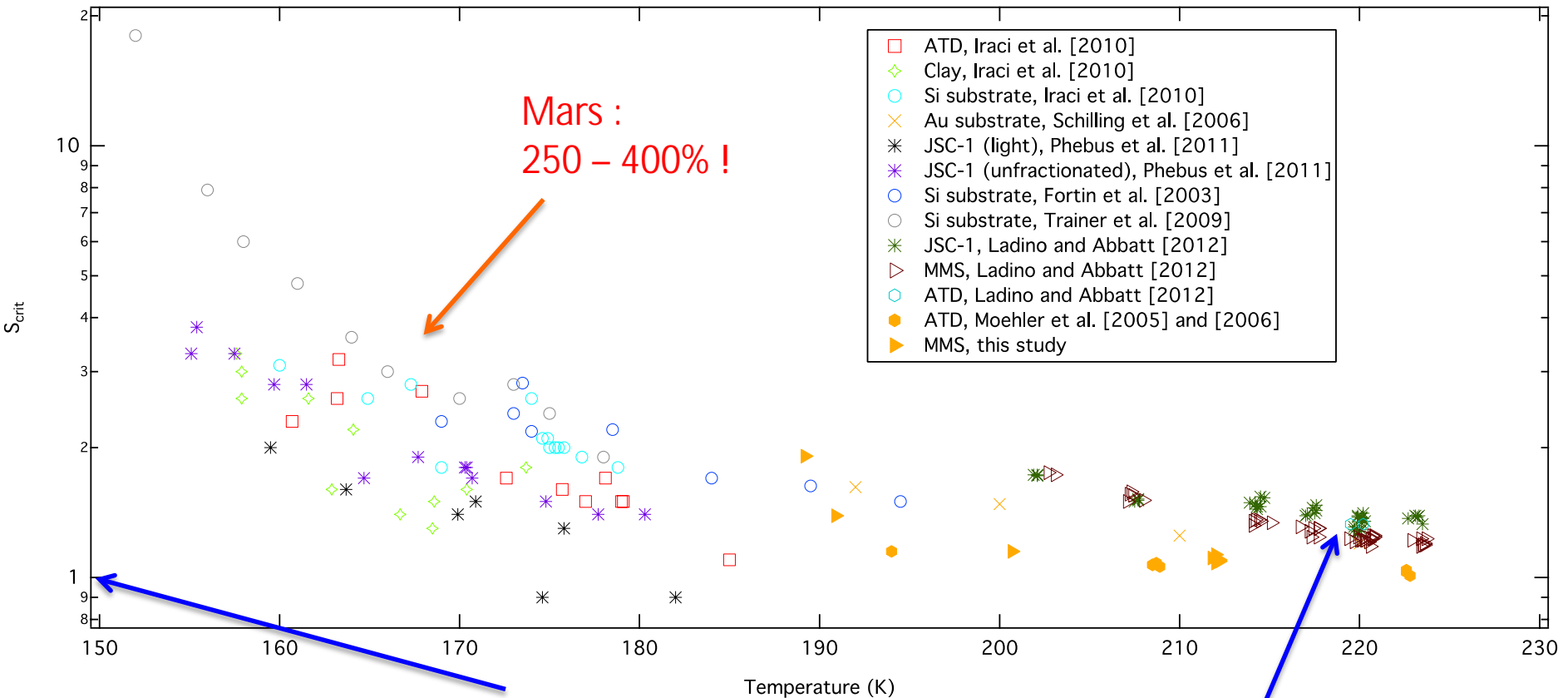
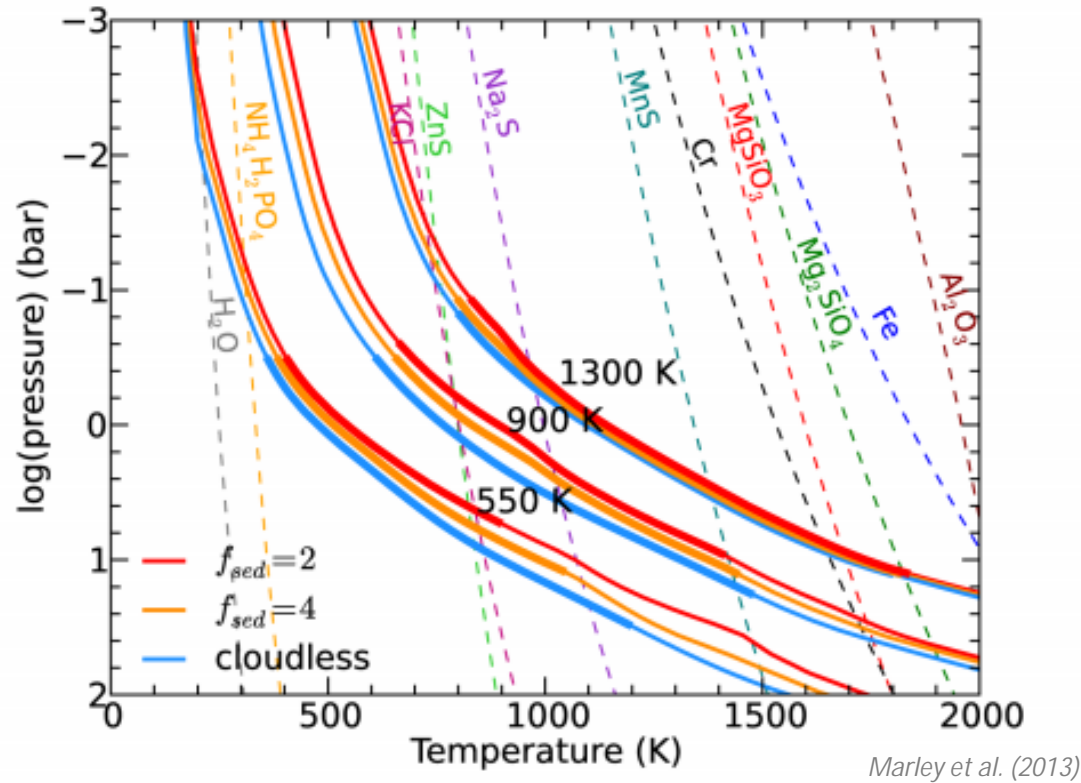


Martian Ice Clouds



Cziczo et al., JGRP, 2014

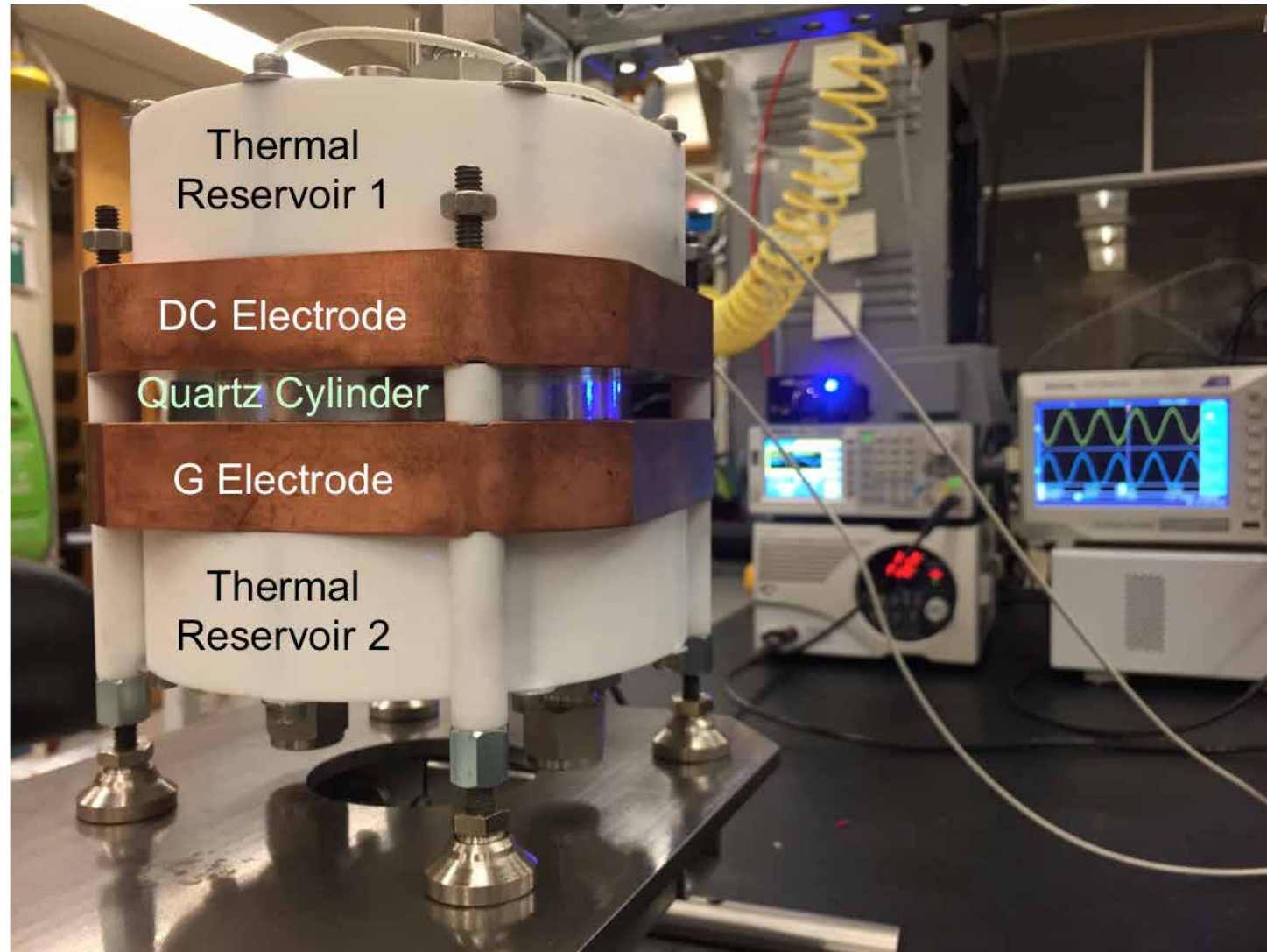
Exoplanets



Exoplanet Cloud Chamber



Civil and Environmental Engineering





Switching Gears



Vision Statement

SSEC has a firm identity, well known in our community, and that should be maintained and expanded. Meet the PIs, staff and students and understand their work so that it can be clearly and effectively communicated to the science and engineering community, state-wide, and nationally.

Second, acknowledge that some research areas will grow in coming years (e.g. cross over studies, new satellite and aircraft platforms) and position SSEC accordingly.

“No Bucks, No Buck Rogers”




Civil and Environmental Engineering

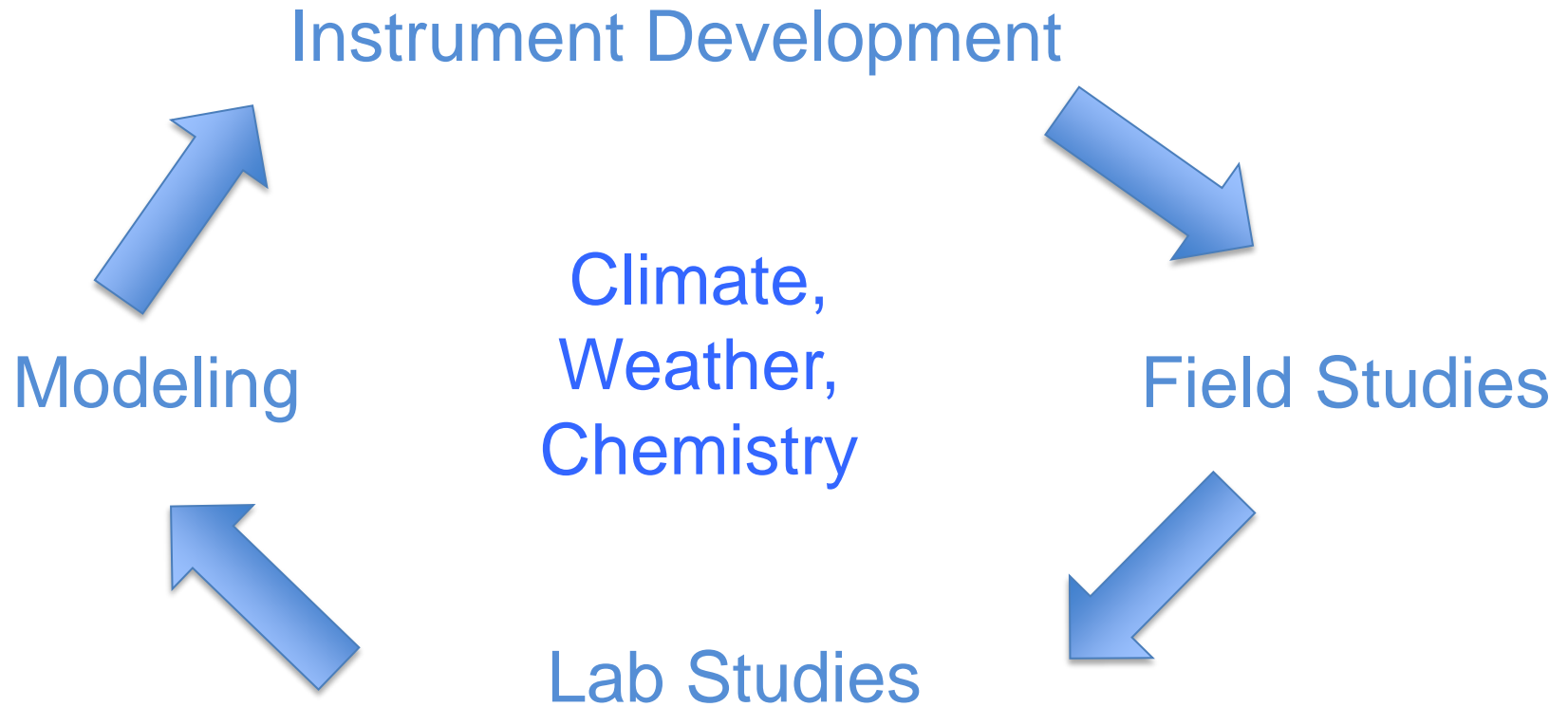
- Understand the new financial model
- Support proposals and seed innovation (e.g. cubesats, field studies)
- Assist in CIMSS re-compete
- Expand non-traditional (non-Federal) funding
- Funding for new & shared research facilities
- Determination of, and funding for, future renovation or new building needs to better realize partnerships on campus.



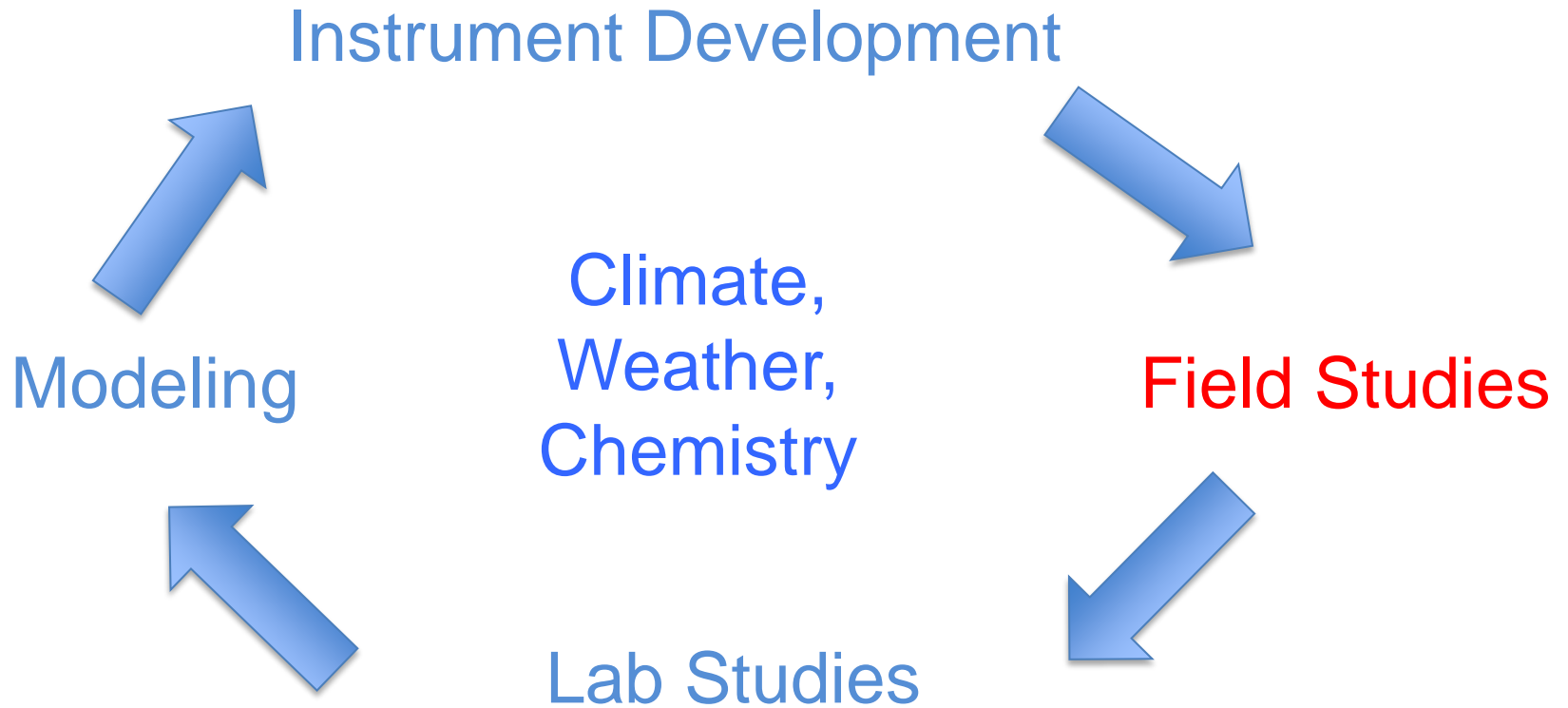
The SSEC Community

- 
- New survey (follow 2015, 2017)
 - Recruiting, career development and retention
 - Continued and new outreach beyond SSEC (e.g. Adult STEM)
 - Diversity and inclusion from interview to entry and throughout career (use of funding for outstanding candidates from undergrad forward?)

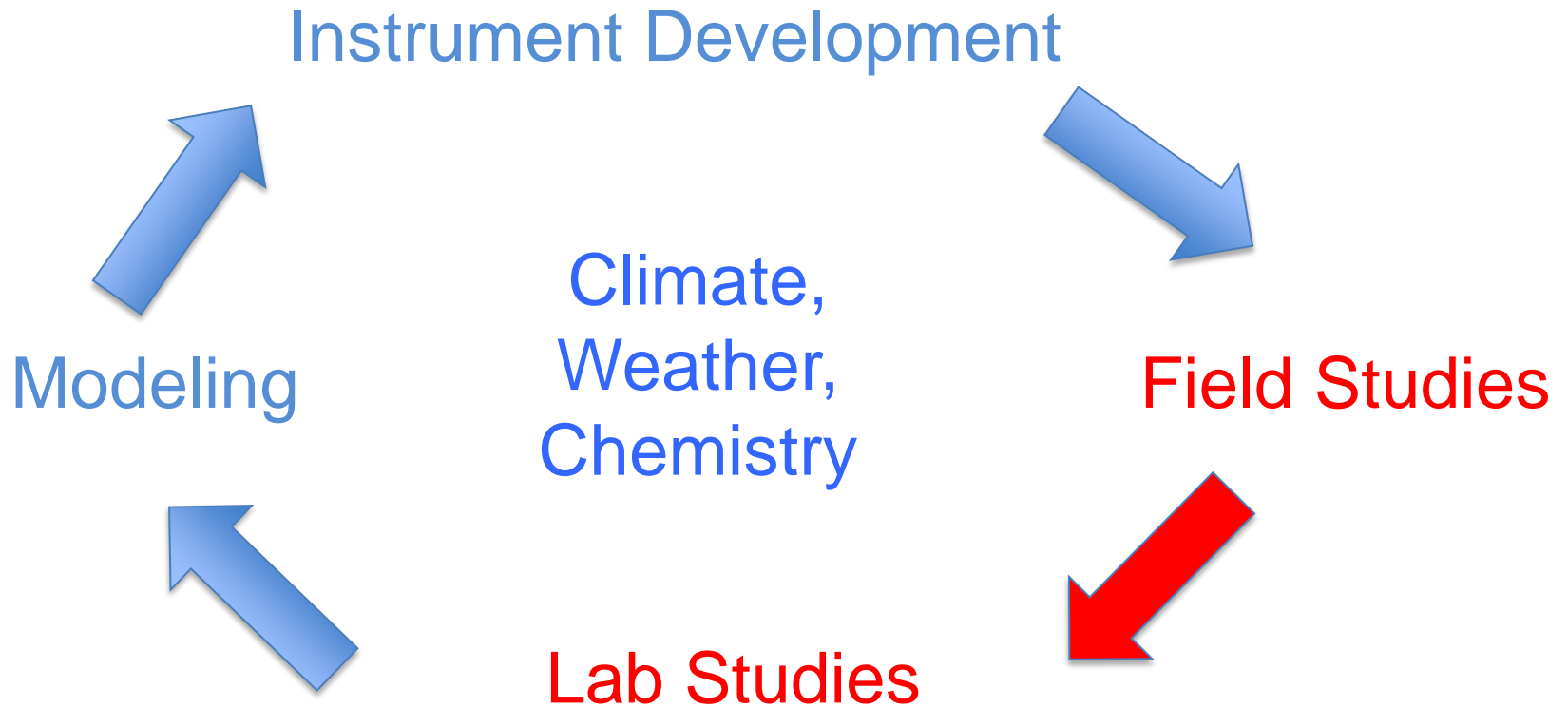
Recap



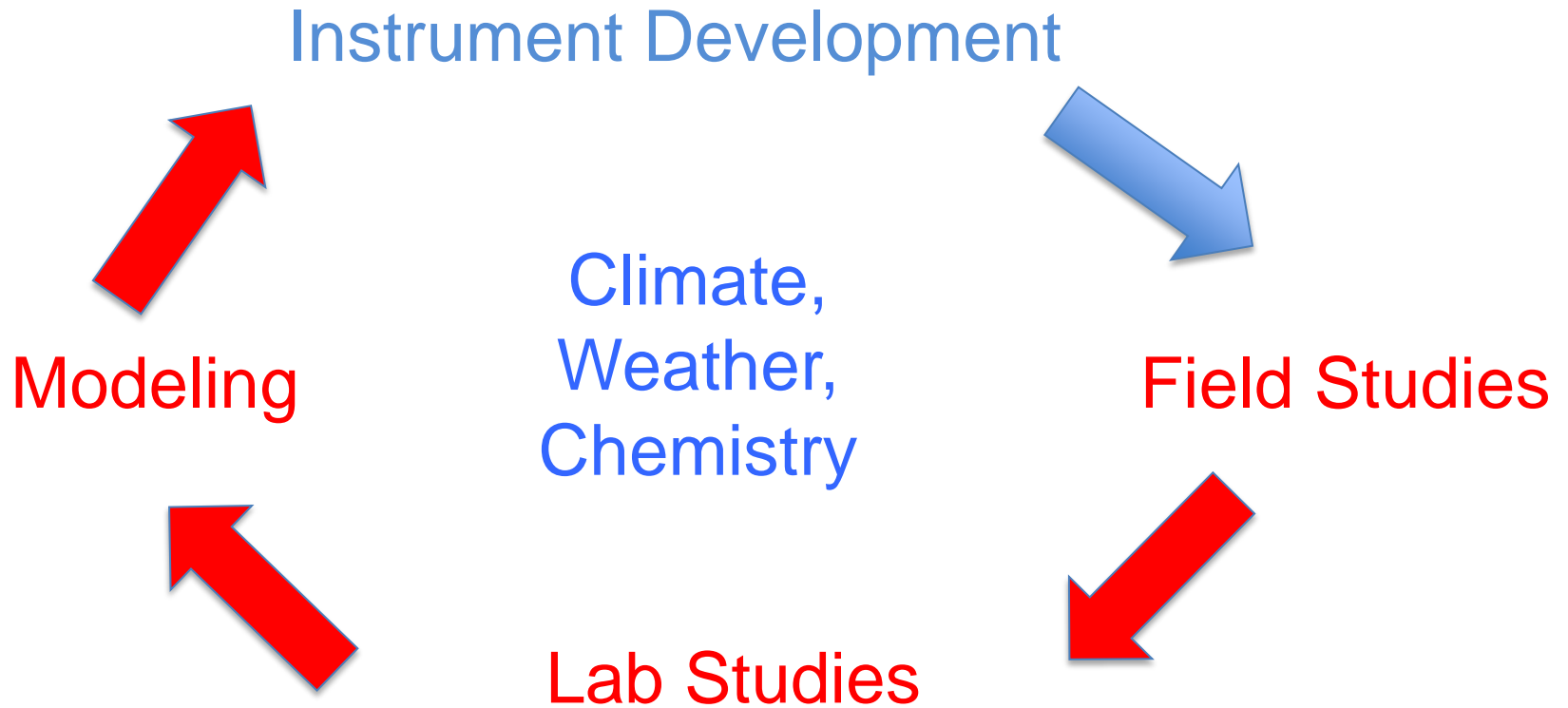
Recap



Recap



Recap



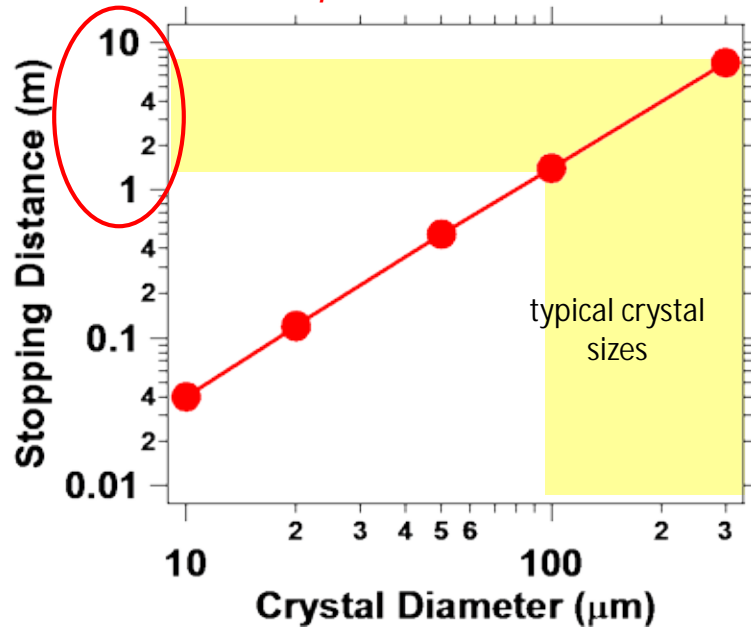


Questions?

What's the issue?

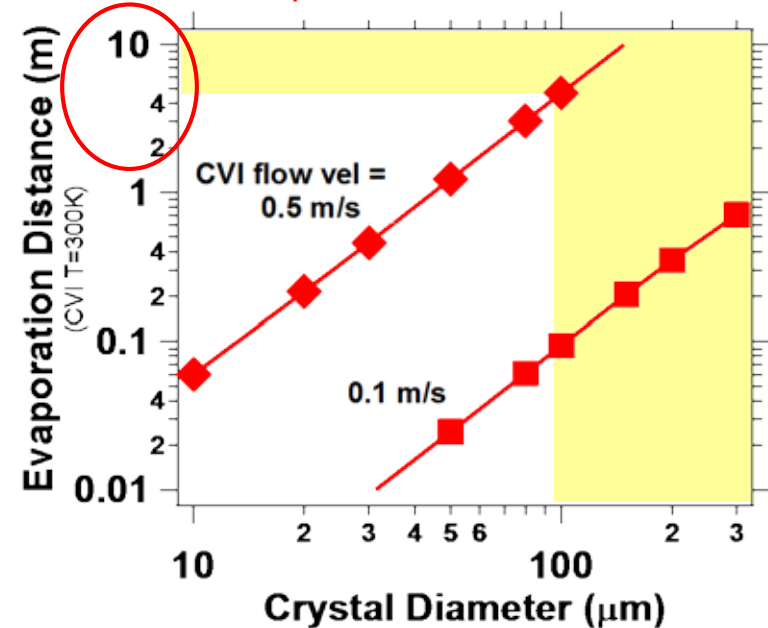
'Ice Bullets'

hard to stop – need >1 m inlet !

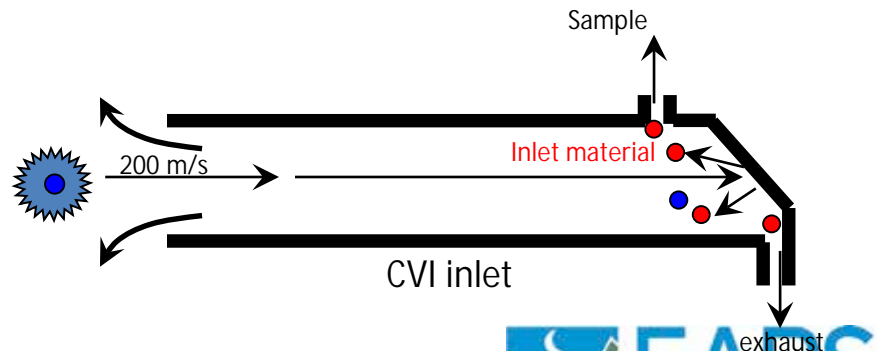


'Icebergs'

hard to evaporate – need >1 m inlet !



- Most crystals too large to sample
- Large crystals impact and generate artifacts

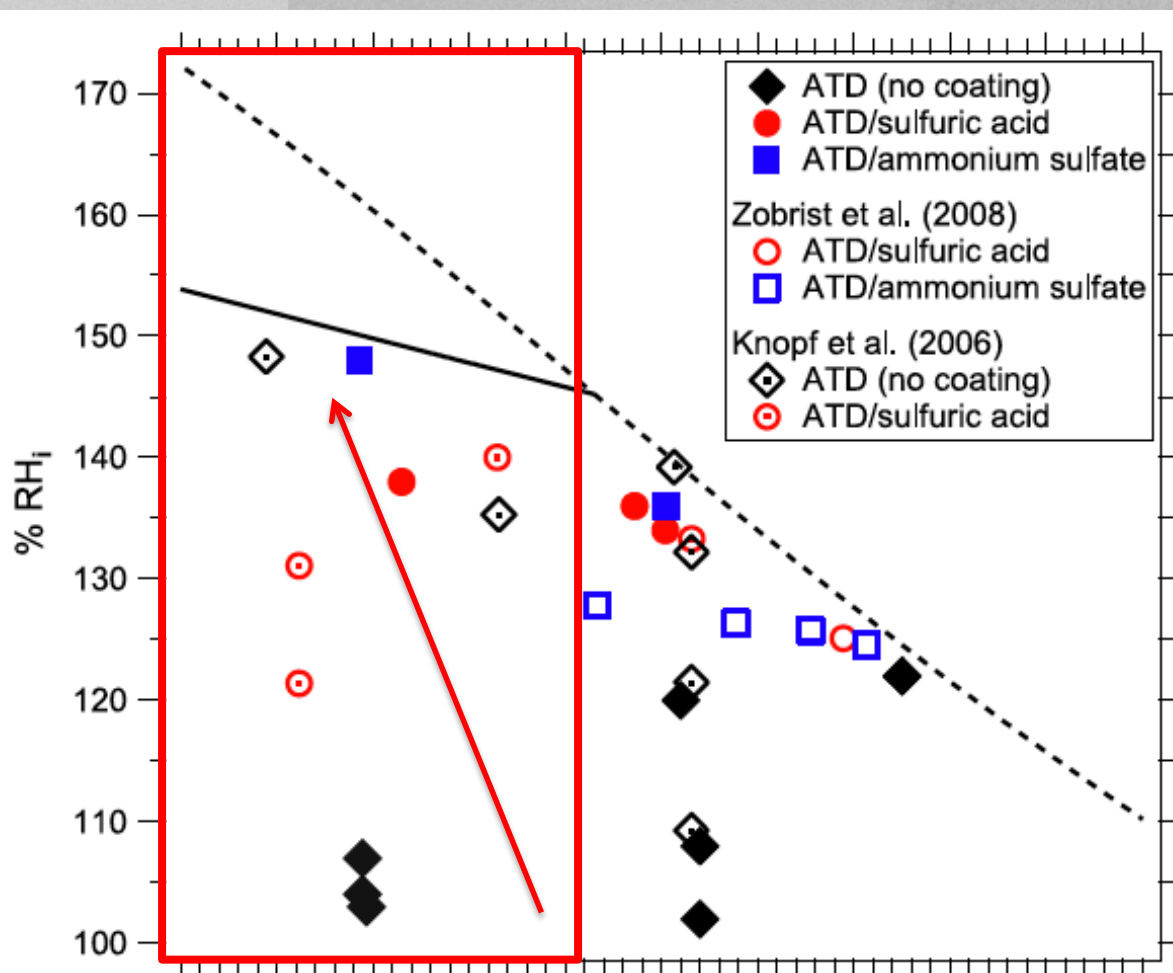


The Major Category: Mineral Dust



MACPEX 02 10.018
MACPEX

Bare Mineral [



coating (5%)

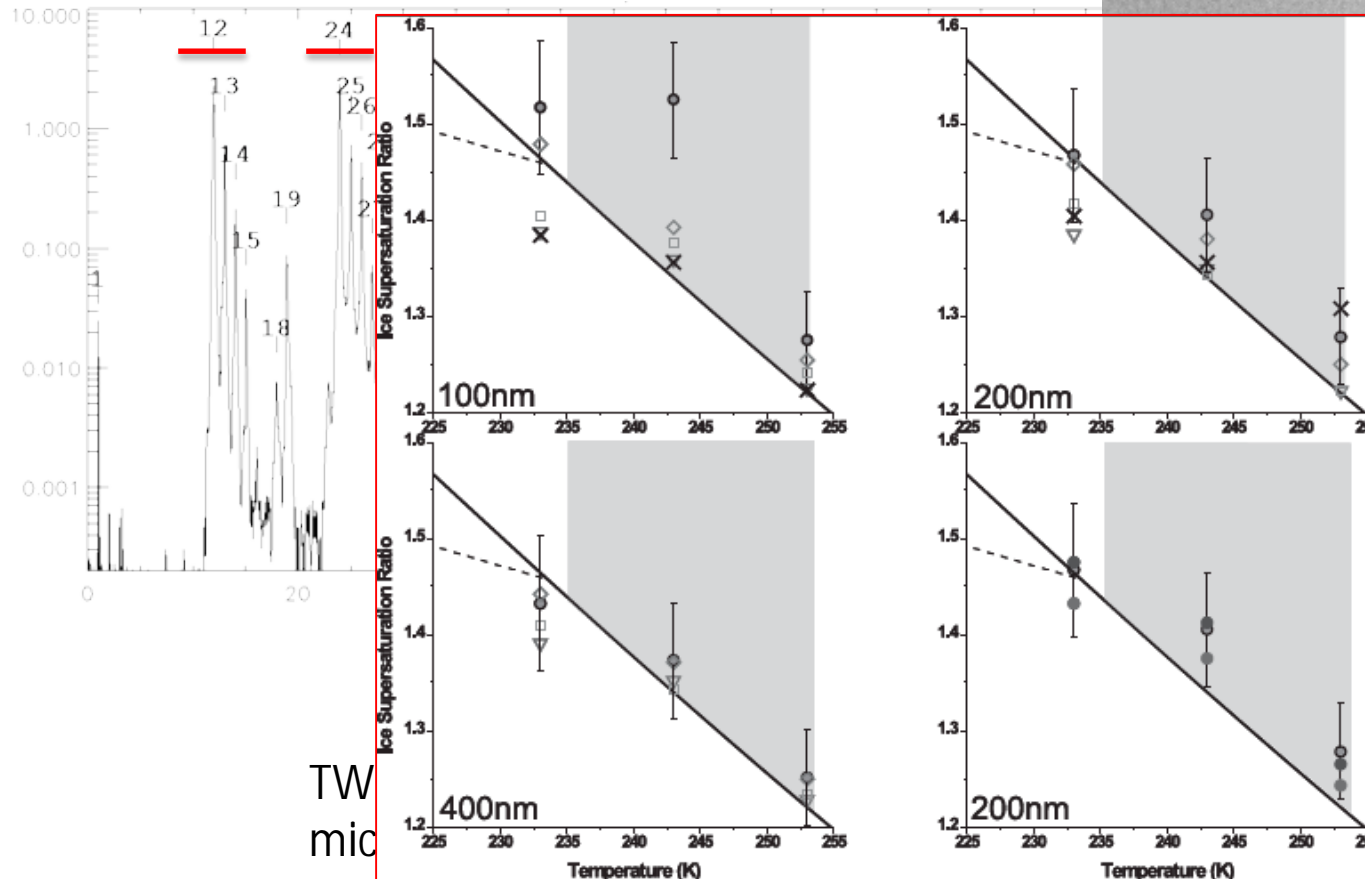
Consistent laboratory and field : (Bare) mineral dust effective IN and present in cirrus

Cziczo et al., ERL, 2009 and other recent works (e.g., Sullivan et al.)

Drill Deeper: What We Don't See

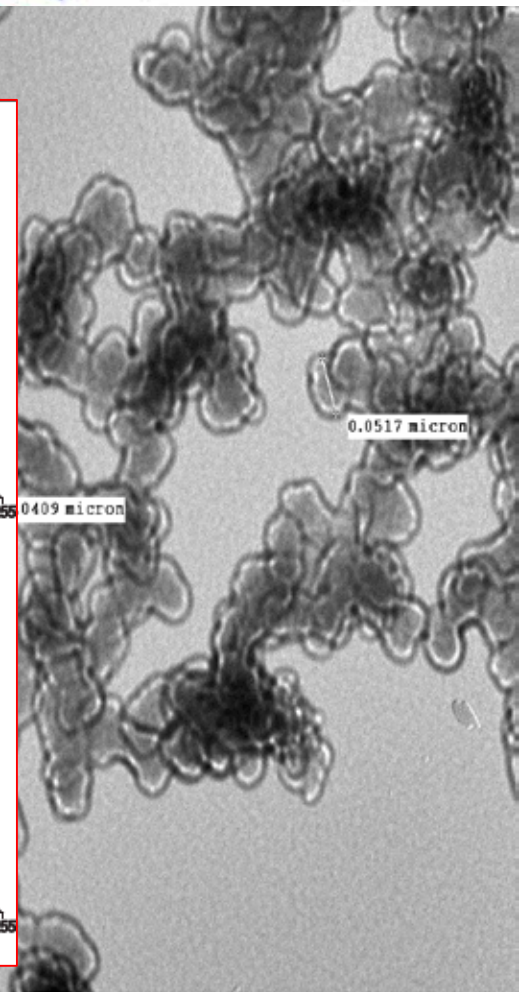


ONE cirrus residual spectrum like this:



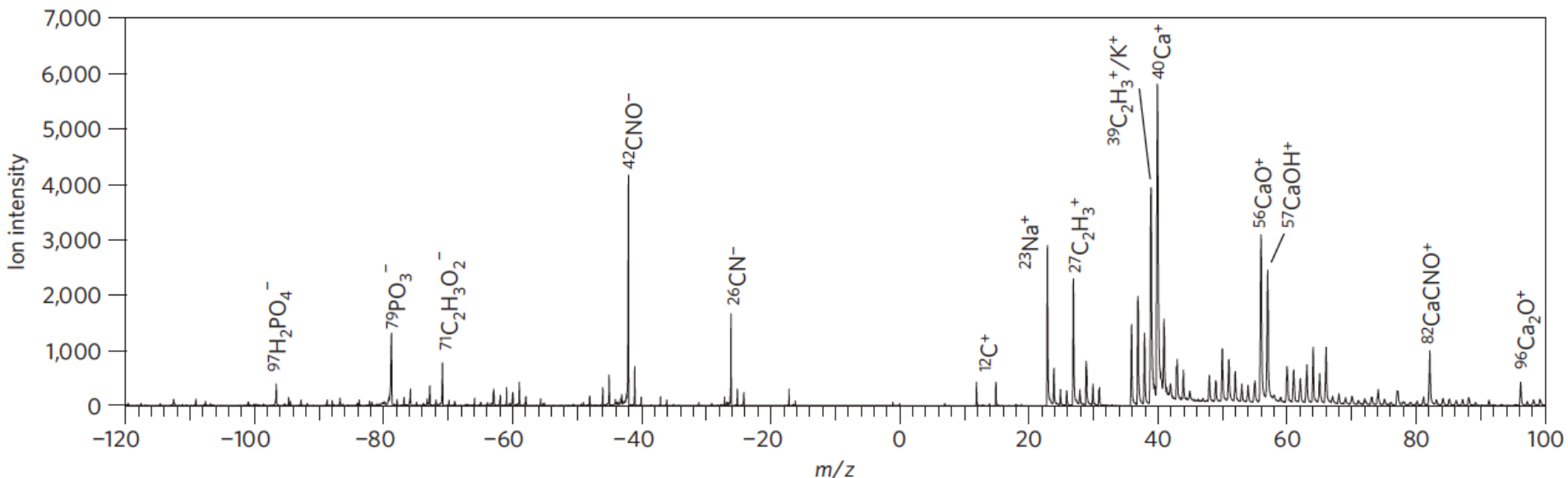
TW
mic

MACPEX Bs 2a.tif



Consistent laboratory and field : EC not a highly effective IN and not abundant in cirrus

Regarding Biological Material



“Biological mass spectral signatures can be differentiated from dust on the basis of abundant organic and phosphorus ions, as well as a lack of key dust markers, such as aluminium and silicates. All sampled biological particles contained nearly identical negative-ion mass spectral markers with positive-ion organic markers.”

Pratt et al., NatGeo, 2009

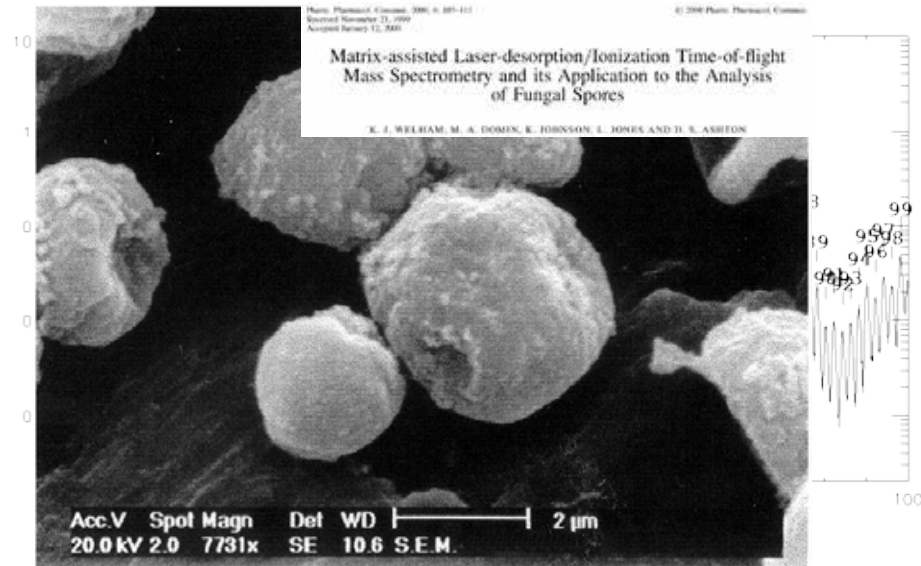
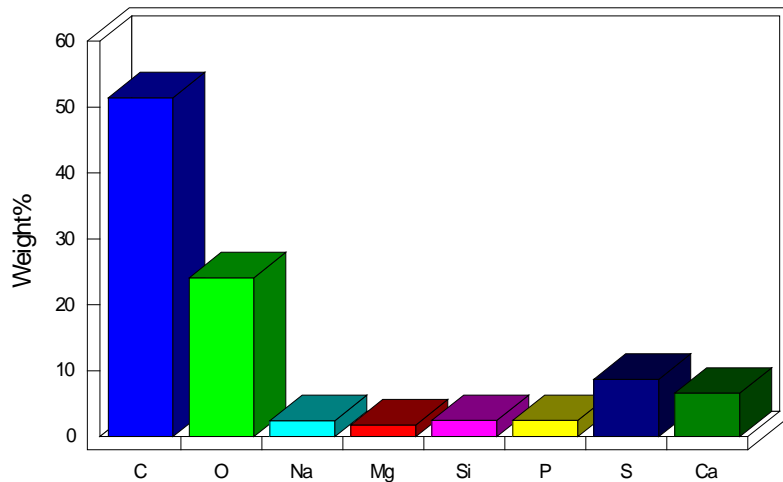


EAPS
Earth, Atmospheric and Planetary Sciences

...Biological Material



Quantitative results



Inconsistent laboratory and field : Some biologicals are effective IN but are not present in cirrus

Suggestion: it is possible these IN are not found in the UT because they are of low abundance and efficiently removed near their source at the first high saturation and/or low temperature