School of Earth and Environment
INSTITUTE FOR ATMOSPHERIC SCIENCE

UNIVERSITY OF LEEDS

University of Leeds Surface Instrumentation

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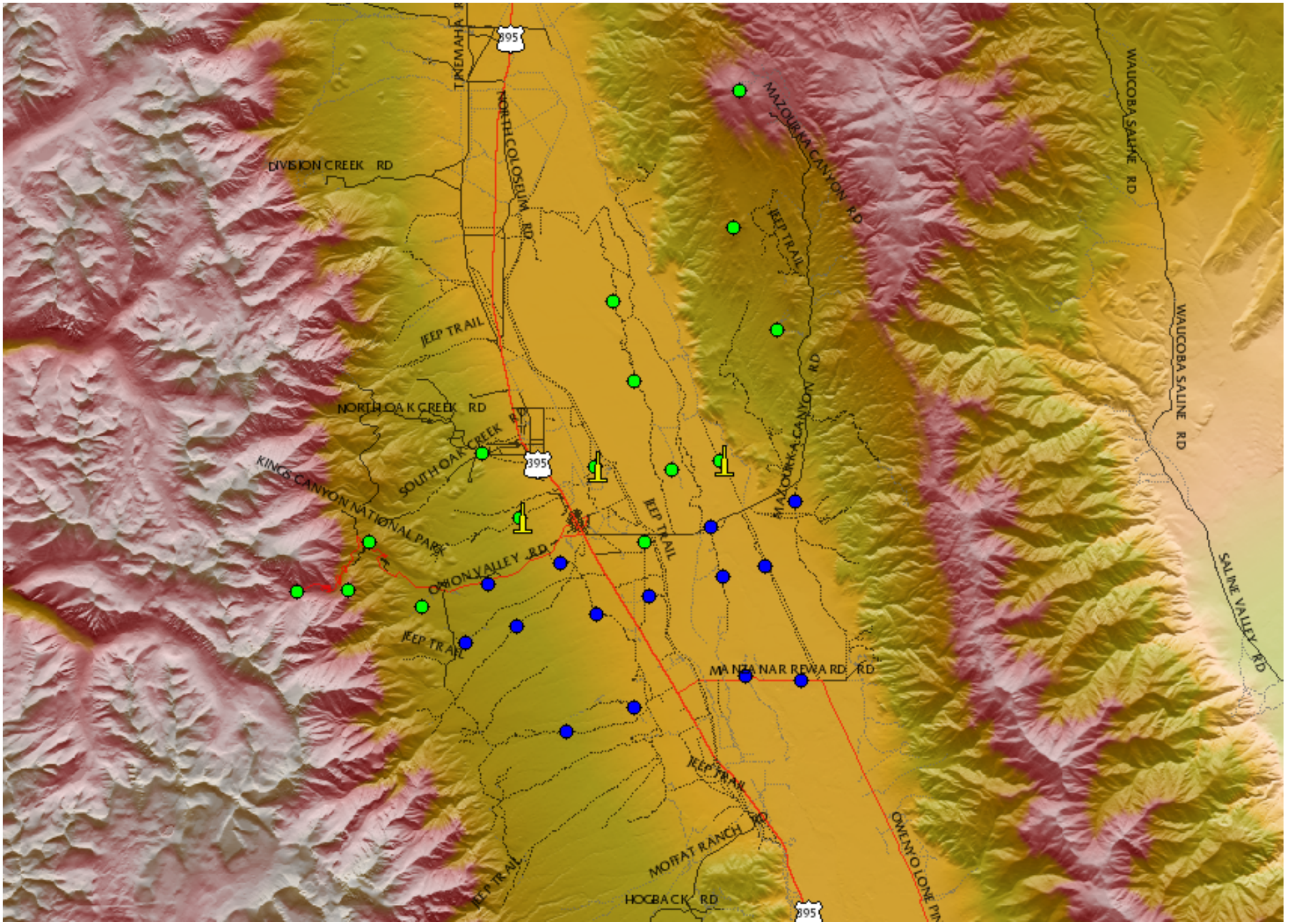
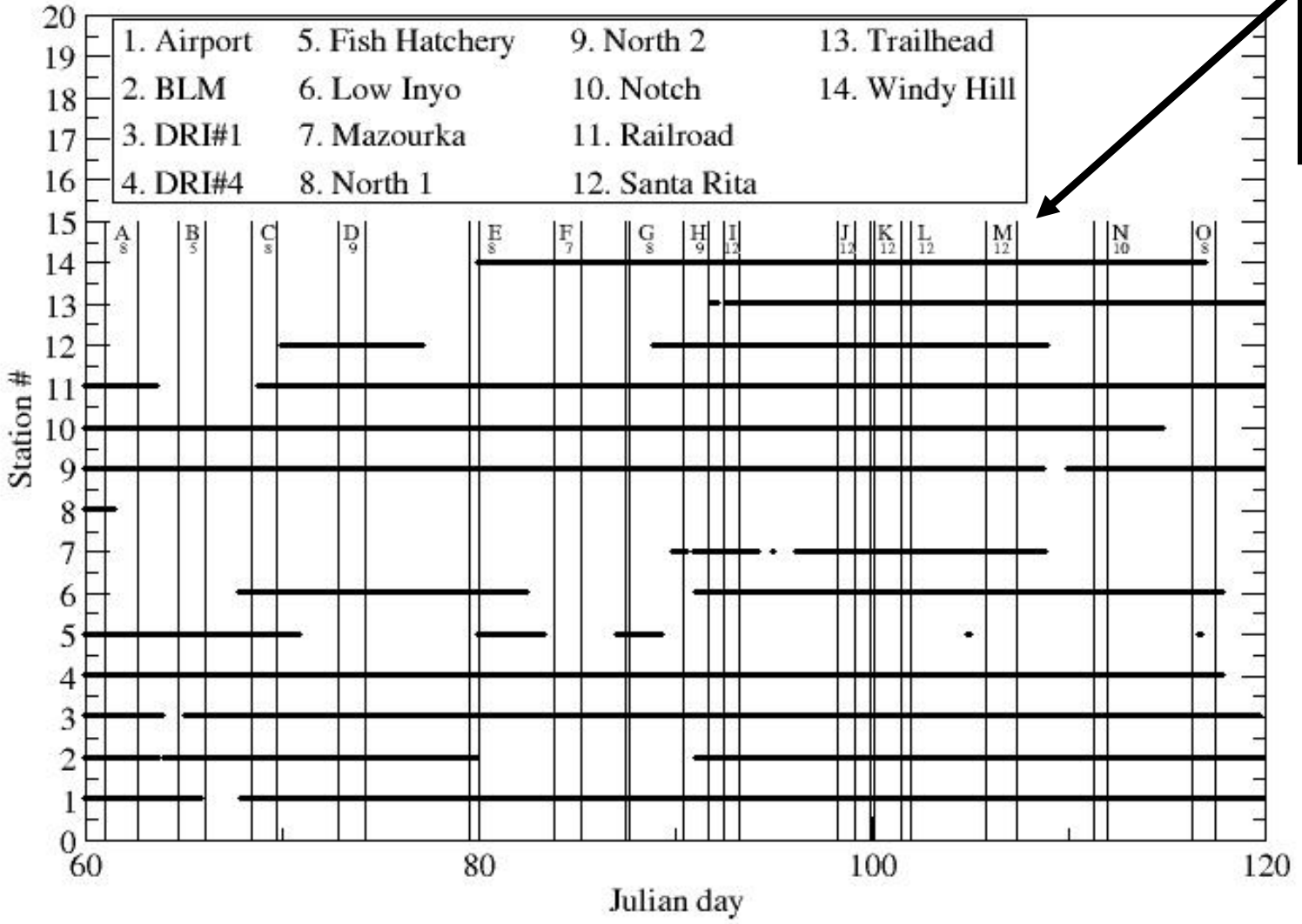
Data Status

- All AWS data calibrated, error checked and on the catalogue (with the exception of “Middle” site). 3-second data.
- All flux data on the catalogue. 15 minute averages; apply for high-resolution data to Ian Brooks.
- All sonde data on the catalogue. Sonde serial numbers also on the catalogue.
- Positions of all sites determined via DGPS and on the catalogue.


TINEMAHA RD
395
NORTH COLOSEUM RD
DIVISION CREEK RD
MAZOURKA CANYON RD
JEEP TRAIL
WAUCOBA SALINE RD
JEEP TRAIL
NORTH OAK CREEK RD
SOUTH OAK CREEK RD
395
KINGS CANYON NATIONAL PARK
JEEP TRAIL
OWENS VALLEY RD
JEEP TRAIL
MANZANAR REWARD RD
SALINE VALLEY RD
JEEP TRAIL
MOFFAT RANCH RD
OWENYO LONE PINE
JEEP TRAIL
HOGBACK RD
395

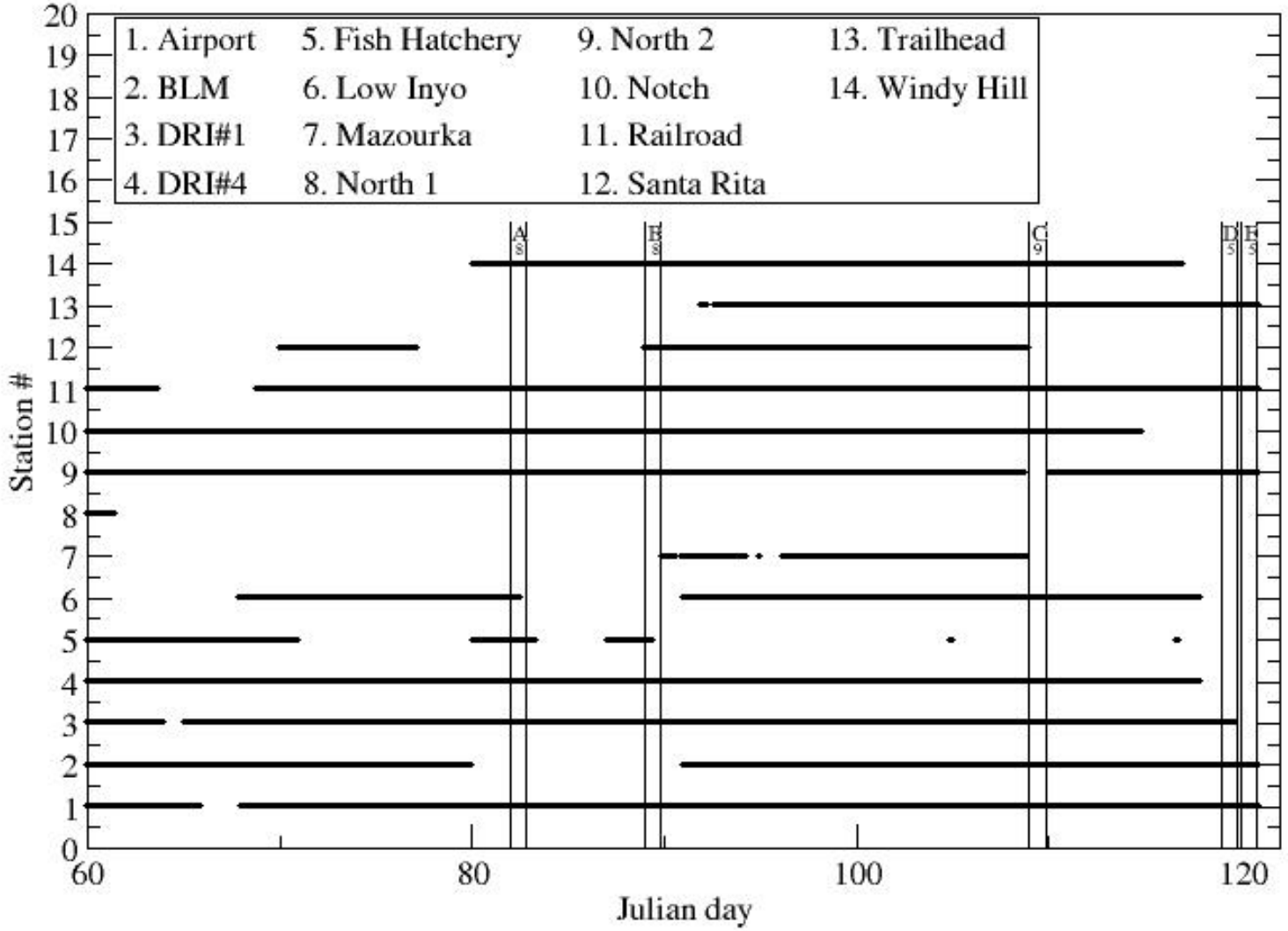
A-O: IOPs 1-15

e.g.
IOP13:
12 sites
functioning



Functioning sites for IOPs

A-E: EOPs 1-5



Functioning sites for EOPs

FAAM BAe-146 T-REX data

Phil Brown, Simon Vosper and Peter Sheridan

Met Office, UK

T-REX Workshop, Boulder, April 2007.

FAAM Core data files for the BAe146

- NetCDF format using similar conventions to NCAR/RAF. Datasets should be readable using standard packages such as NCPLOT (although some functions may not be usable)
- Filename is core_faam_yyyymmdd_rx_bnnn.nc
  where x is a dataset release number (currently 14), nnn is the FAAM flight number.
- Also file
  core_faam_yyyymmdd_rx_bnnn_descrip.txt
  contains an ascii description of all parameters and quality-control flagging procedures. Useful to help de-cipher the rather indigestible parameter names (eg. PARA0716 is the vertical wind component)
- Within each dataset, parameters are stored at the frequency at which their raw data is recorded and processed, eg: all wind data are 32Hz, Nevzorov LWC data are 8Hz, Johnson-Williams LWC data are 4Hz etc.

FAAM wind data

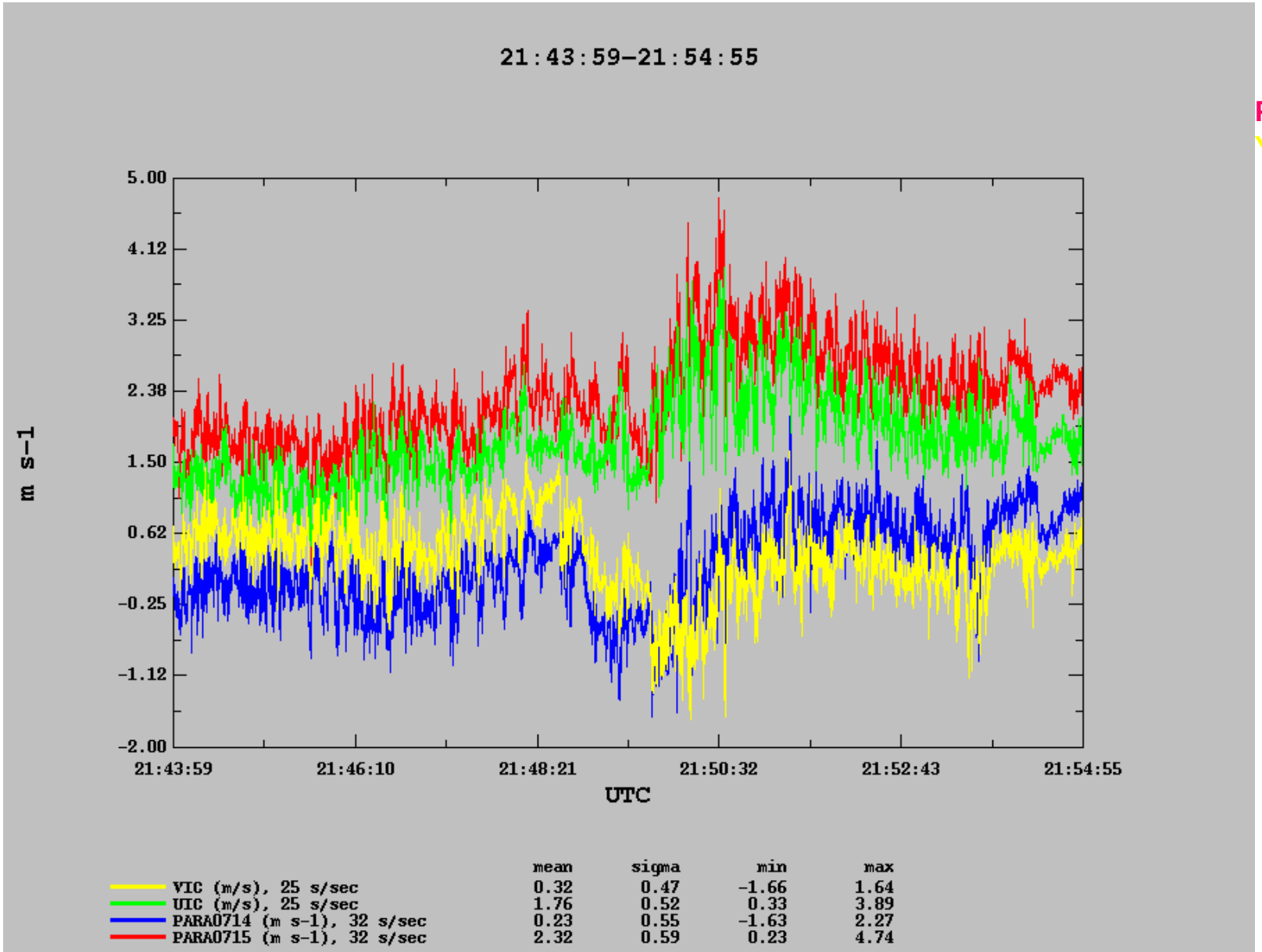
- Flow wrt aircraft is measured by a radome 5-hole system.
- Aircraft velocities and attitude angles in the earth frame are measured by INS (with Kalman filtering against GPS to remove Schuler oscillations and long-period drifts).
- Differential pressure measurements combine calibrations of the individual sensors with calibrations of the data recording system analogue-to-digital conversions
- Attack and sideslip angles derived from measured differential pressures using flight manouevres (“Radome calibrations”)
- Iterative procedure to derive TAS from radome centre port differential pressure using AoA and AoSS

FAAM wind data

- Further corrections to AoA, AoSS plus estimates of INU attitude offsets (roll & pitch) are also provided by in-flight manouevres – banked orbit turns with simultaneous yawing oscillations
- Correction factors estimated by a procedure that minimizes residual variations in vertical wind component that are correlated with the manouevres
- Many thanks to Al Rodi (Univ. of Wyoming) for his continuing help in processing these data

Comparison with HIAPER (6 Apr 2006)

Horizontal wind components

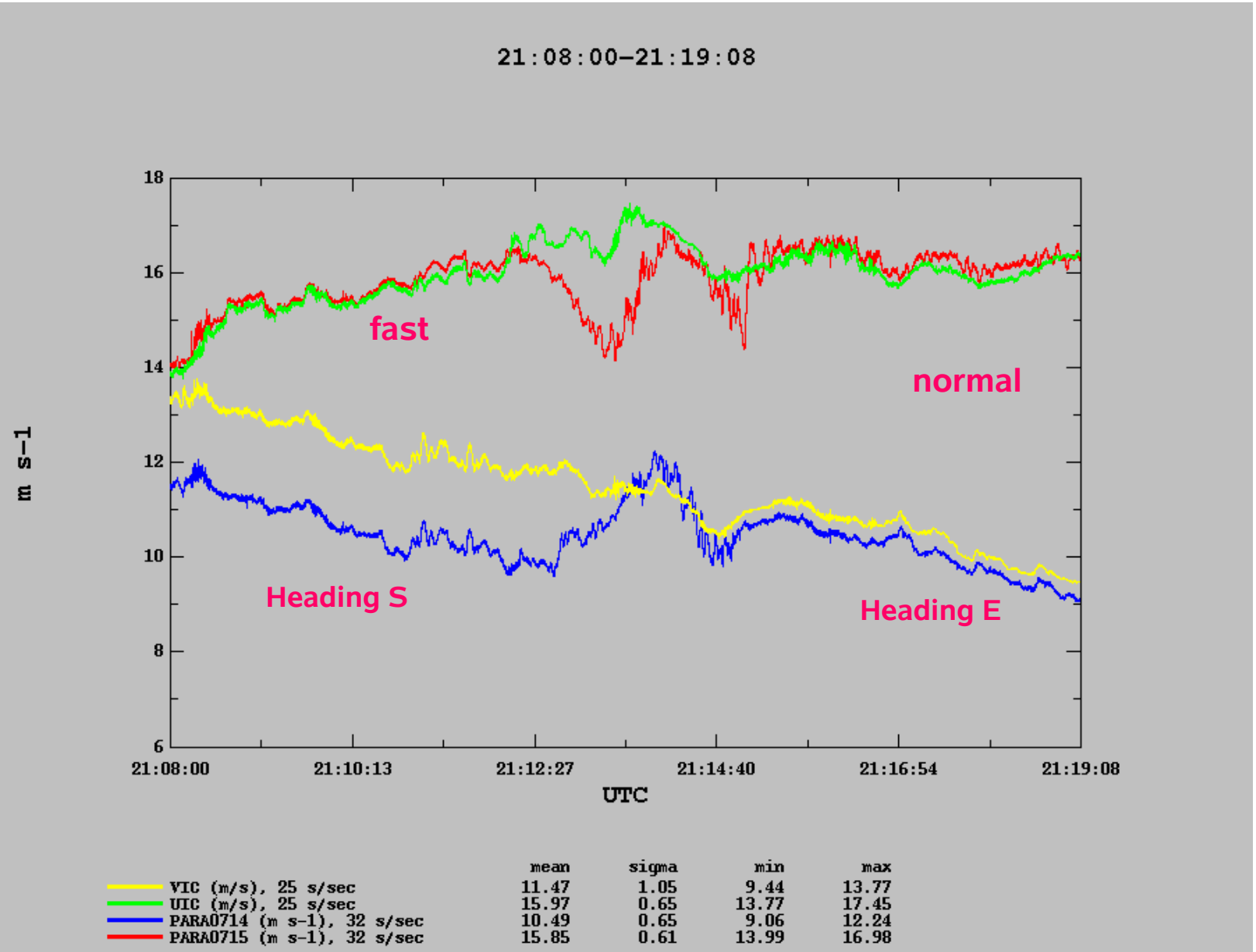


1000 ft asl

Red & blue: BAe-146
Yellow & green: Hiaper

Comparison with HIAPER (6 Apr 2006)

Horizontal wind components



19500 ft asl

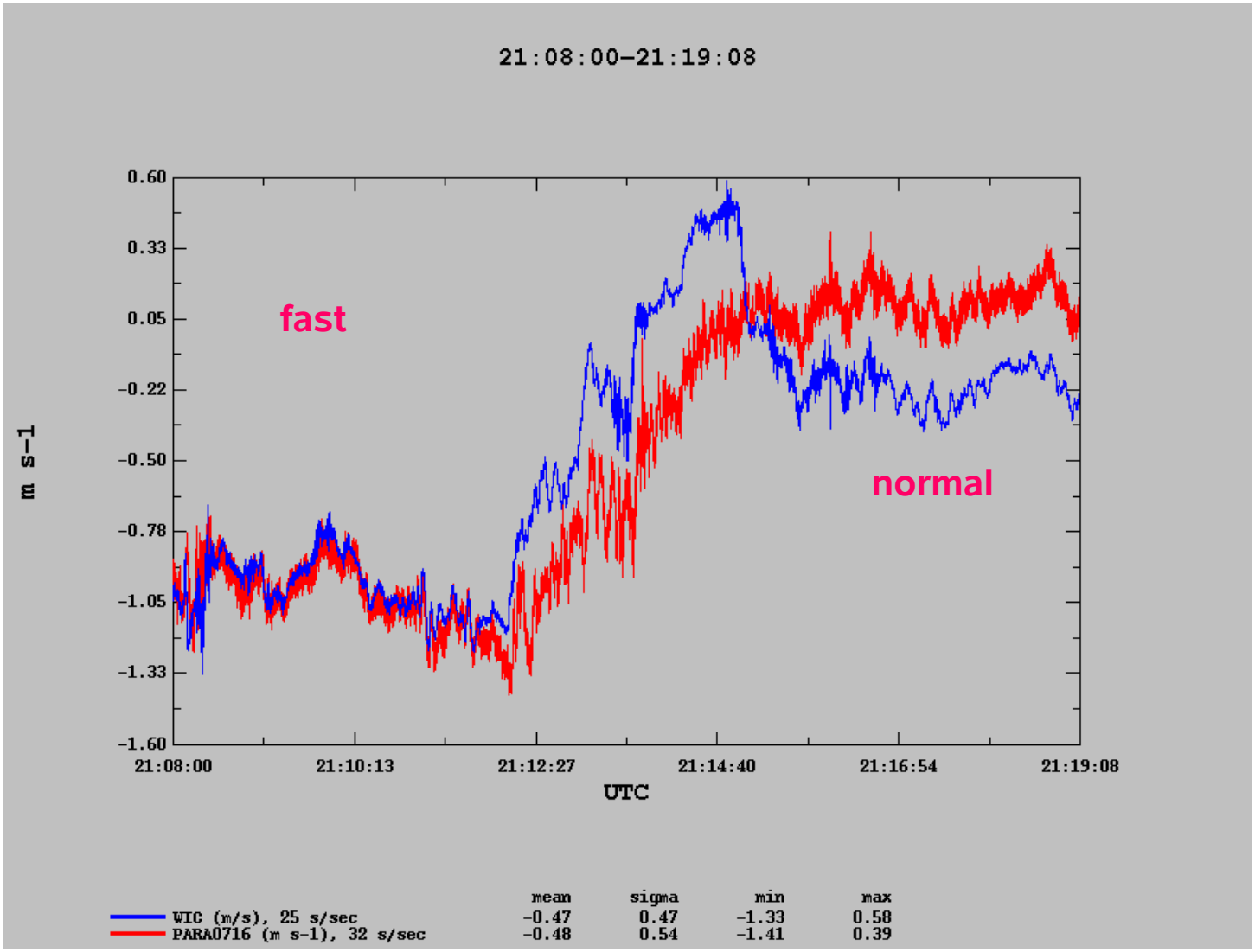
HIAPER data are the most recent high-rate product with corrected winds

Remaining differences in N wind components result from differences in TAS that occur at higher Mach number

Comparison with HIAPER (6 Apr 2006)

Vertical wind component

Red: Bae-146 Blue: Hiaper

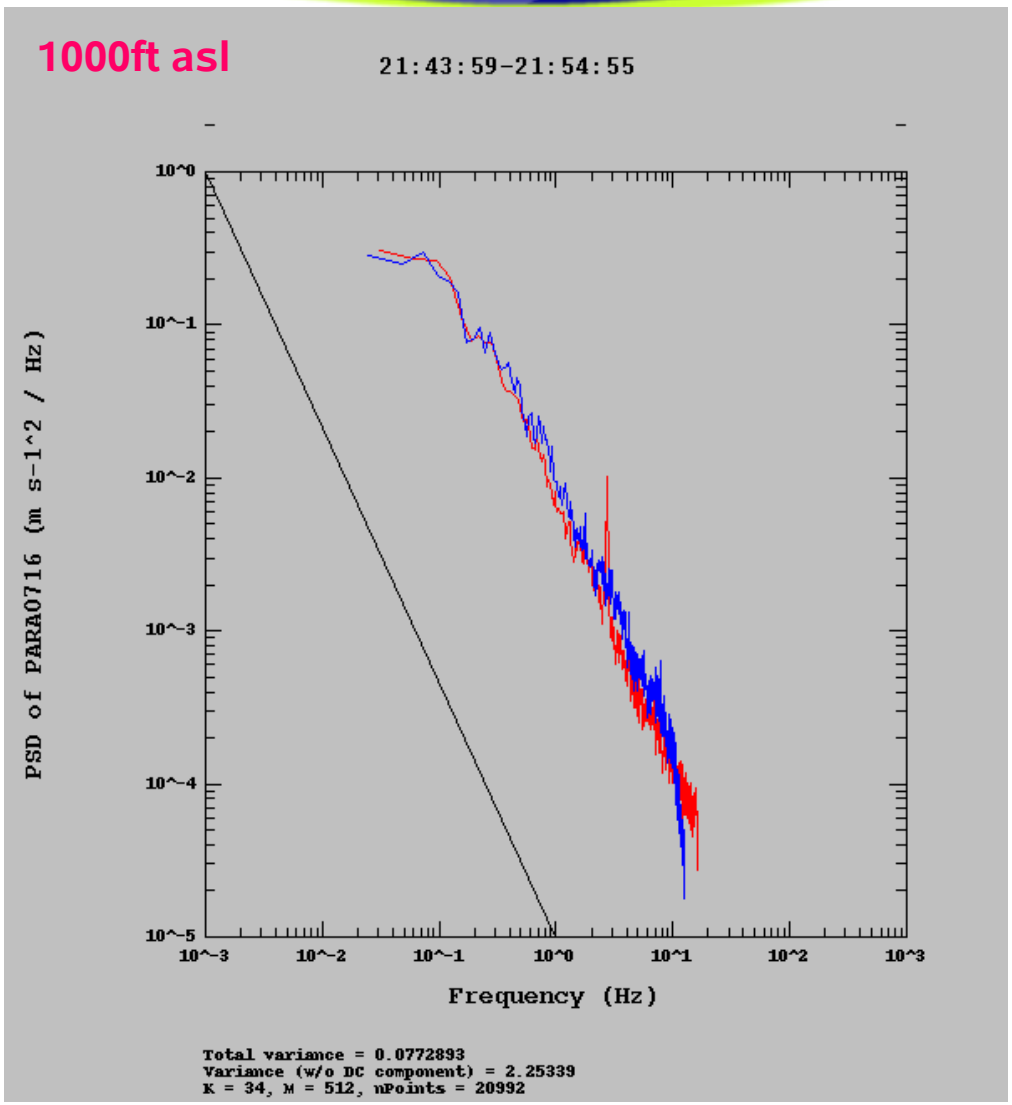


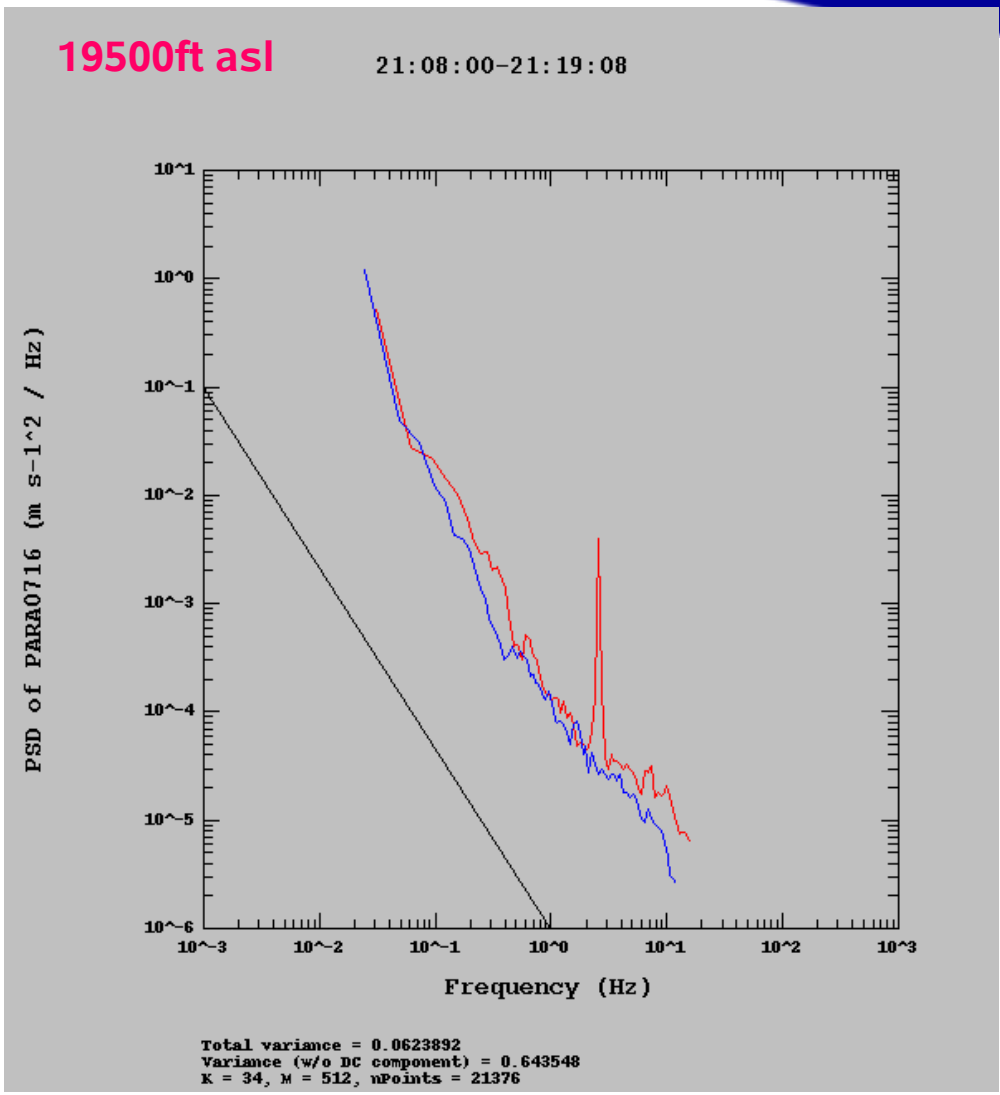
19500 ft asl

HIAPER data are the most recent high-rate product with corrected winds

Offsets in vertical wind are related to TAS errors and residual AoA calibration errors. Will not normally be significant where data for any flight leg are de-trended.

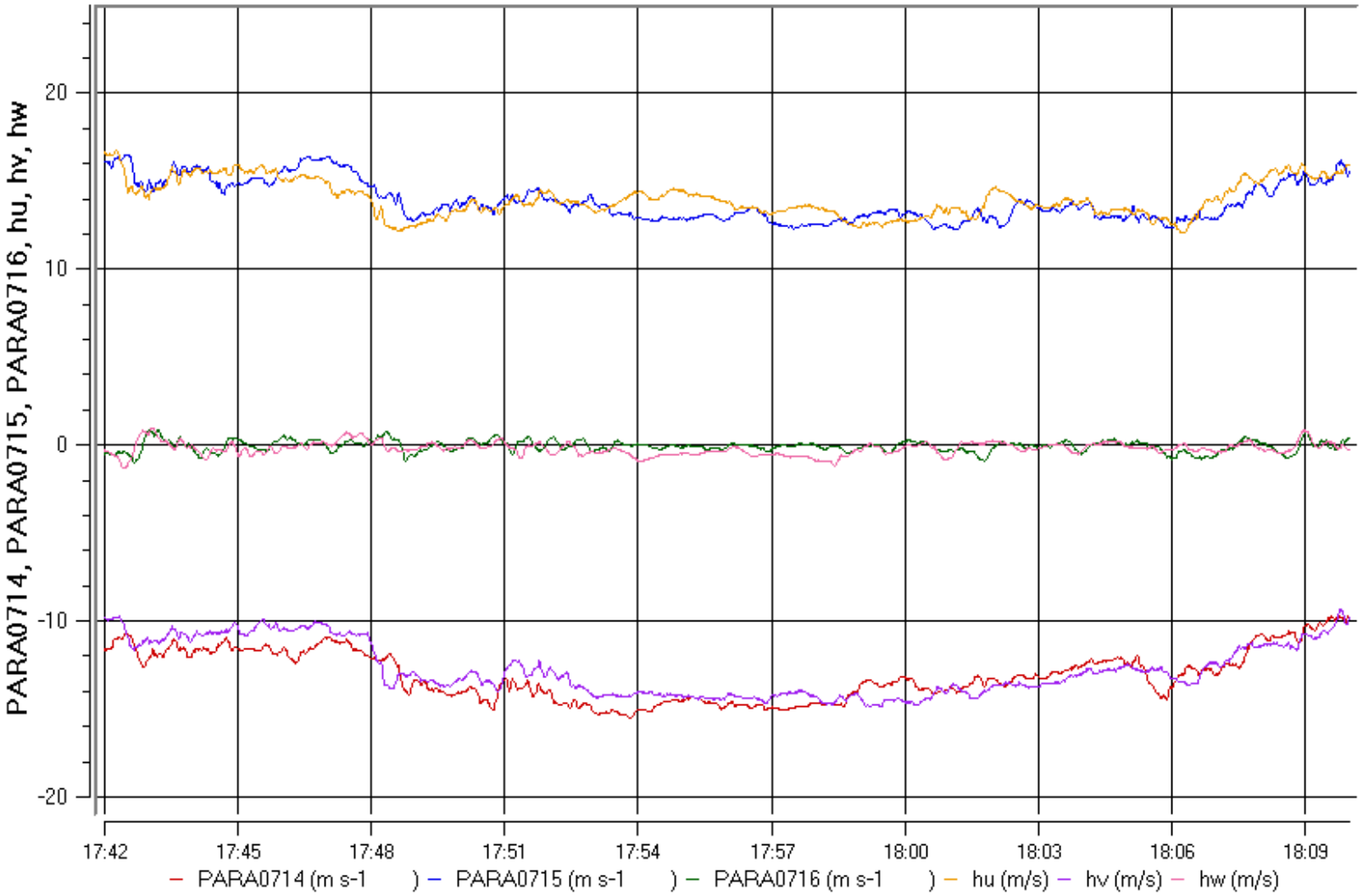
Comparison with HIAPER (6 Apr 2006)





BAe146 data contain a spike at around 3Hz which is derived from noise or aliassing in INU attitude-rate data

Comparison with King Air (6 Apr 2006)



These measurements were obtained on racetrack legs during which the 146 was overtaking the King Air