

SAIL Seasonal Aerosol Properties

Jim Smith, Anna Kapp
UC Irvine

SAIL Breakout
ARM/ASR STM
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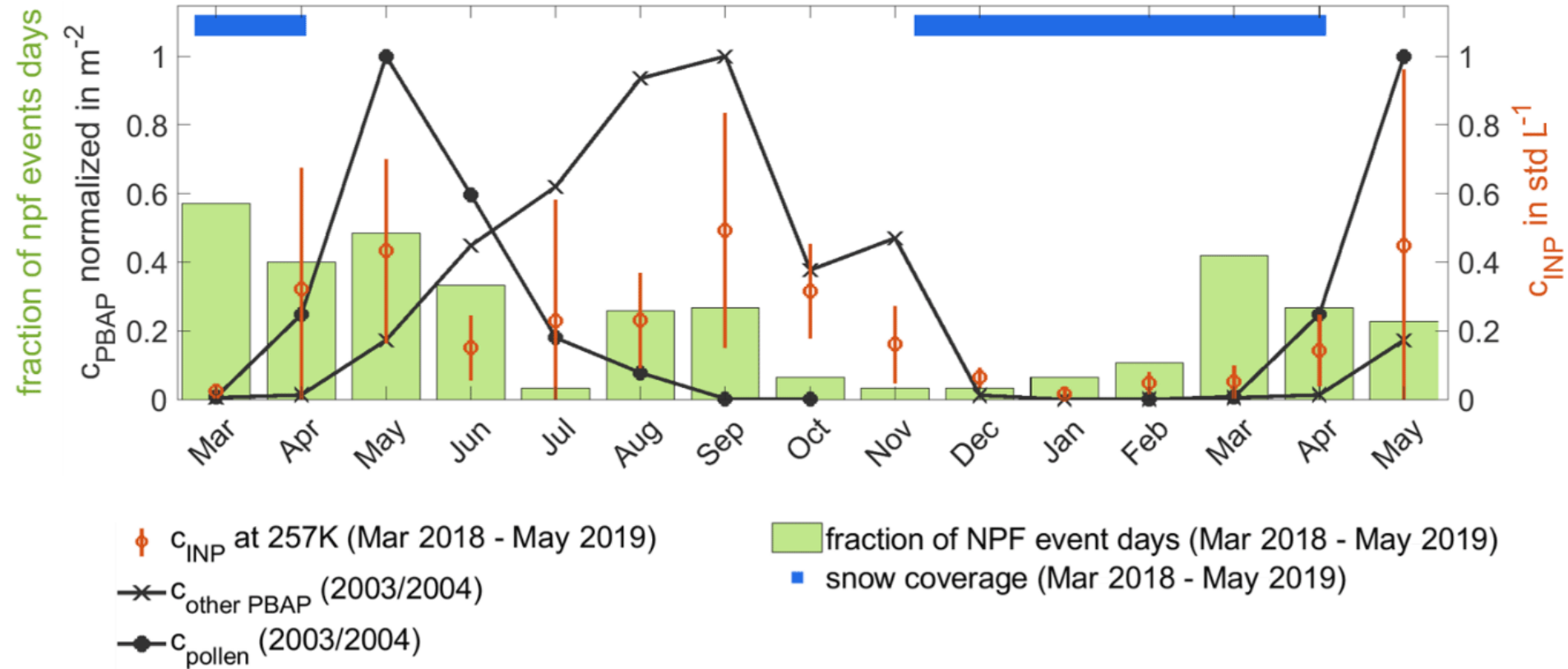
Why study seasonal aerosol properties?

Biosphere-atmosphere interactions during the winter-spring transition

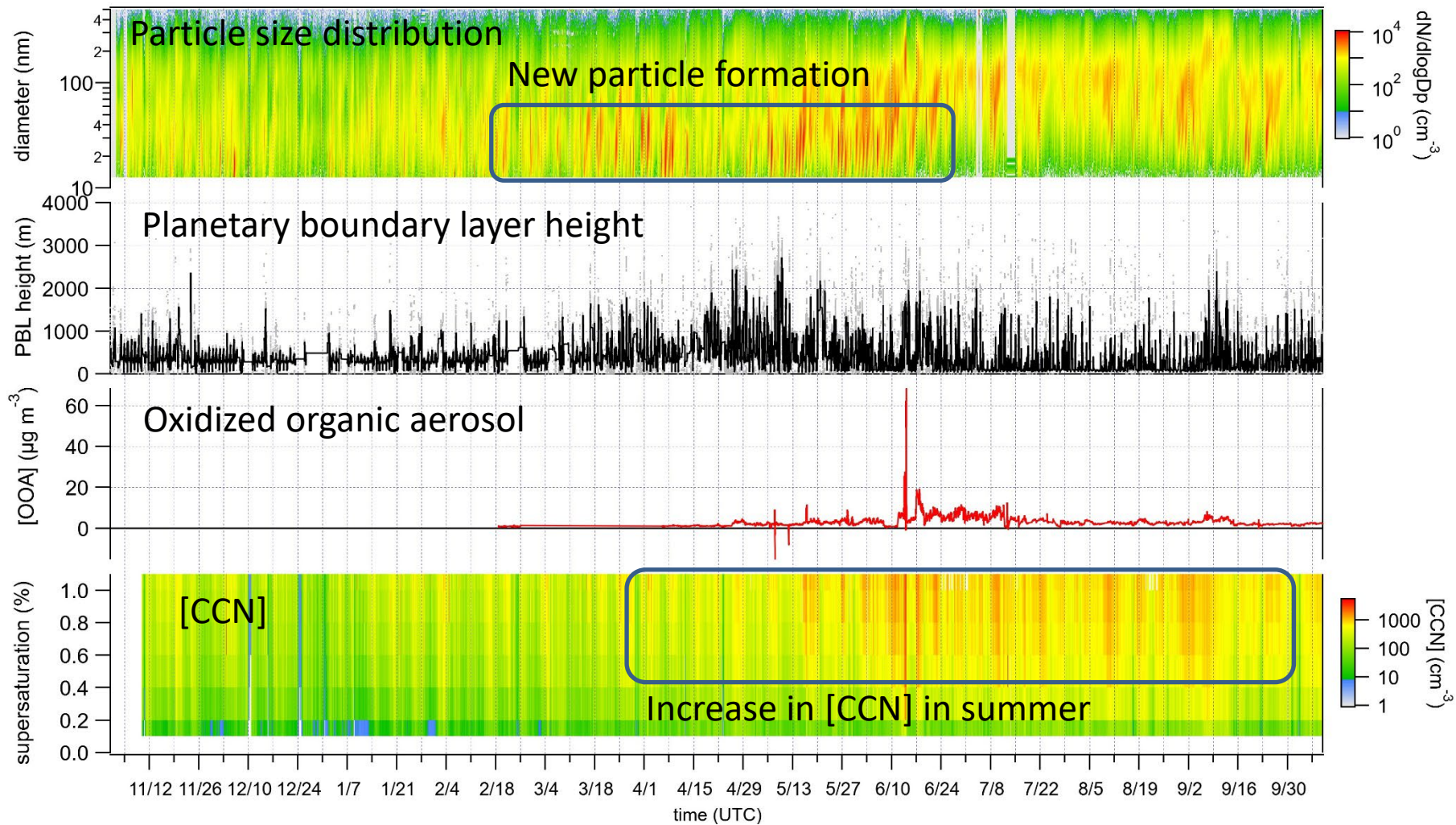
- Observations from high altitude research station (Storm Peak Lab) and from the boreal forest (Hyytiala) have shown that this period is often characterized by frequent new particle formation events.
- During this period, plants “wake up” and typically particles transition from being composed of sulfate in winter to organics in spring, with possible implications for CCN and IN activity.
- Boundary layer dynamics may also play a role. In the Himalayan foothills, new particle formation peaks in the spring due to increased PBL height.
- In general, gradients/transitions make for interesting science.

(Yu and Hallar, JGR, 2014; Dal Maso, et al., Boreal Env. Res, 2005; Neitola, et al., ACP, 2011)

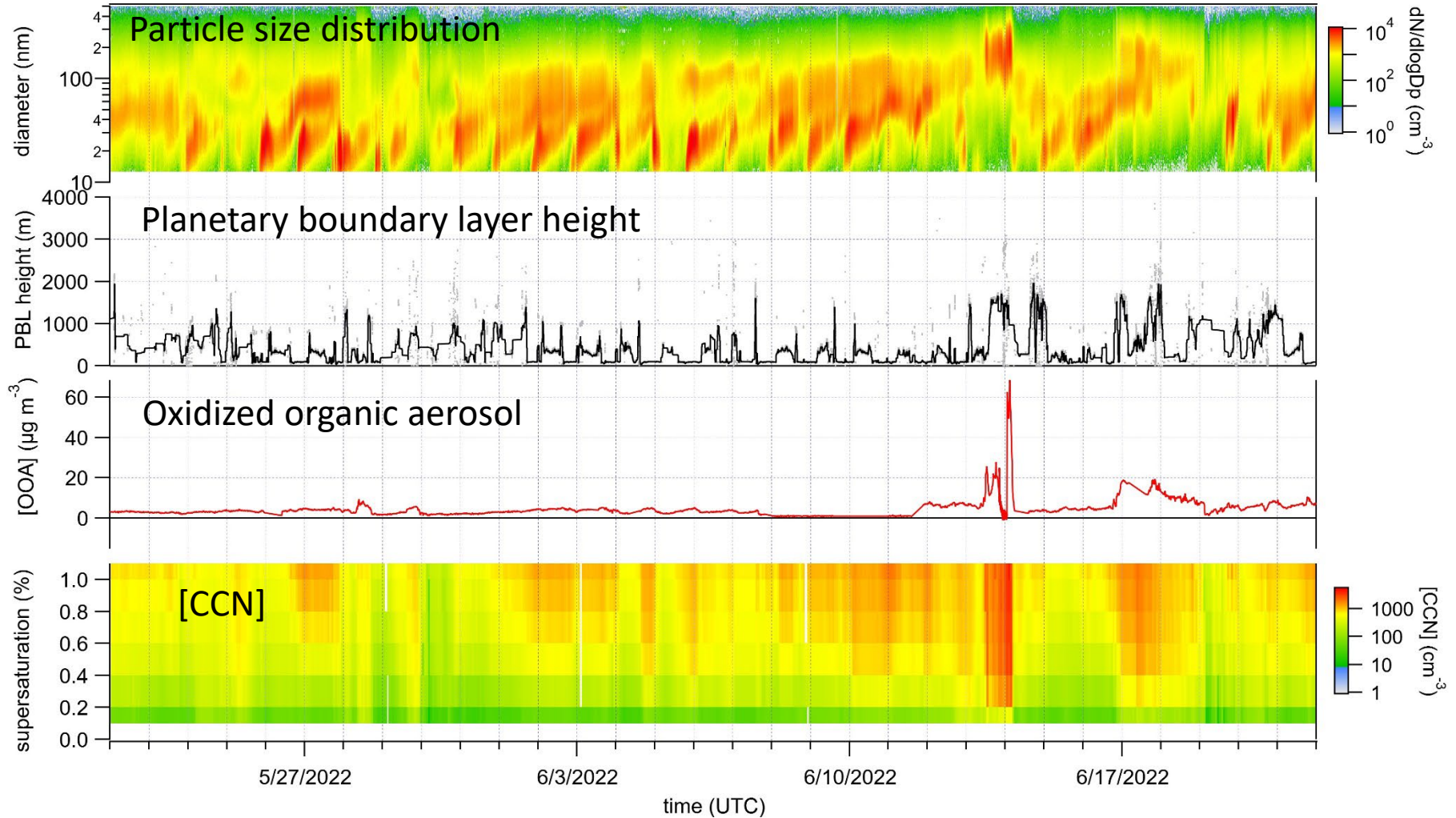
Seasonal aerosol properties in boreal forest



Overview: Nov 12 2021 – Oct 7 2022



Intense 30-day period of new particle formation



Summary

- Dramatic increase in atmospheric new particle formation events in winter-spring transition period (Feb – Jun 2022).
- This period corresponds to an increase in boundary layer height and increases in oxidized organic compounds.
- SAIL land-atmospheric datasets will provide additional insights into potential drivers of observed events.