CCN vs IN in limiting Arctic mixed-phase ice nucleation

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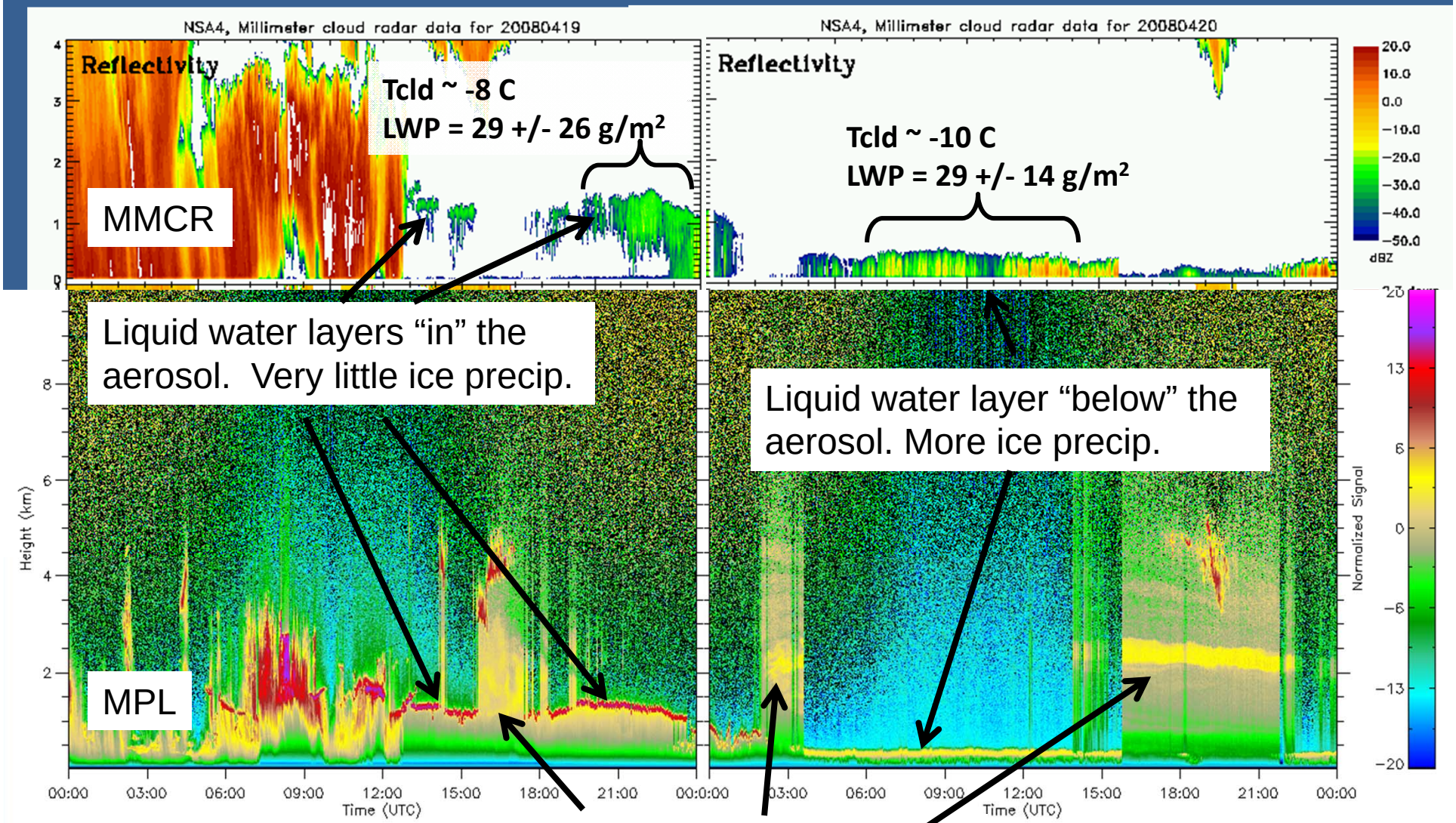
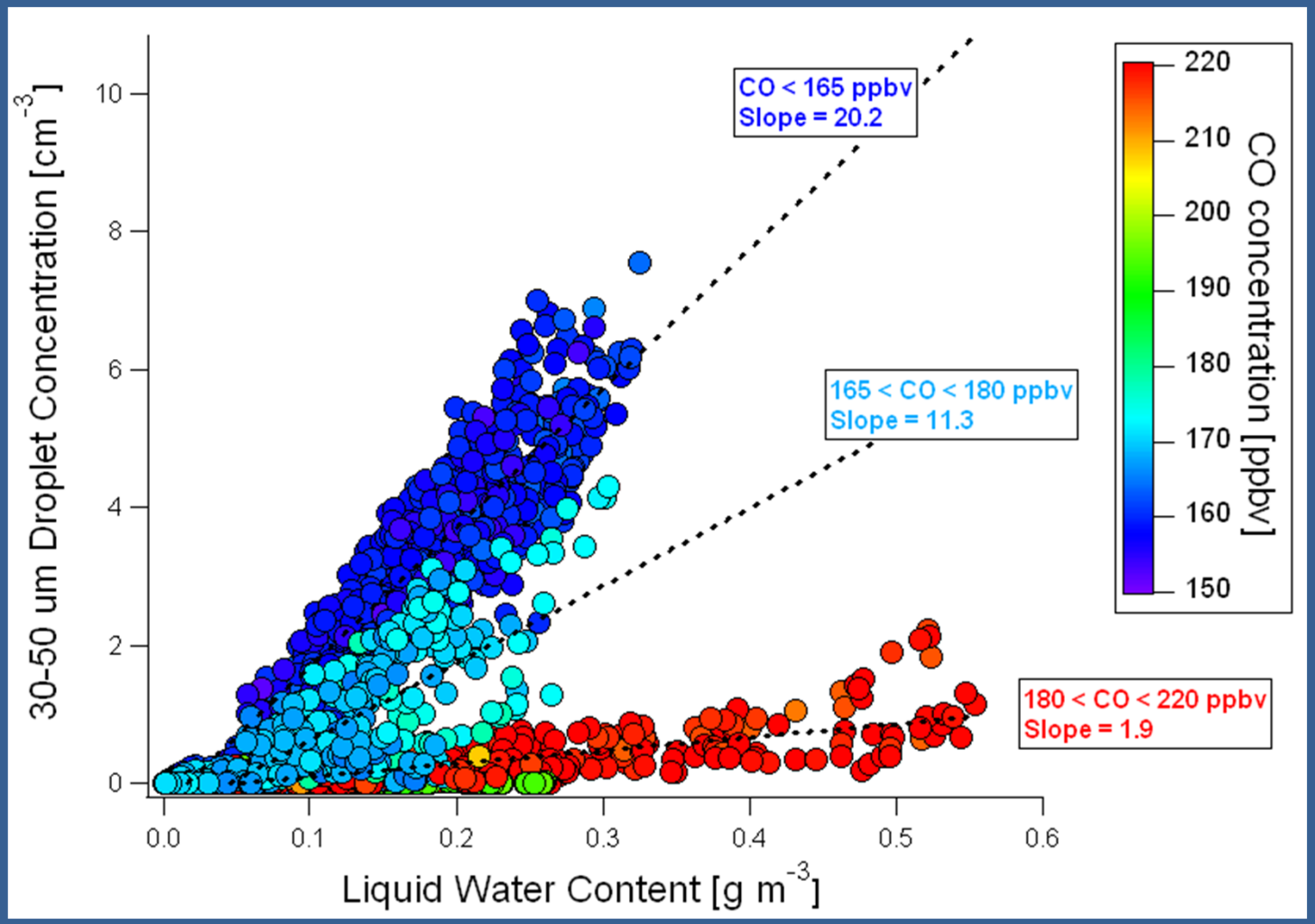
ISDAC: 19-20 April case



Indication of aerosol layers

More Large Drops in Cleaner Clouds

ARCPAC Experiment, Spring 2008

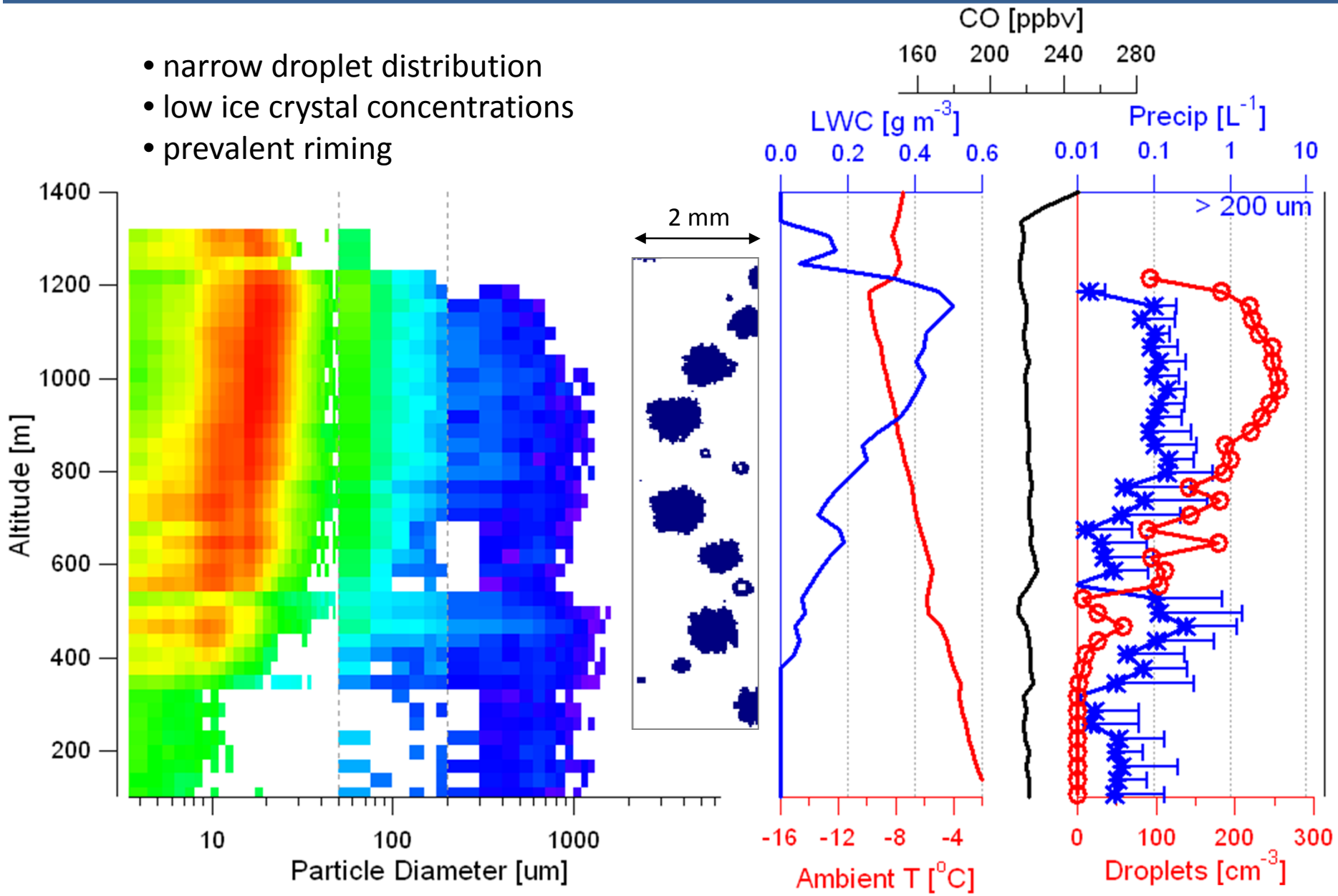


Large aerosol, CCN, black carbon, and mineral dust concentrations all observed to increase with increasing CO concentration

Lance et al. 2011

Polluted Case

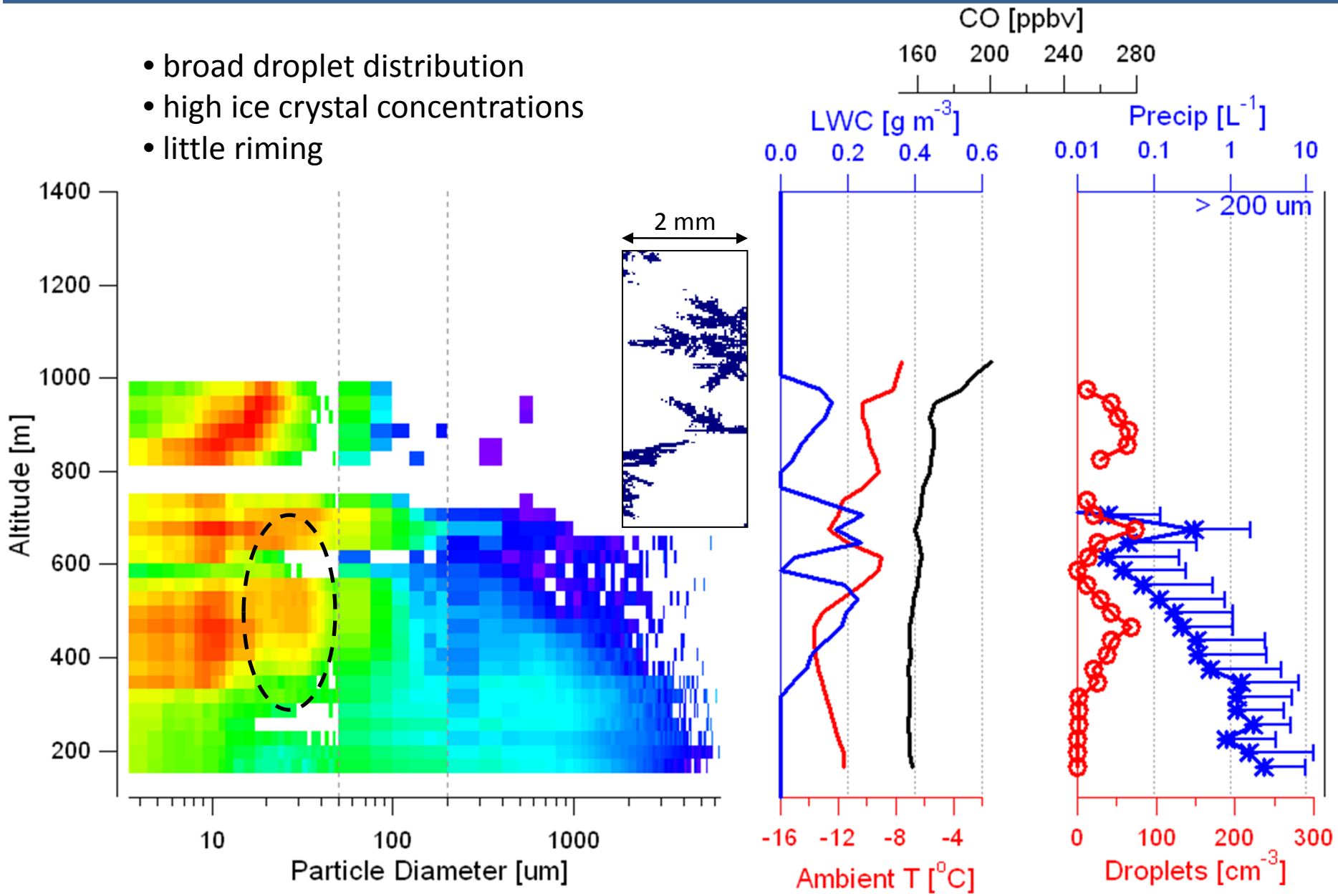
- narrow droplet distribution
- low ice crystal concentrations
- prevalent riming



Lance et al. 2011

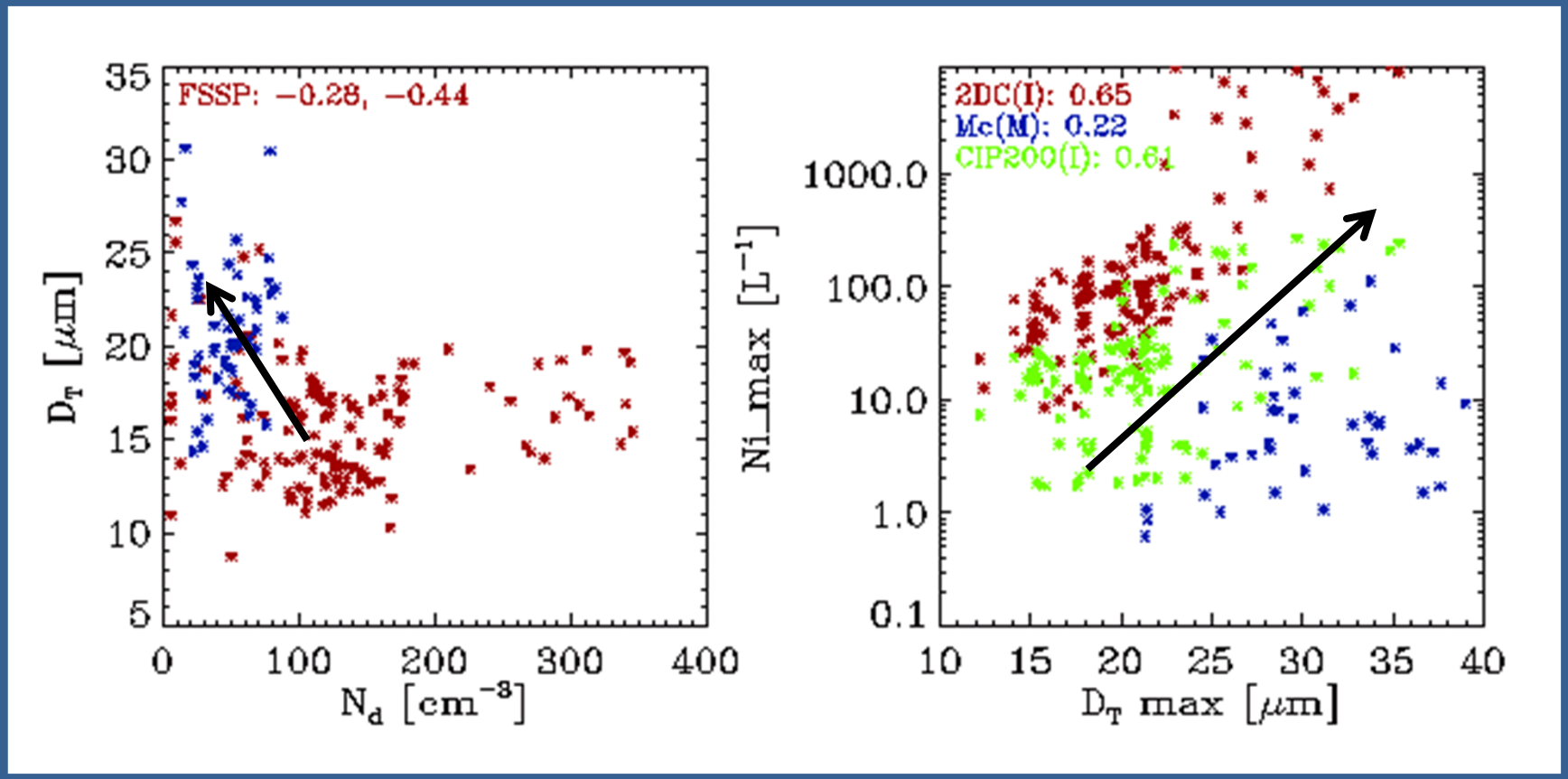
Clean Case

- broad droplet distribution
- high ice crystal concentrations
- little riming



Lance et al. 2011

Some observations from MPACE/ISDAC



General increase in large drops at smaller N_d

General increase in ice concentration with more large drops

How do we study these processes?

- Measurements of airmass tracers (CO, acetonitrile, etc.) coordinated with cloud and aerosol measurements
- Better understanding of IN measurements in general
- Studies examining the co-variability of Na, CCN, IN
- Studies of interactions between CCN and IN (inhibition?)