Mixed-Phase Arctic Cloud Experiment

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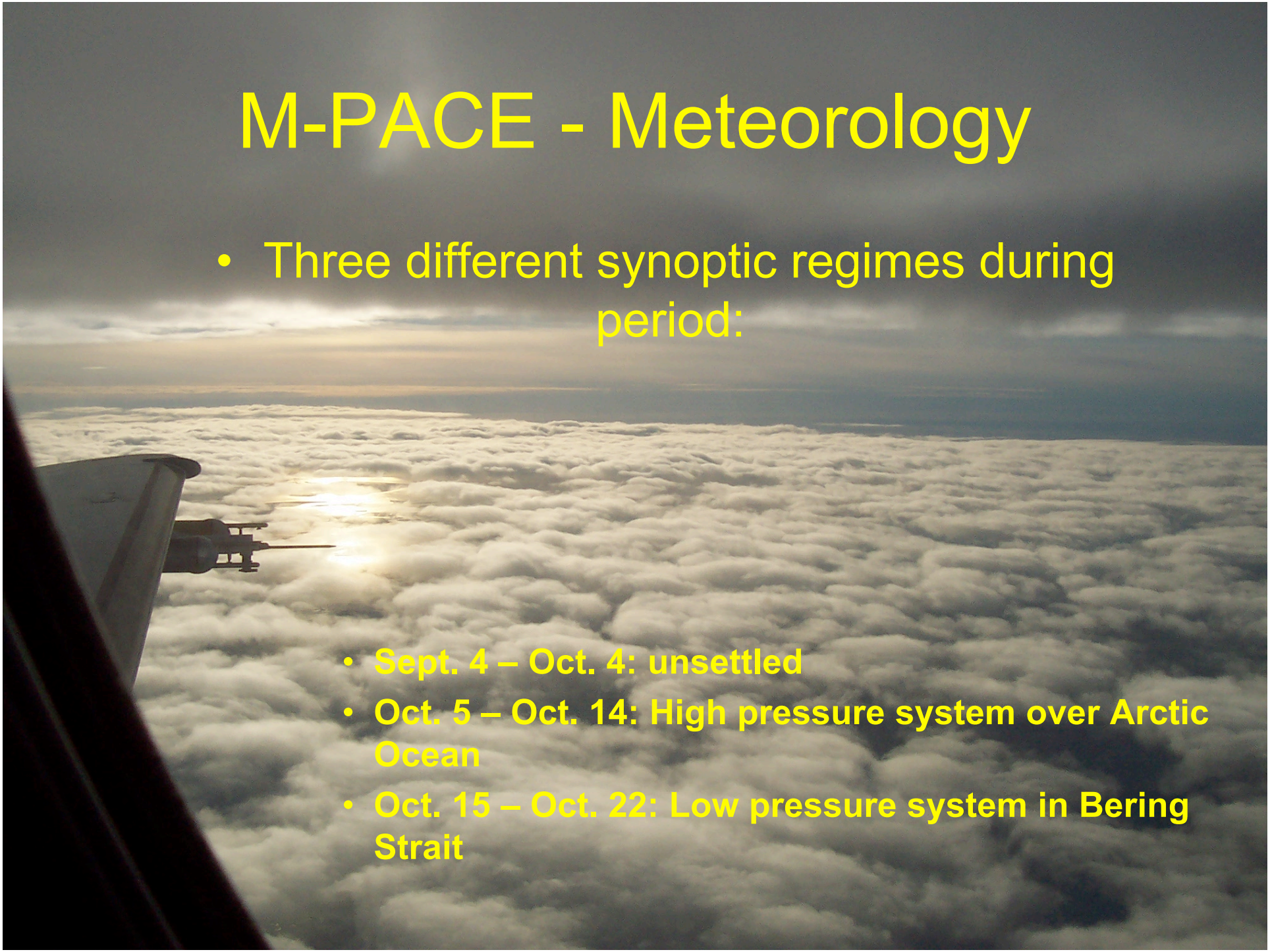
M-PACE - details

1. Sept. 27 – Oct. 22, 2004
2. 14 Citation research flights:
   - 6 multi-layer,
   - 5 BL stratus,
   - 2 Ci.
3. 5 Proteus flights
4. 2 SCM experiments with 4x per day radiosonde releases:
   - 00 UTC 5th – 00 UTC 10th
   - 00 UTC 14th – 12 UTC 22nd

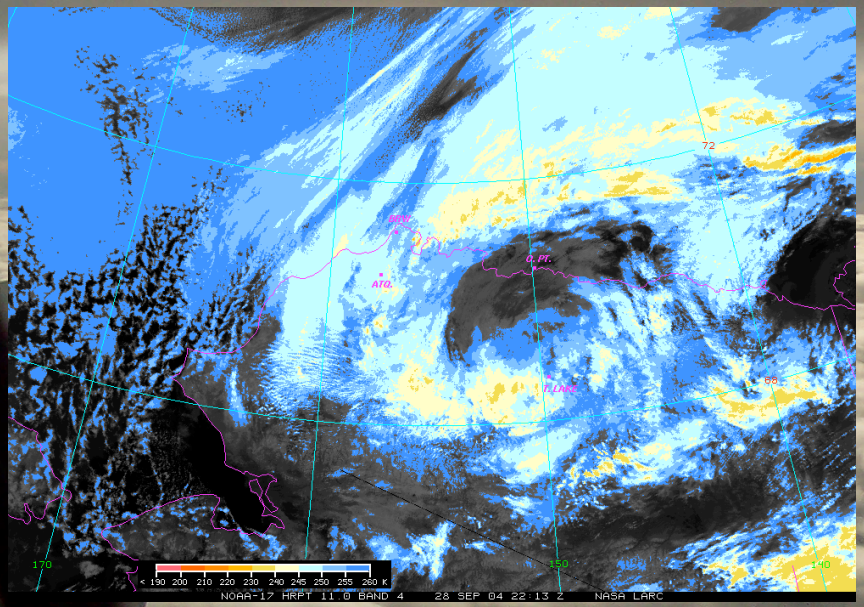
M-PACE - Meteorology

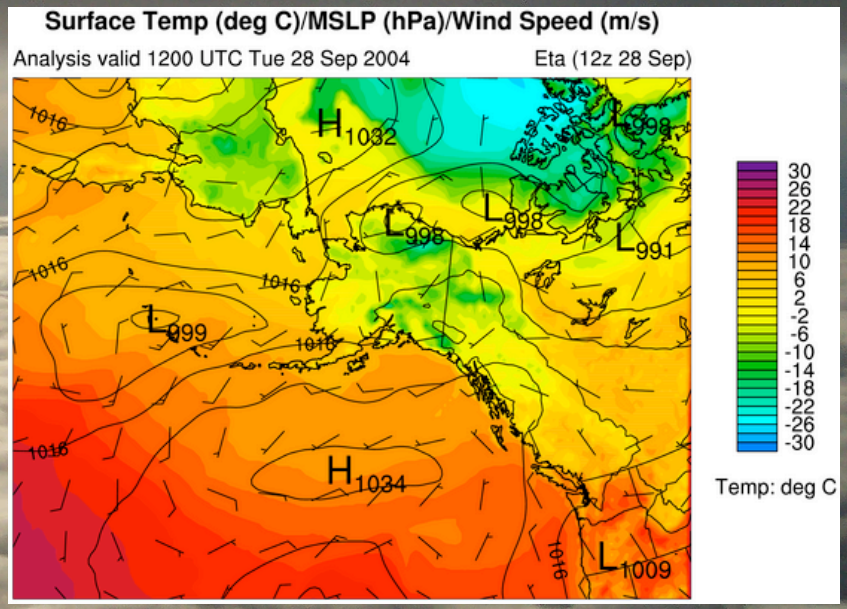
- Three different synoptic regimes during period:



- **Sept. 4 – Oct. 4: unsettled**
- **Oct. 5 – Oct. 14: High pressure system over Arctic Ocean**
- **Oct. 15 – Oct. 22: Low pressure system in Bering Strait**

M-PACE – Meteorology
Regime 1

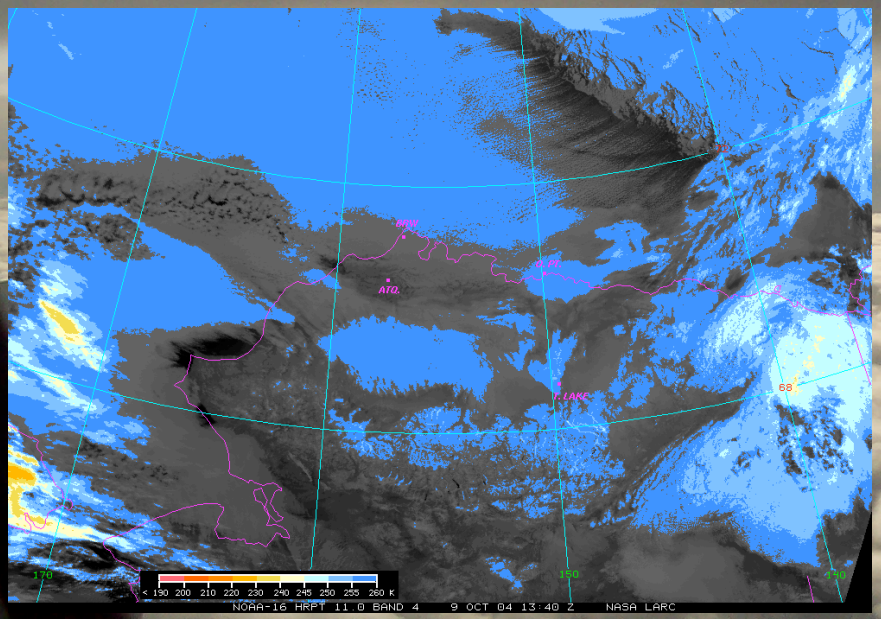


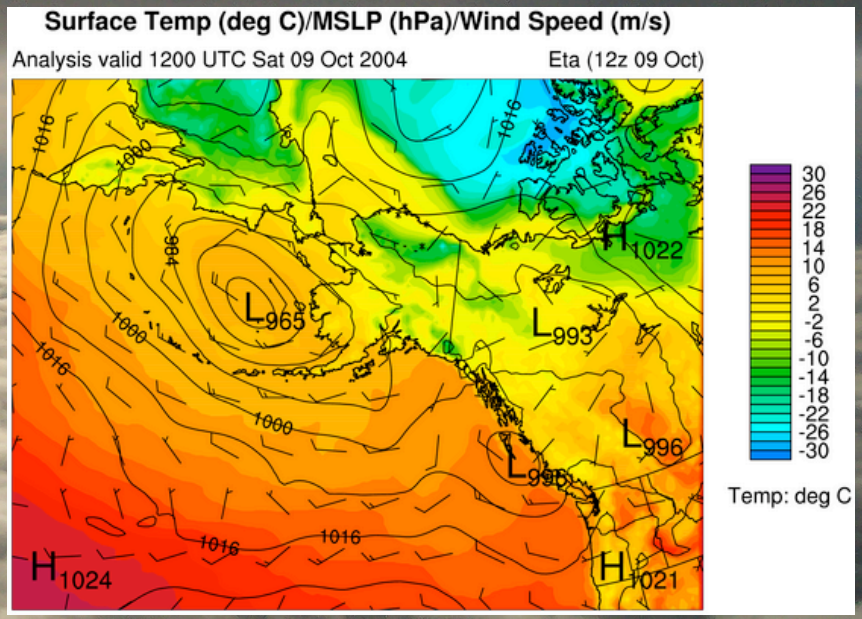


North Slope affected by small low pressure

2 flights in mostly liquid cloud

M-PACE – Meteorology
Regime 2

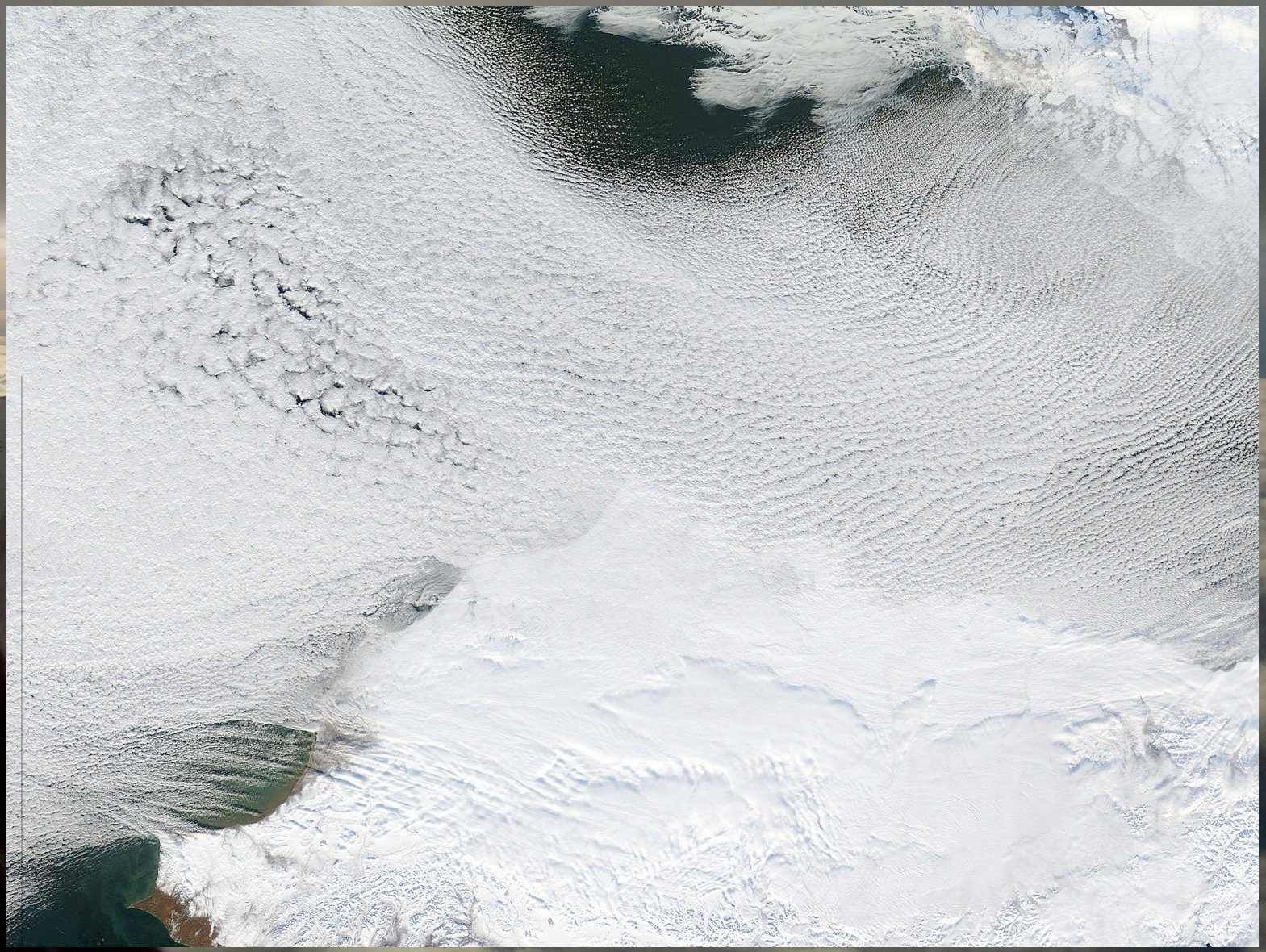




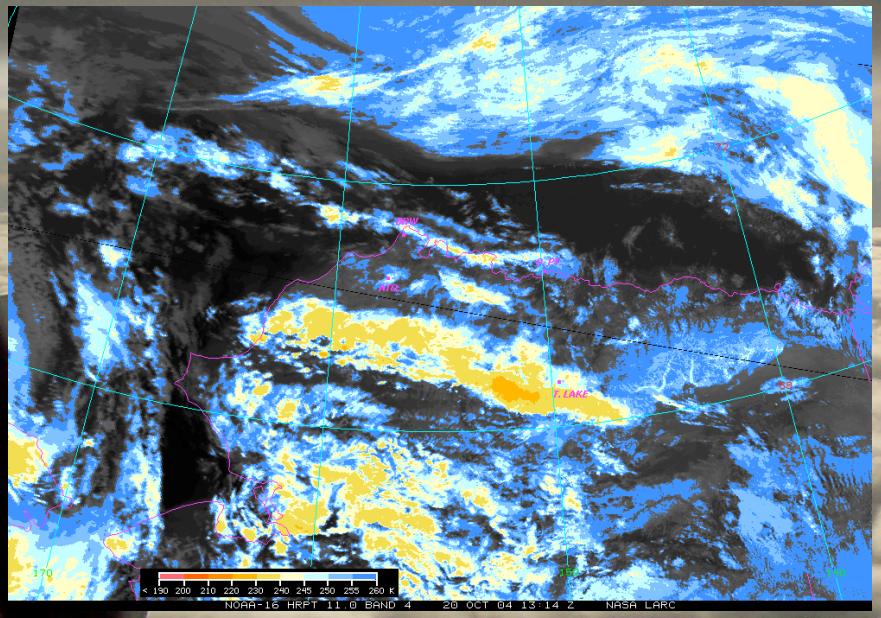
North-east flow of ice-pack – boundary layer rolls over North Slope

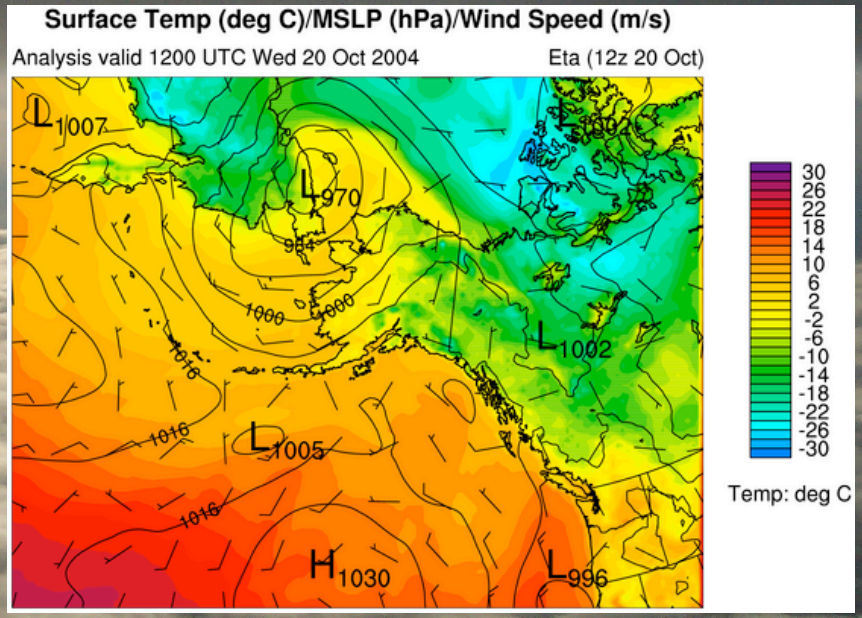
7 research flights

MODIS Visible Image Oct 9th



M-PACE – Meteorology
Regime 2



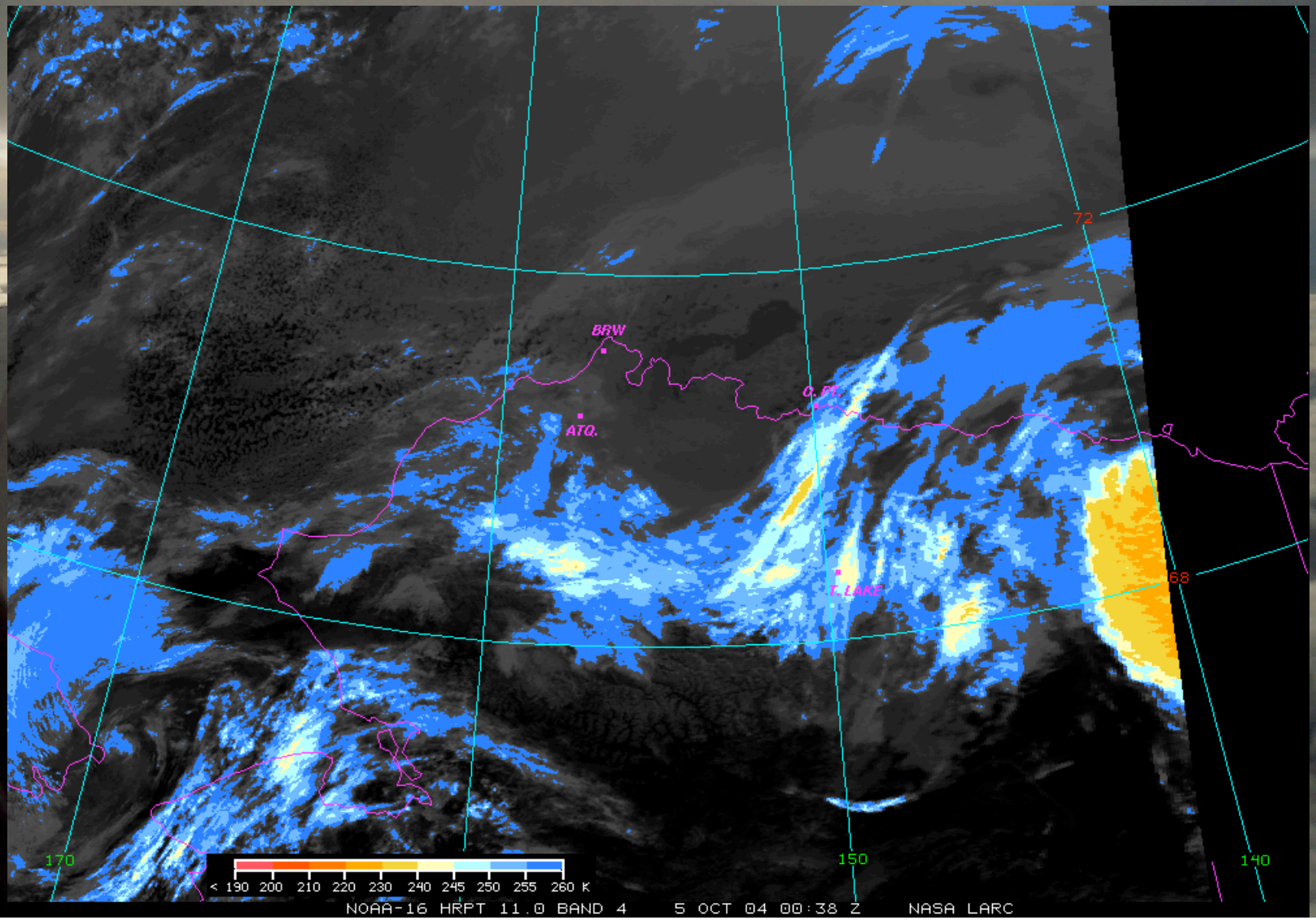


Low in the Bering Strait spawn frontal systems that propagated over domain

2 Cirrus missions, and 2 mixed-phase missions in elevated Sc

with enhanced IN characterization

Radiosonde IOP 1
00 UTC 5th -00 UTC 10th



Radiosonde IOP 1
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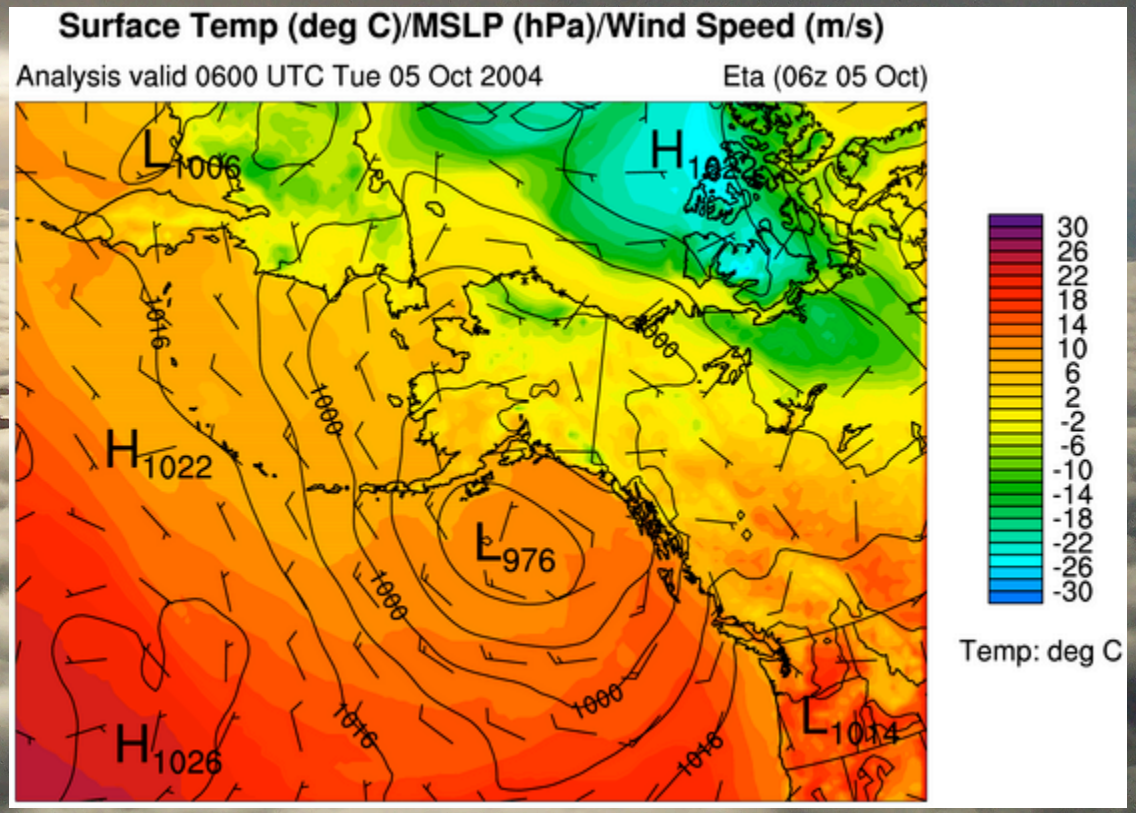
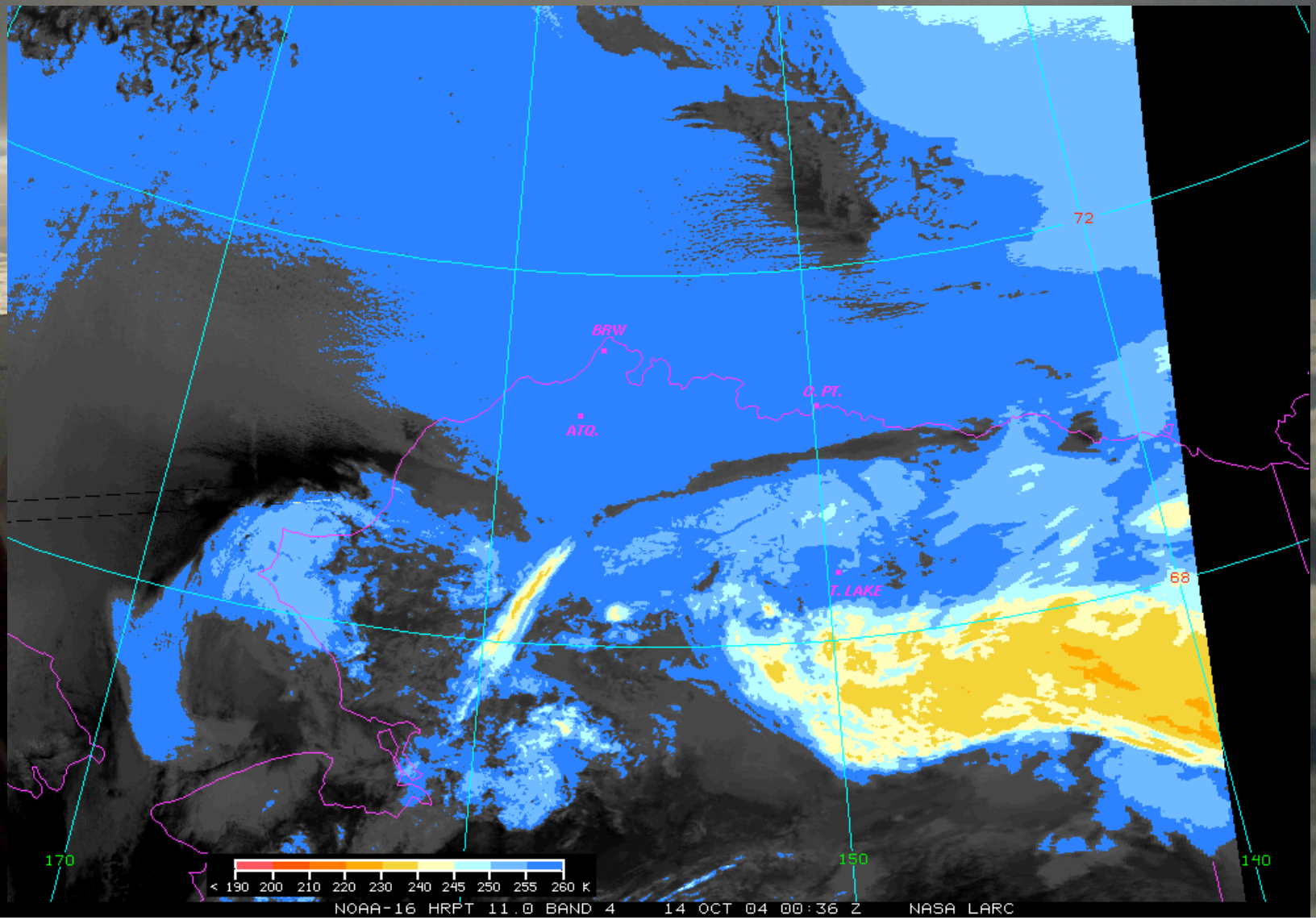


Radiosonde IOP 2
00 UTC 14th -00 UTC 22nd



Radiosonde IOP 2
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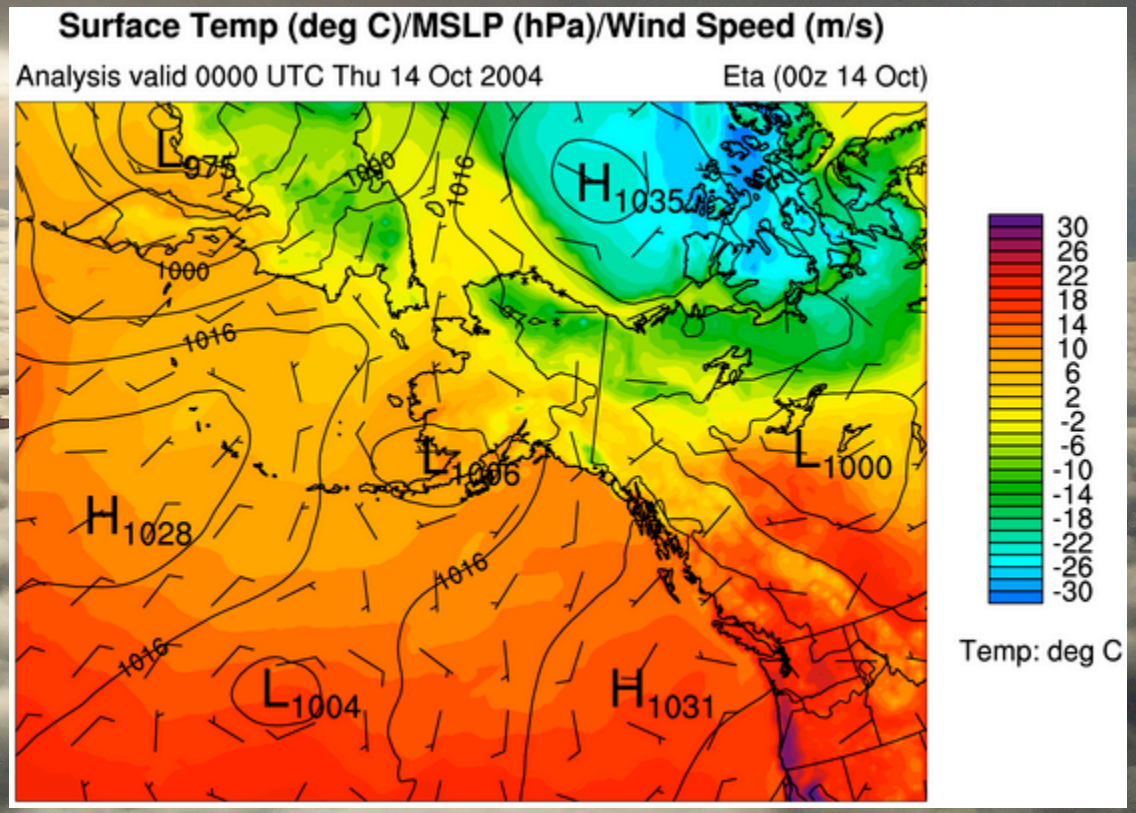
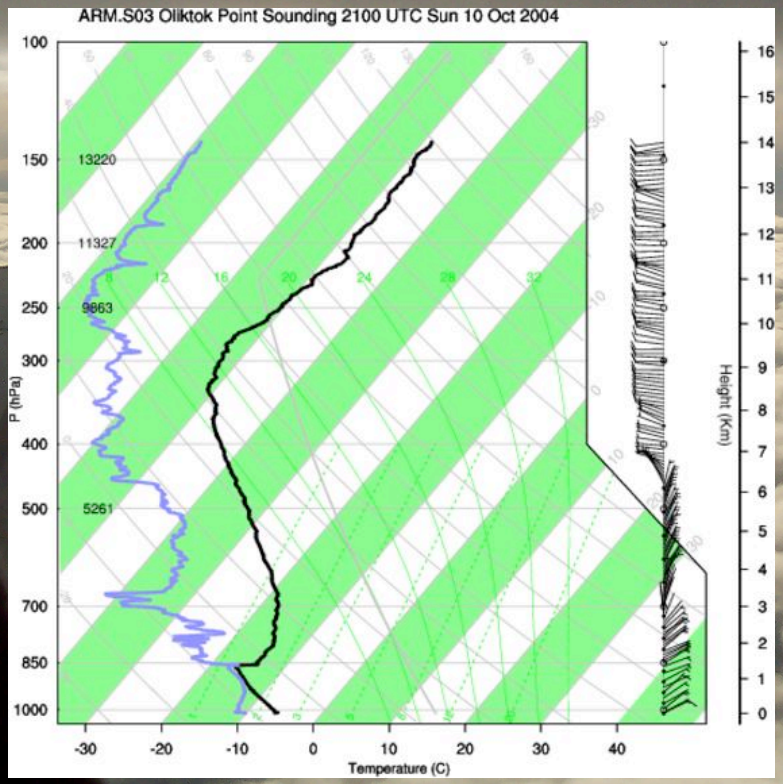
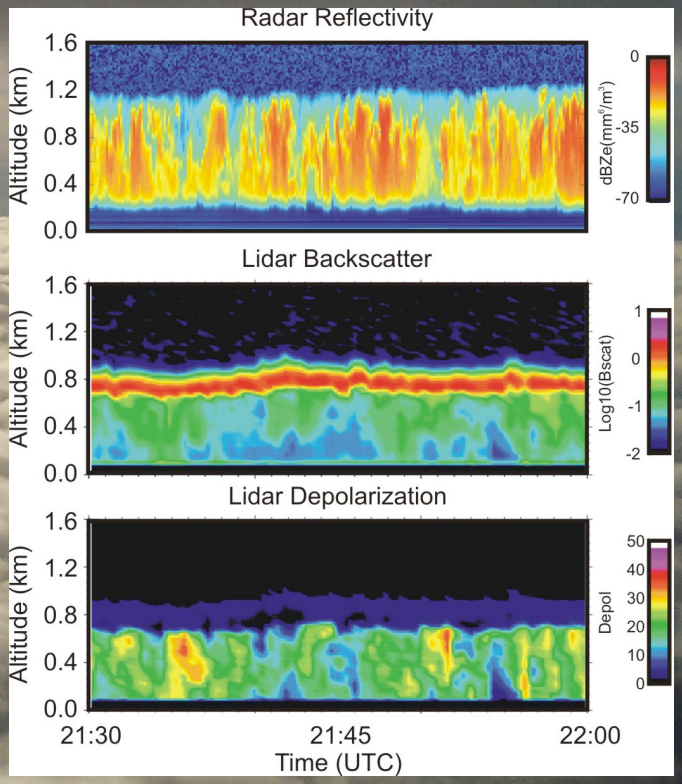


In Situ Measurements: Oct 10th

TERRA Under Pass





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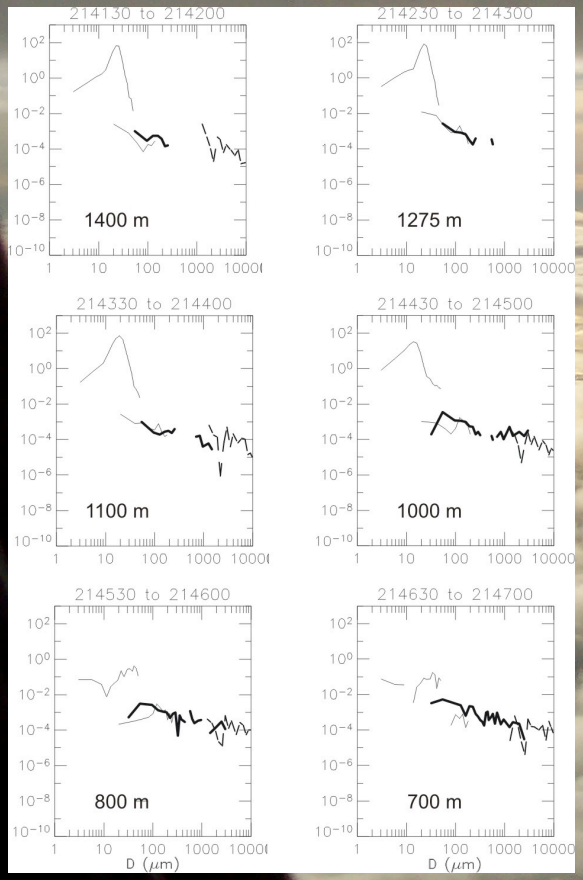
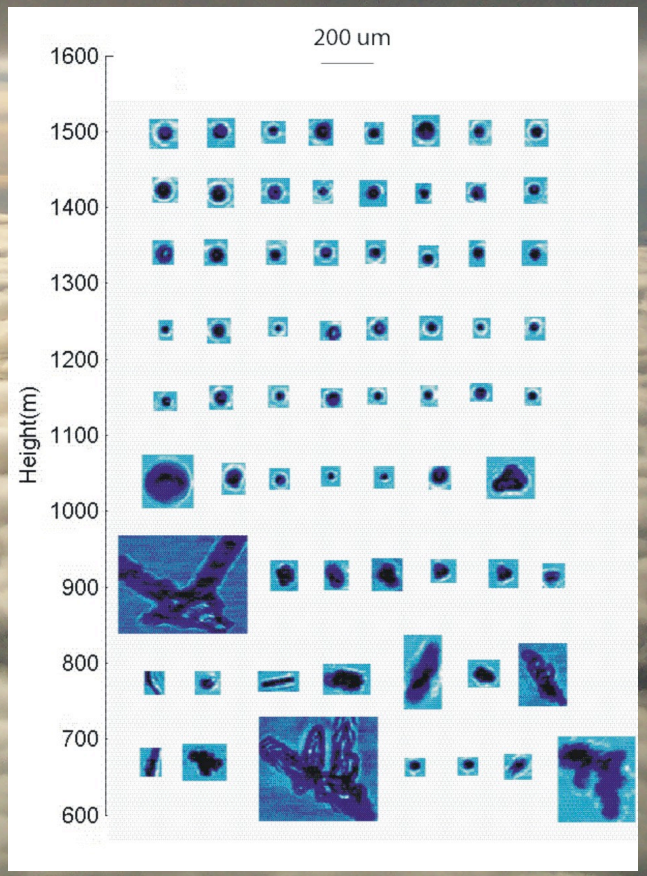
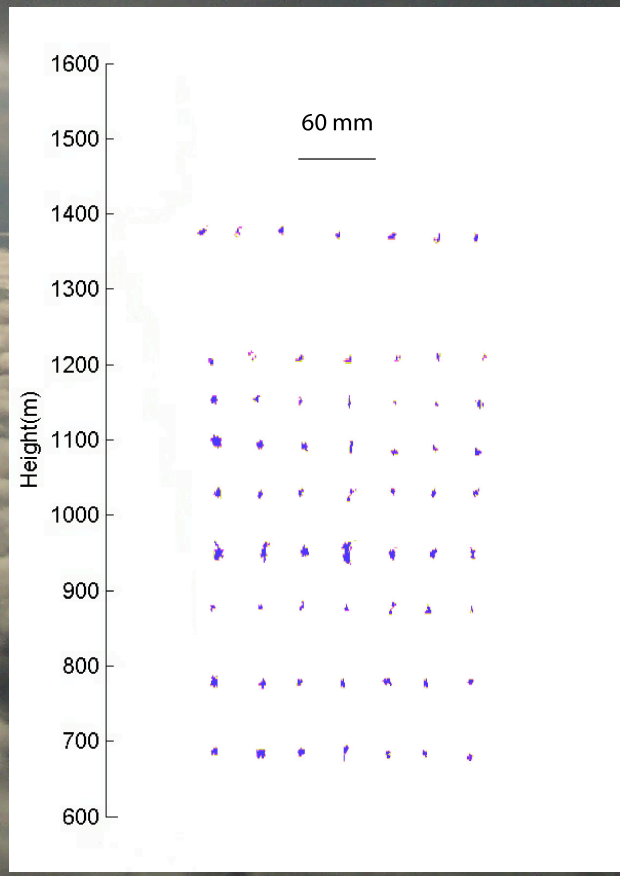


All Probes

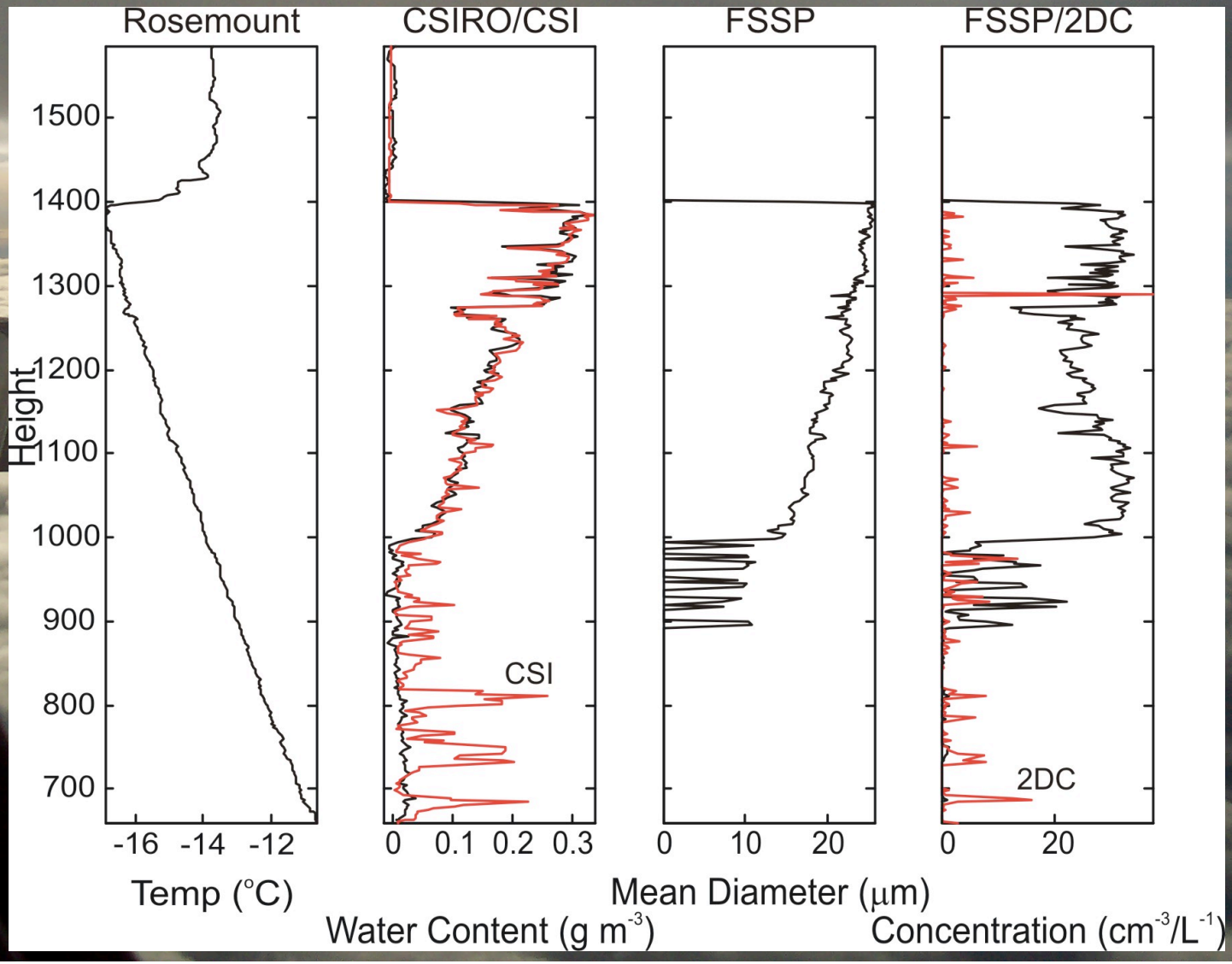


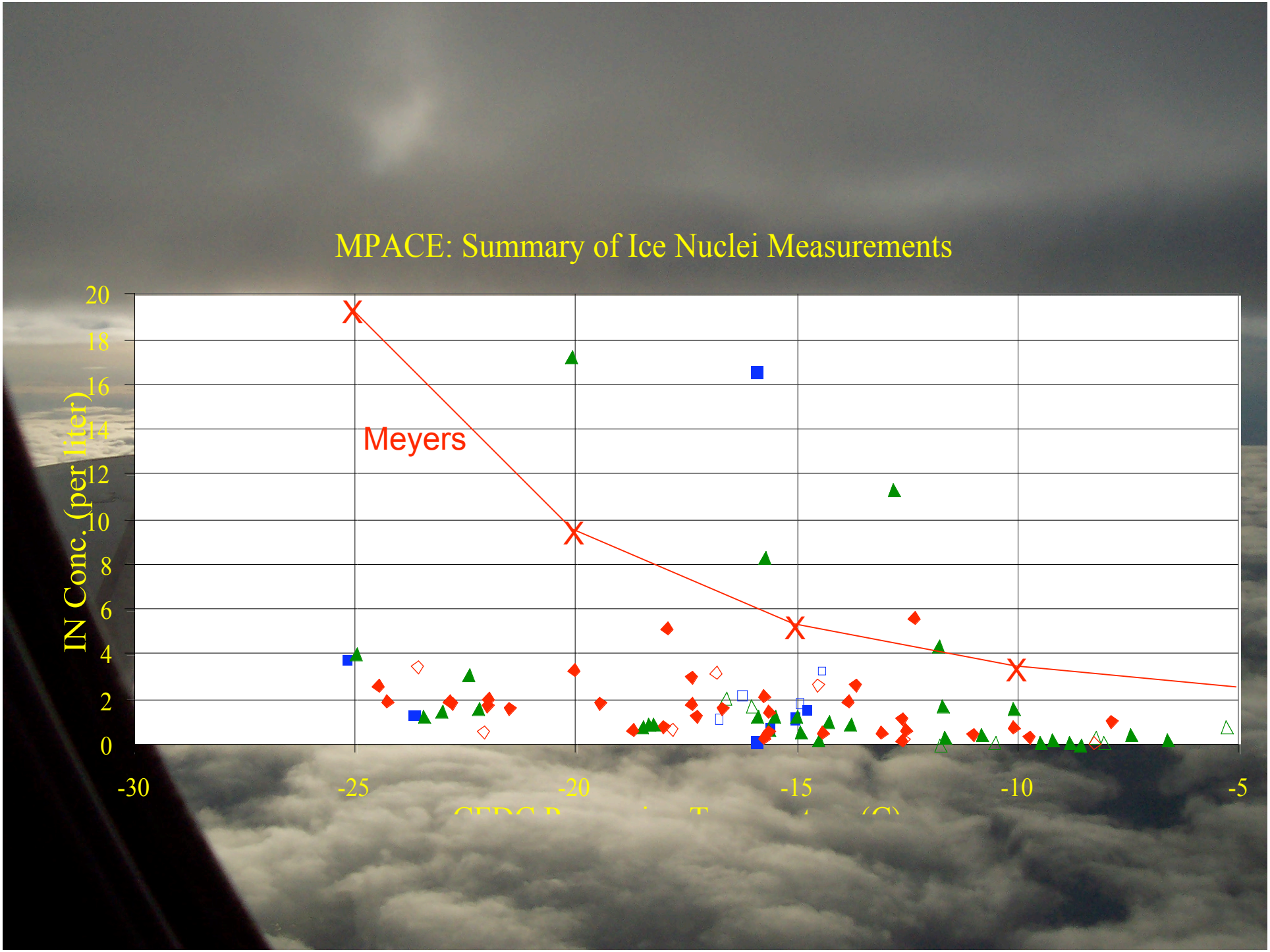
CPI



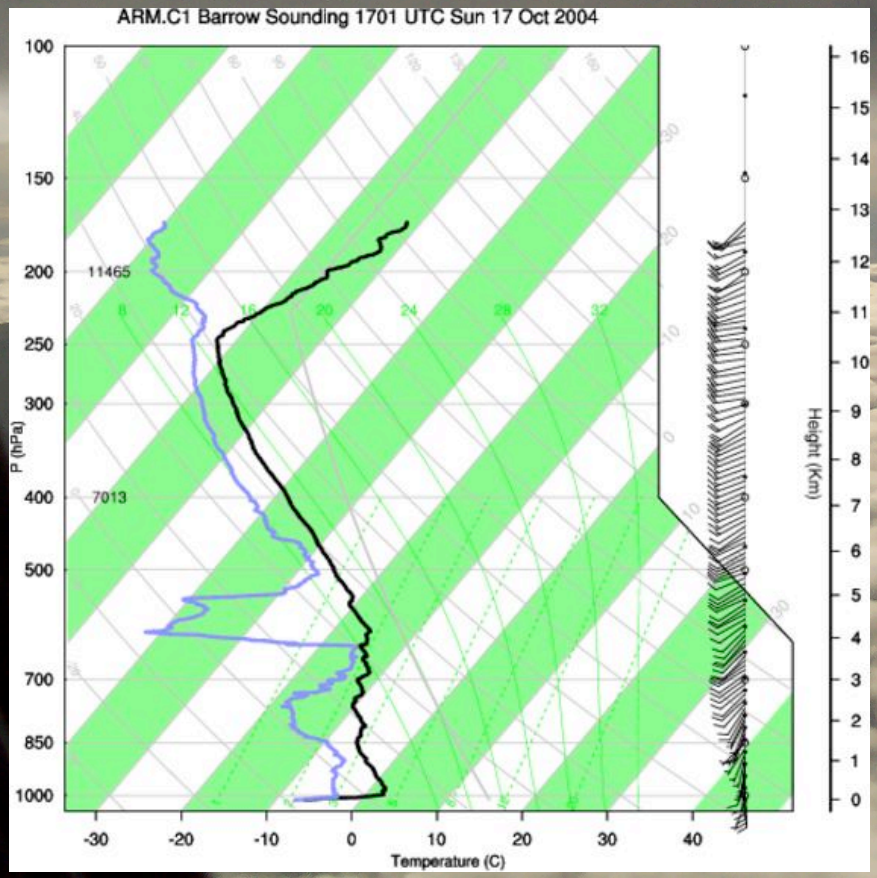
HVPS

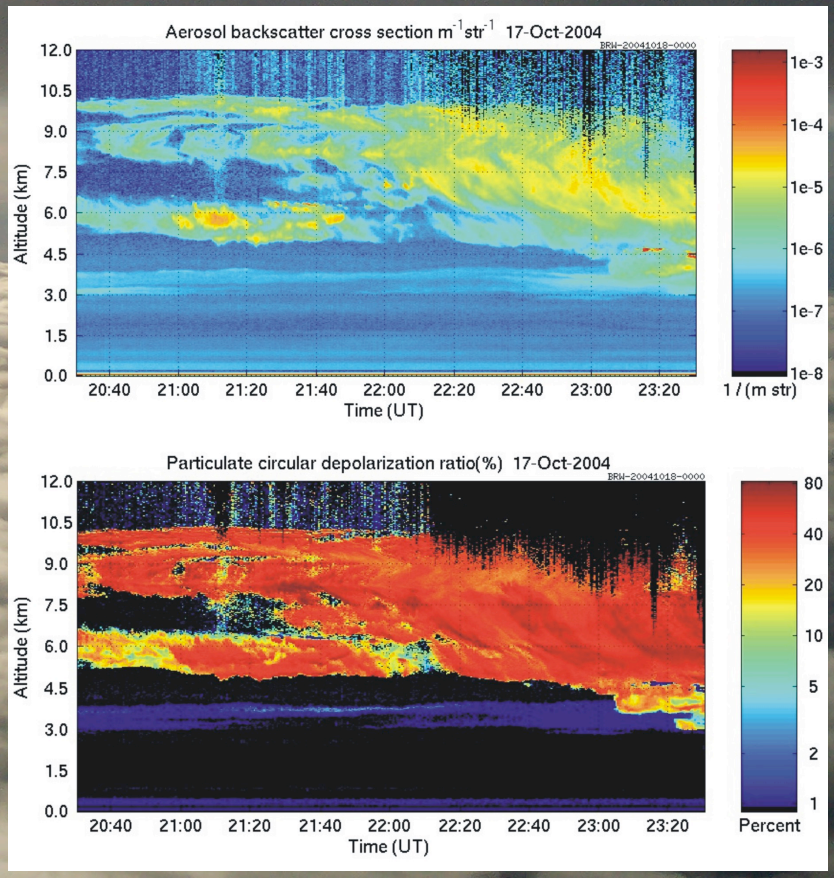
In Situ Measurements: Oct 10th TERRA Under Pass




MPACE: Summary of Ice Nuclei Measurements
IN Conc. (per liter)
20
18
16
14
12
10
8
6
4
2
0
Meyers
-30
-25
-20
-15
-10
-5

In Situ Measurements: Oct 17th TERRA Under Pass





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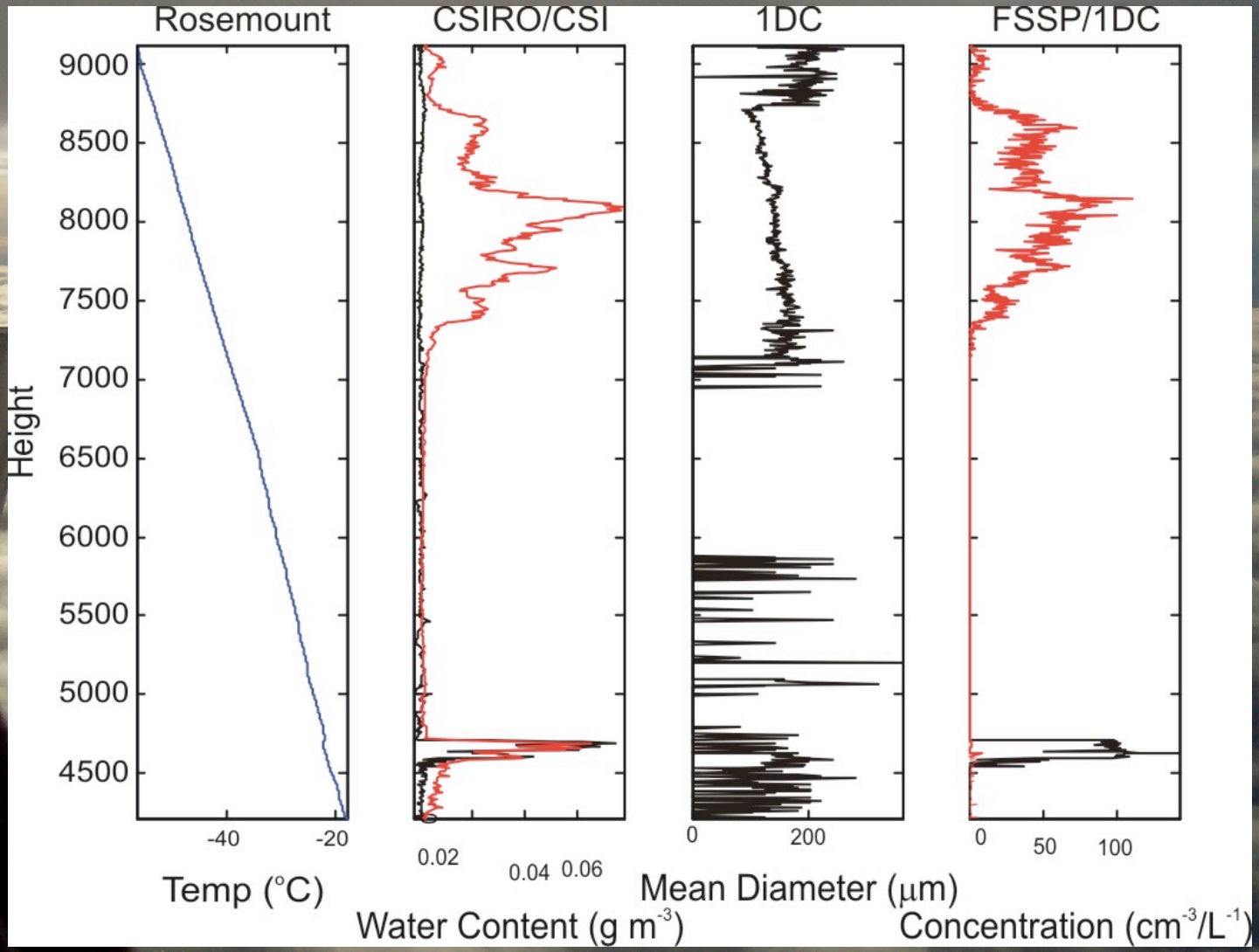

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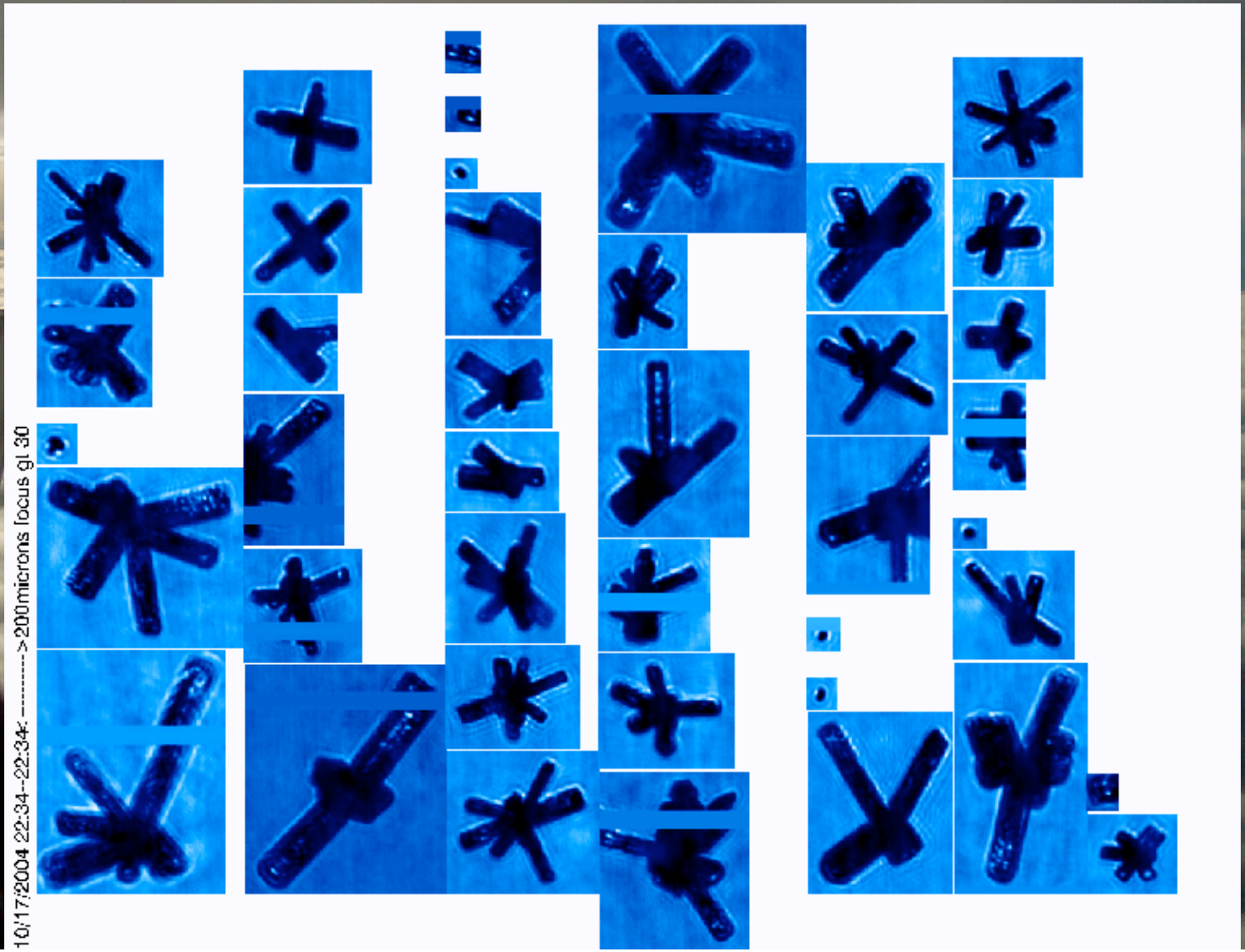
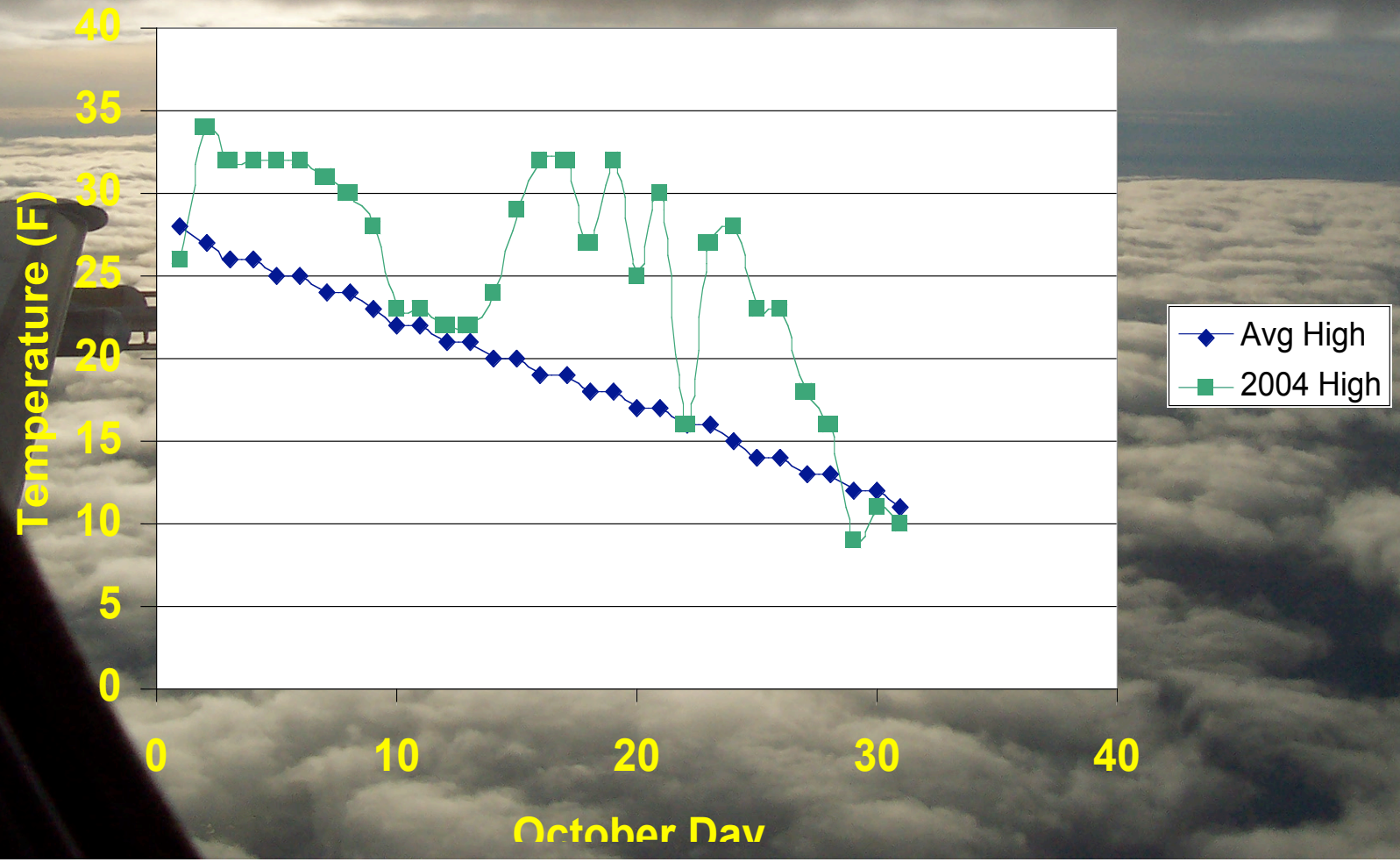


M-PACE – Compared to Climatology



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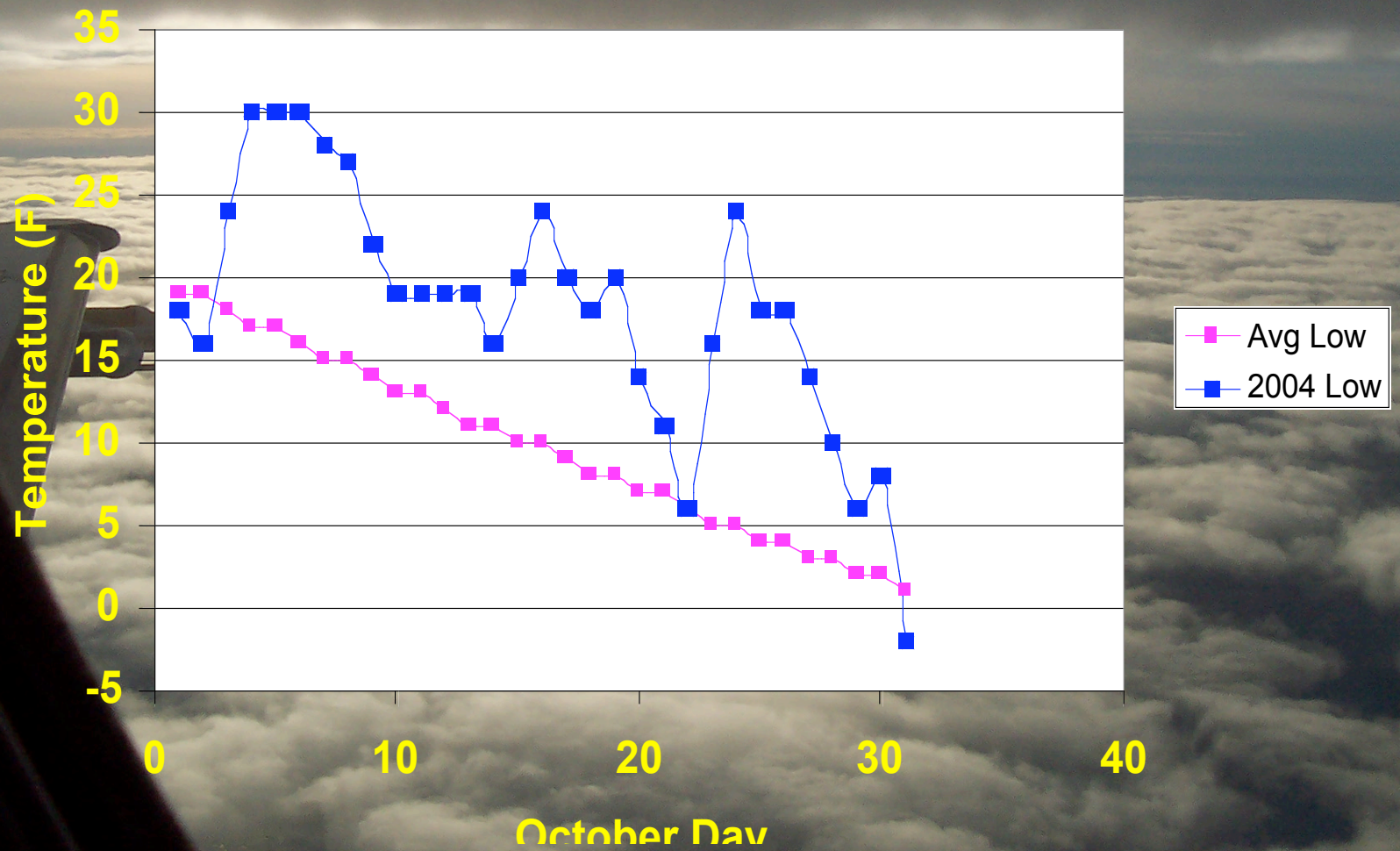

M-PACE Web Sites

- http://nsa.met.psu.edu
  - Quick looks of meteorology (maps, sondes), aircraft measurements, radar, lidar, satellite
  - Links to all other M-PACE related pages
- http://www-angler.larc.nasa.gov/mpace/imagery.html
  - Satellite archive, including satellite retrievals
- http://lidar.ssec.wisc.edu/
  - HRSL data (click Arctic HRSL data)
- http://science.arm.gov/~mather/mpace/
  - PARSL images