

Standard Instrumentation

- True Wind: Rosemount 0858
- Static Pressure: Mensor CPT & Weston
- Temperature (heated): Rosemount 102
- Temperature (fast response, unheated): Reverse Flow PRT
- Humidity: EdgeTech 137 Vigilant
- Humidity: Buck Research 1011C
- Surface Temperature: Heitronics KT15.85
- Liquid Water (hot wire): DMT LWC-301
- Aircraft Position— L1/L2 GPS (opt ~30cm RT corrections)
- Aircraft Attitude – Applanix POS AV 410 v6 w/ IMU-64
- Aircraft state – ARINC 429 & 717 data buses
- Time – EndRun RTM3205 (<10 ns RMS to UTC(USNO))
- Video and Still Imagery: forward & nadir (20FPS)

Data and Display Capabilities

- Standard 25Hz and 1Hz data products
- NetCDF file support
- 1000Hz Analog (+/- 10VDC) sampling
- Serial and Network sampling
- NTP/IRIG-B/PPS Timing
- IWG1 data broadcast and reception
- Remote connections (VNC, RDP)
- Windows environment for user instrument apps
- PI and Operator displays stations
- Realtime data telemetry (200k, 700k, 5G)
- Cockpit/crew intercom with voice ground link and IRC
- Satcom and realtime position tracking
- Traceable calibration and test equipment

Requestable Instrumentation

- **Remote Sensors, all fixed antenna, looking up and down**
 - Wyoming Cloud Radar, fixed antennas, nadir & zenith (see separate poster)
 - Wyoming Cloud Lidars, fixed view, nadir & zenith (see separate poster)
 - Ka-band Profiling Radar *
- **Air Chemistry / Trace Gas**
 - CO₂/H₂O (closed Path): LI-COR LI-7000 (20Hz, suitable for fluxes)
 - CO₂/H₂O (open path): LI-COR LI-7500 (20Hz, suitable for fluxes)
 - CO/CO₂/CH₄/H₂O: Picarro 2401-M (20Hz)
 - CO/N₂O: Aeris Ultra*
 - CH₄/C₂H₆: Aeris Ultra*
 - H₂O/NH₃/NO/NO₂/O₃/CO₂/CO/CH₄/H₂O/SO₂: MIRO Analytical MGA10-GP*
- **Aerosol Size Spectra / Composition**
 - 0.004 - 3µm: TSI 3775 Ultrafine CPC (1Hz)
 - 0.06 - 1µm: DMT UHSAS (20Hz)
 - 0.13 - 3 µm: Handix POPS (1Hz)
 - 0.1 - 3+ µm: TSI 3010 CPC (1Hz)
 - 0.1 - 3µm (ambient/in-situ: DMT PCASP-100X (25Hz)
 - Inlet (Isokinetic): Brechtel IsoKinetic 0.005-10um, 300LPM @ 100m/s
 - Black Carbon: DMT SP2-XR (100-500 nm Scattering, 50-800 nm Incandescent, mass)
- **Solar Radiation / Albedo**
 - 295 to 385 nm: Eppley UV
 - 285 to 2800nm: Eppley PSP (Nadir and Zenith)
 - 4000-50000 nm: Eppley PIR (Nadir and Zenith)
 - Radiometric IR 7500 - 13500 nm (Nadir): FLIR Vue Pro-R*
- **LW / Droplet Spectra / Cloud Physics**
 - 2-50 µm DMT CDP
 - 25-1550 µm DMT CIP
 - 0.01-1.28mm SPEC 2DS
 - 0.3-19.2mm SPEC HVPS
 - LWC/TWC: Sky PhysTech Nevzorov Hot Wire
 - 3-50 µm LWC, PSA, Re: Gerber PVM-100A
 - SPEC 3V-CPI*

* In Development

PI Mission-Specific Instrumentation

- **Facility support for:**
 - **Modifications to user-supplied instruments to make them aircraft ready**
 - **Aircraft certification of instruments (Mechanical and Electrical DERs)**
 - **CNC Machining and electrical fabrication**
 - **Racking**
 - **Inlet and sample system development**
 - **Environmental testing**
 - **Project specific data products**
 - **STC enabling lidar installations**
- **User-Supplied Instrument Collaborations**
 - MARLi & CRL (Raman lidar T, q profiles) -- Zhieng Wang, Stonybrook
 - PTR-TOF-MS -- Hu, UMt
 - CIMS (Br₂, Cl₂, BrO) – Pratt UMich
 - PILS / Impactor – UMich, CSU
 - Flask Sampling – UW
 - CVI – Lance, SUNY
 - Ammonia – Fisher, CSU
 - Ozone – Rheem, Pitt
 - SOF – Volkamer, CU
 - Holodoc – UMich
 - MTHP – Lim, JPL
 - Multispectral Imaging – UW

NCAR EOL Partnerships

- **AVAPS Dropsondes -- Hock**
- **Field Catalog**
- HARP -- Hall
- CO – Campos
- HIMIL Inlet – RAF
- “Chat”

EOL instruments and services require a separate PI request

Science Mission Capabilities

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|---|-------------------------------------|----------------------------|-------------------------|
| • O&G / CAFO Emissions | • Eddy Covariance | • Atmospheric dynamics | • Boundary layer |
| • Air mass composition and characterization | • Wildfire / smoke | • Air chemistry & Aerosols | • Air-sea interactions |
| • Fluxes | • Land Use / Agriculture | • Severe Weather | • Atmospheric Radiation |
| • Particulates / Black Carbon | • Cloud physics, cloud microphysics | • Tropospheric profiling | • Water Resources |

