

New Particle Formation and Growth in the Southern Great Plains: Seasonal Differences and Vertical Gradients

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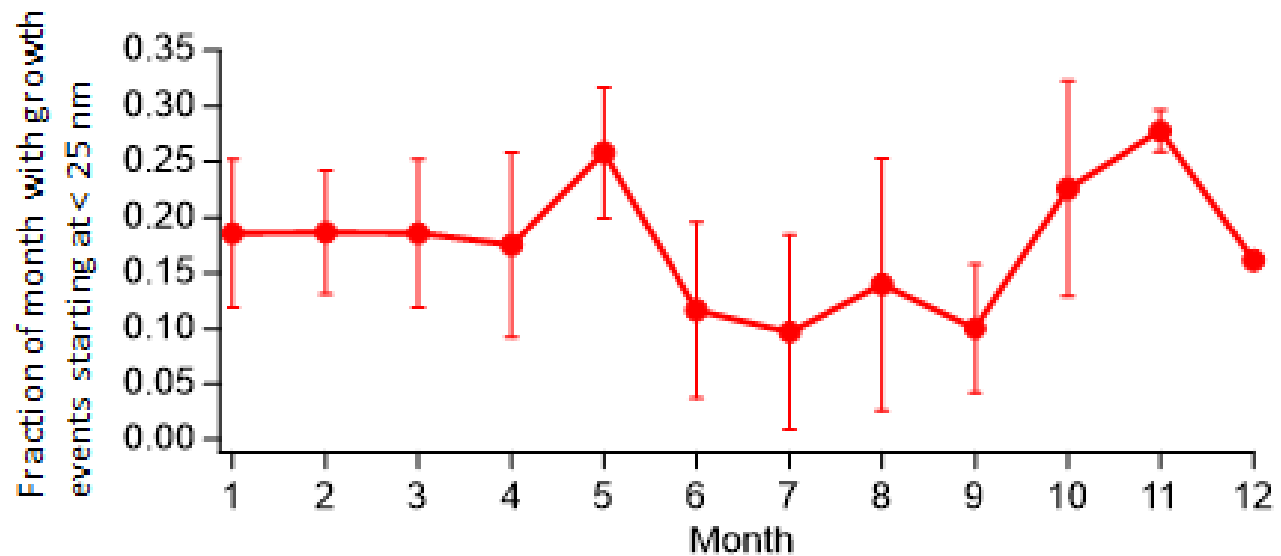
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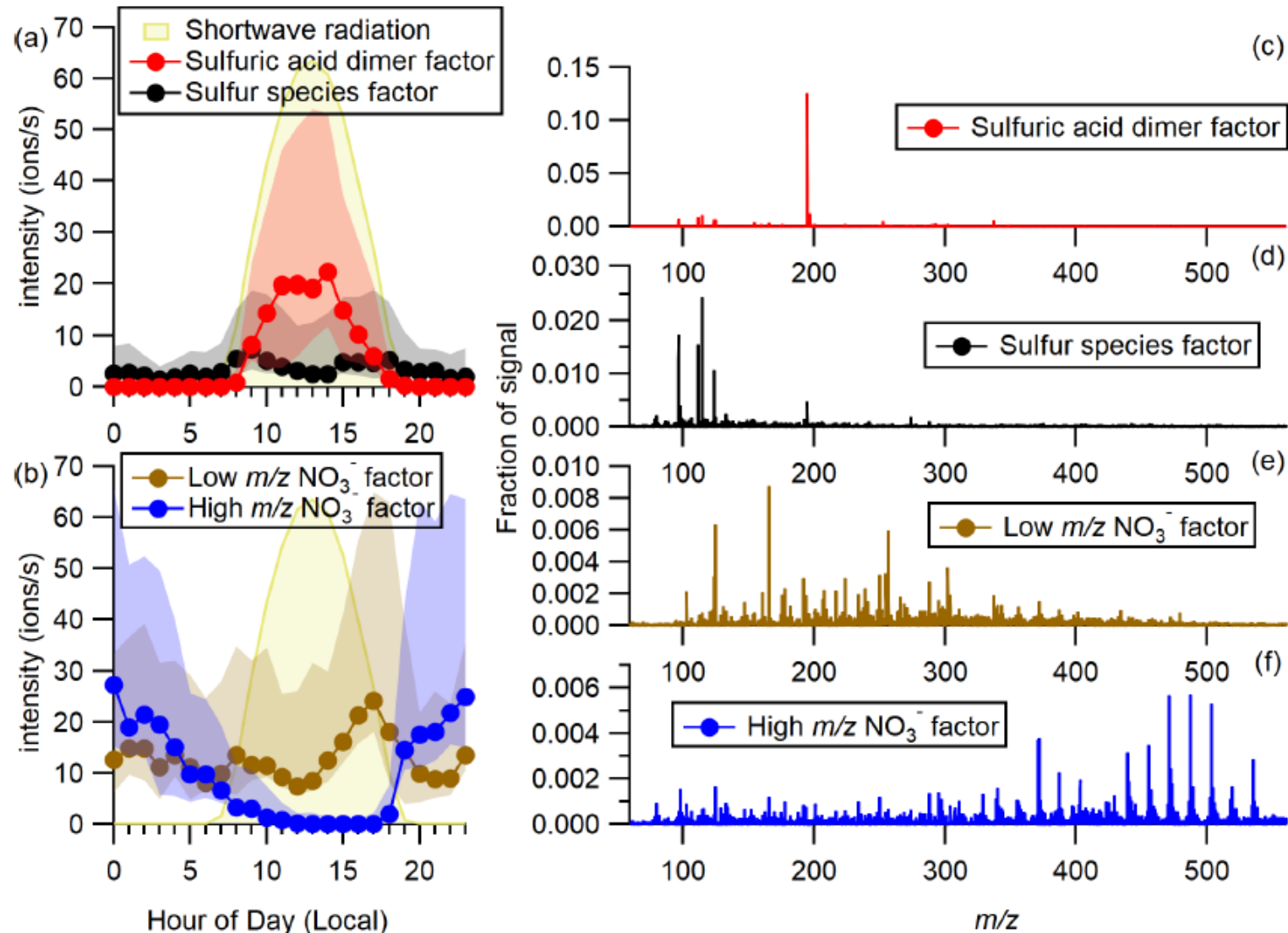
DE-SC0011218, DE-SC0020175, DE-SC0023533, BNL-ANL PASCALS SFA

NPF @ SGP



Photos by Bri Dobson.

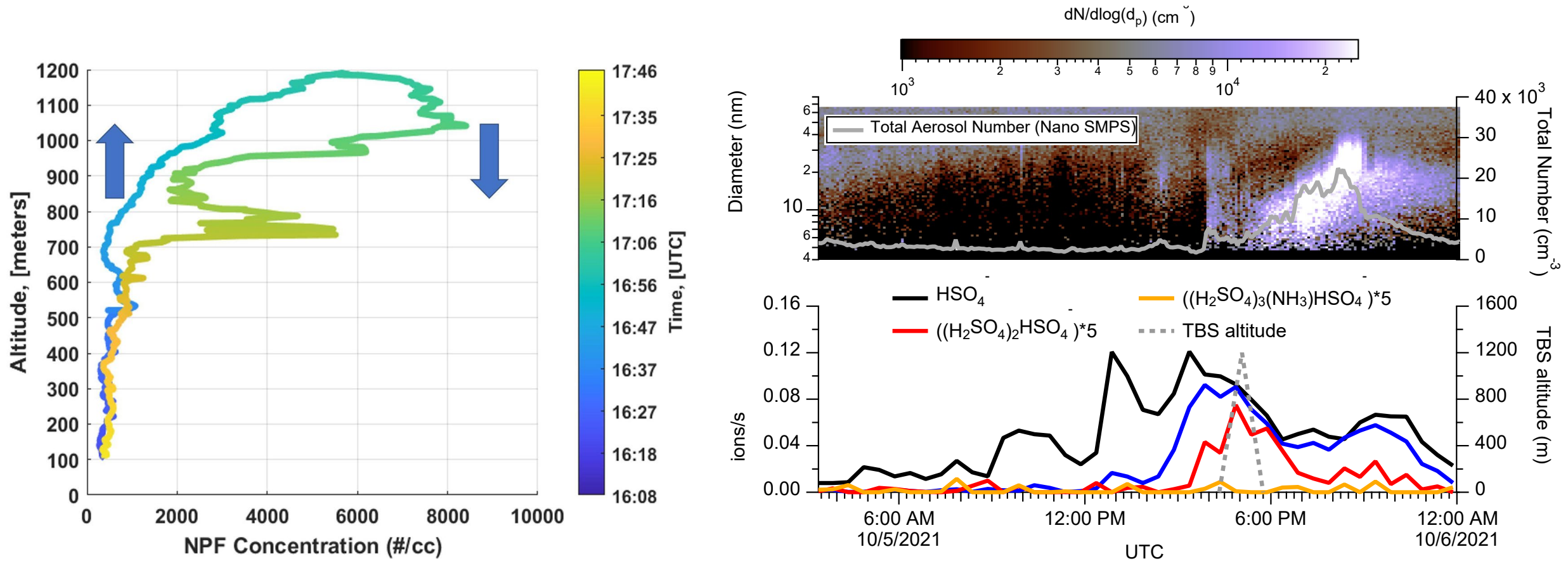
Bin PMF on API-TOF data reveals NO_3 radical oxidation of sesquiterpenes as a HOMs source



HI-SCALE IOP2
August -
September 2016

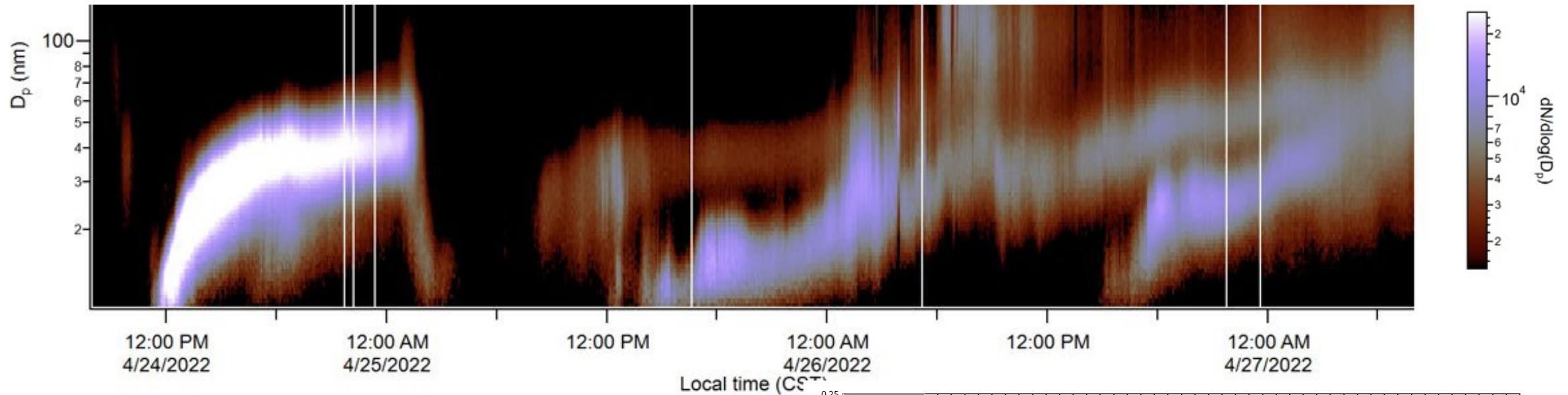
Katz et al., ACP,
doi:[10.5194/acp-23-5567-2023](https://doi.org/10.5194/acp-23-5567-2023), 2023.

Oct. 2021: Only transported NPF events observed

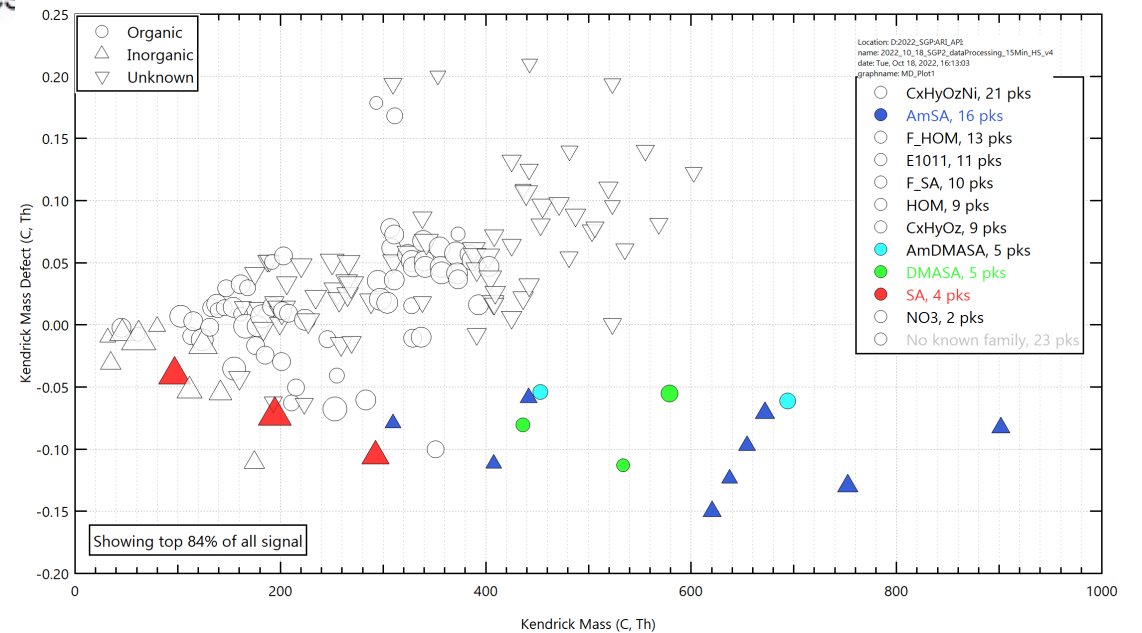


- Left: TBS-based 1 nm CPC provided vertically-resolved aerosol concentrations indicating that **NPF initiates aloft** (> ~1200 m) followed by downward transport to the surface where particle growth continues.
- Right: Higher order sulfuric acid ion clusters ($n = 3$) were not observed, suggesting **insufficient precursors to initiate surface NPF**. Amines were below detection limit.

April 2022: potential evidence of surface nucleation



- Above: Consecutive NPF days
- Right: Amines may be participating in NPF on April 24.



Amines and/or reduced temperature may be necessary for NPF at SGP.

