Summary of PLOWS operations and data

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# MAX and MIPS data availability

<table>
<thead>
<tr>
<th>Instrument</th>
<th>MAX</th>
<th>MIPS</th>
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**Legend:**
- **Full data set**: Green
- **Partial - Min**: Yellow
- **No data**: Pink

**Deployment #**: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Summary

• MAX - missed two events (waveguide leak, other)
• MIPS
  – 915: degraded data during IOP 19 (amp problem)
  – XPR: started with IOP 13
  – Hotplate data quality was degraded at locations where turbulence was significant
  – All other instruments were primarily good.

Snowflake video imager data uncertain
Example: IOP 19

- The one occasion when the 915 was not healthy (anemic -- amplifier)
- Excellent XPR data
- Excellent MAX data
- The 2-D experiment
Cold frontal passage at the MAX site (10 m wind and T)

Sharp front; looks similar to a density current; shallow at ~1000 m

Time: 03 - 07 UTC
MAX PPI (3.7 deg) at 0506 UTC

cold front

30 km
MAX PPI (3.7 deg) at 0542 UTC

cold front

RHI

30 km
MAX PPI (15 deg) at 0544 UTC

RHI

30 km
The XPR detects fine scale structures not seen in either MAX or 915 (if it had been healthy).

[TSC: 10 m/s x 3900 s = 39 km]
XPR velocity (W), 0600 - 0605 UTC

PRF = 1200 Hz, 250 pulses averaged, 0.208 s resolution
Here, a running average of 30 samples → 6.25 s resolution
Example XPR measurements illustrate the high resolution

- 18 min time series of mammatus formations from an anvil in northern AL
- **Wave motions** prevailed over the upper anvil region
- **Turbulent motions** were associated with the mammatus over the lower anvil
Comparison of backscatter

\[ \Delta t = 2 \text{ s (avg)} \]

18 min time series

\[ \Delta t = 40 \text{ s (20 s dwell)} \]

Bragg scatter (not detected by XPR)

915 SNR
Comparison of W XPR W waves

Smaller turbulent eddies (W within mammatus elements)
Questions?