

Overview of phase 2 surface measurements during HI-SCALE

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

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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)

Instrument	Resp. Person	AUGUST															S	EP1	ΓEΝ	IBE	R												
		27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
HTOF-TDCIMS	Smith																																
SMPS	Shilling																																
nano-DMA + DEG CPC	Kuang																																
SMPS	Kuang																																
UHSAS	Kuang																																
HR-TOF-AMS	Alexander																																
SPLAT II	Zelenyuk																																
SPOT sampler + nano-DESI	Eiguren Fernandez																																
PTR-MS	Shilling																																
AmpMS	Hanson																																
amine-CIMS	Stark																																
Cluster CIMS	Smith																																
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Thermo 43i TLE	Smith																																
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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

