Ice nucleating particles (INPs): Initial results from SAIL
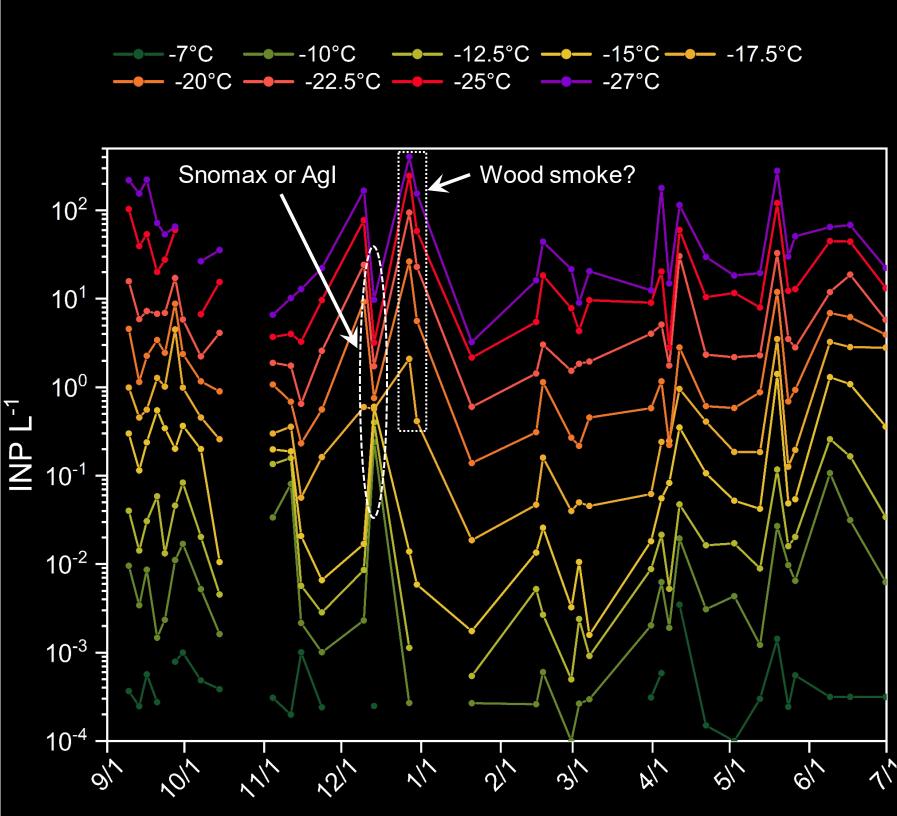
Tom Hill*, Carson Hume and Jessie Creamean*

*Co-mentors

INPs catalyze the formation of ice in supercooled clouds. INPs influence: precipitation, latent heat release, cloud electrification, cloud albedo and cloud lifetime.

- INPs sampled using 0.2 µm pore polycarbonate filters
- Run for 24 h, every 3 days, filtering ~25,000 L air
- INPs measured from 0 to ~-28°C
- Detection limit 0.0001 INPs L^{-1} air
- Will test ⅓ of samples after heating (95°C) and H_2O_2 digestions to estimate the relative abundance of heat-labile (biological) INPs, heat stable organic INPs, and inorganic INPs (i.e., minerals)

Legend: -7°C, -10°C, -12.5°C, -15°C, -17.5°C, -20°C, -22.5°C, -25°C, -27°C

Chart labels: Snomax or AgI; Wood smoke?

Y-axis: INP L^{-1} (10^2, 10^1, 10^0, 10^{-1}, 10^{-2}, 10^{-3}, 10^{-4})

X-axis: 9/1, 10/1, 11/1, 12/1, 1/1, 2/1, 3/1, 4/1, 5/1, 6/1, 7/1

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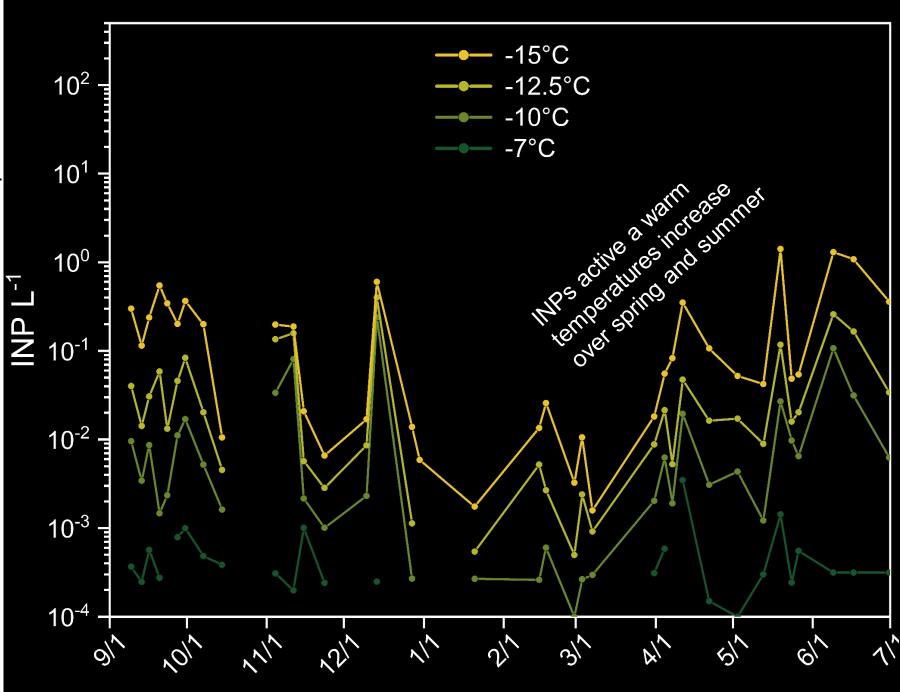
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INPs active a warm temperatures increase over spring and summer

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First TBS IcePuck data