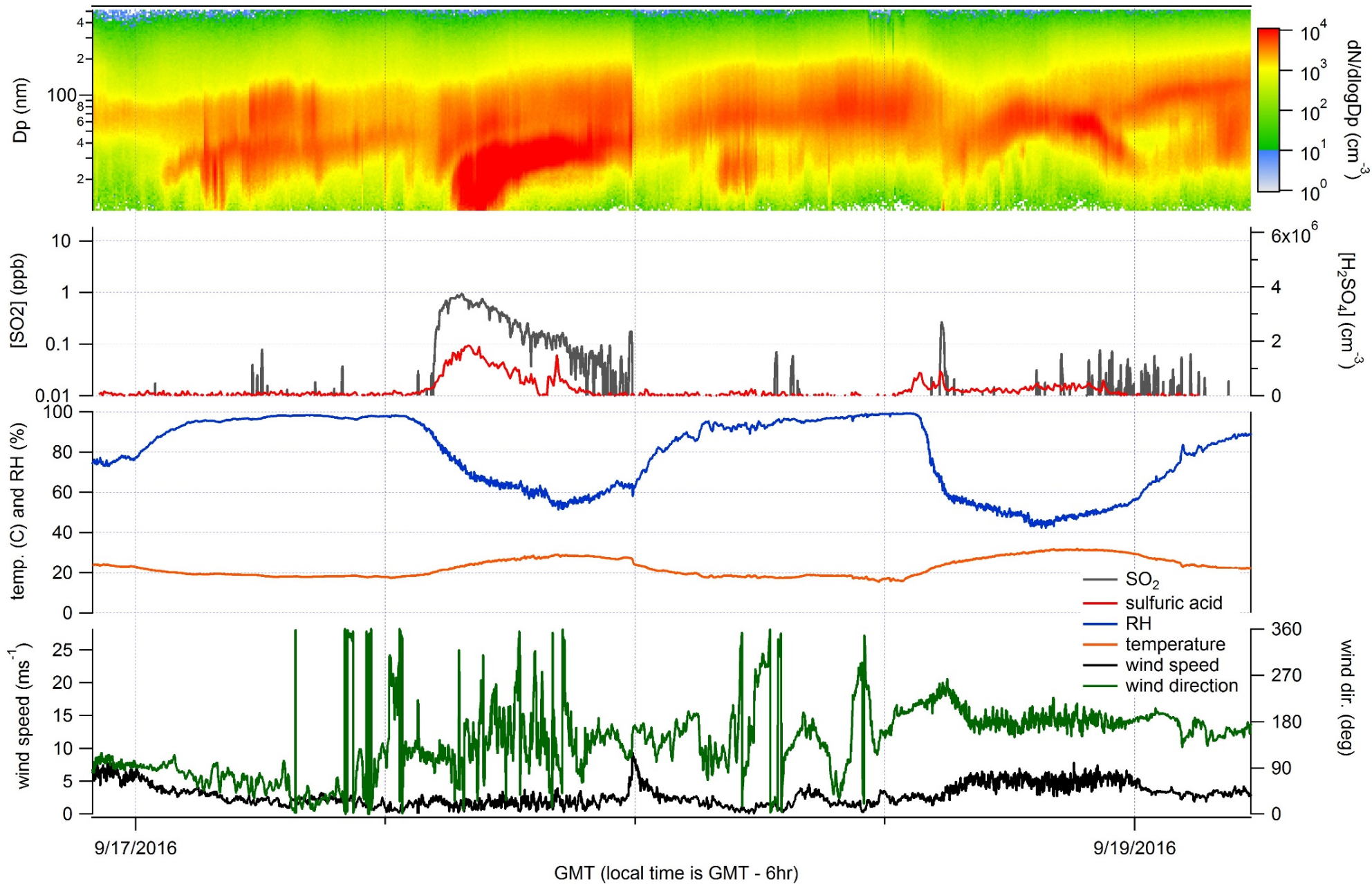
- ▶ TDCIMS (nanoparticle composition; Smith, UC Irvine)
- ▶ Cluster CIMS (inorganic and organic acids and HOMs; Smith, UC Irvine)
- ▶ Api-TOF (ambient ions; Eli Browne, Univ. of Colorado)
- ▶ Amine CIMS (gas phase nitrogen-containing bases; Stark, Aerodyne)
- ▶ Amp-MS (amine CIMS, Hanson)
- ▶ SO₂ (Thermo model 43i TLE; (Springston, Brookhaven NL)
- ▶ Offline analysis of aerosol composition
 - ▶ Spot sampler + nano-DESI (Eiguren-Fernandez, Aerosol Dynamics)
NOTE: IN SEARCH OF INTERESTING DAYS FOR ANALYSIS
 - ▶ Filters + offline analysis (Moffet, Univ. of the Pacific)



Overview of aerosol particle size distribution with SO₂ and H₂SO₄



“Golden Day”: Sept. 17, 2016



High-resolution Ethanol CIMS at HISCALE: Correlation with new particle formation events?

High resolution allows separation of isobaric compounds

Detection of reduced nitrogen and some additional compounds

Evidence for NPF from decreasing gas-phase signals?

- Changes in most compounds slightly before events
- Strongest increase when no particles were formed

