



RICO Doppler Lidar measurements

9 Jan - 25 Jan 2005

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NOAA / ETL, CIRES & Zeltec

Current status of lidar data:

Raw:

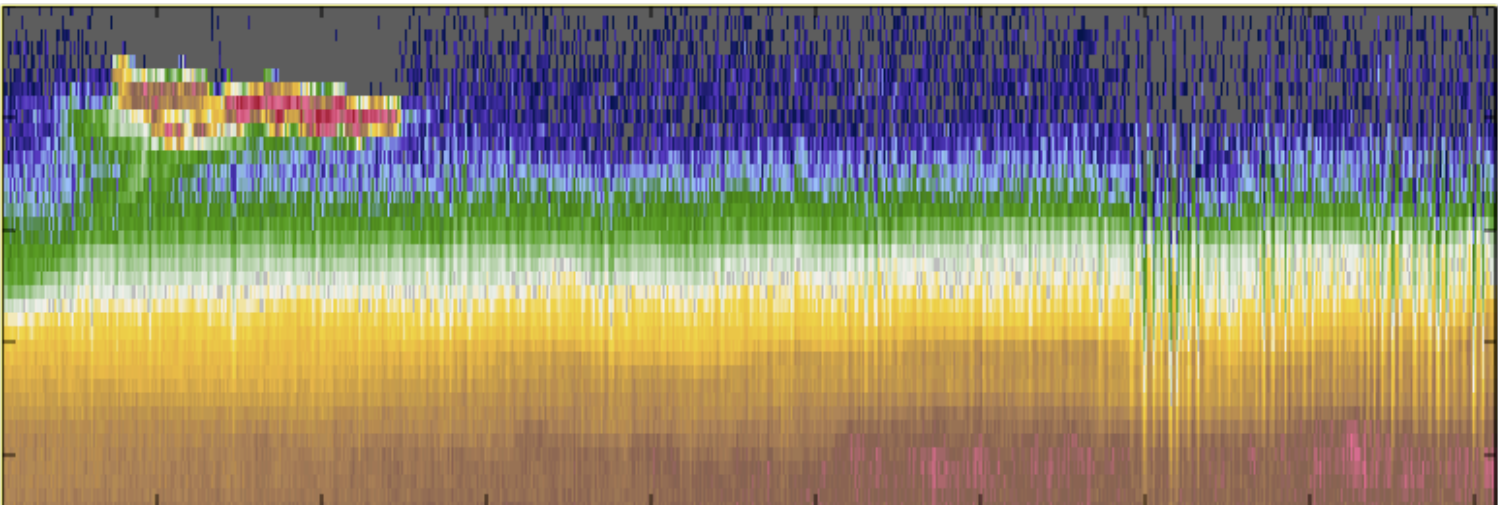
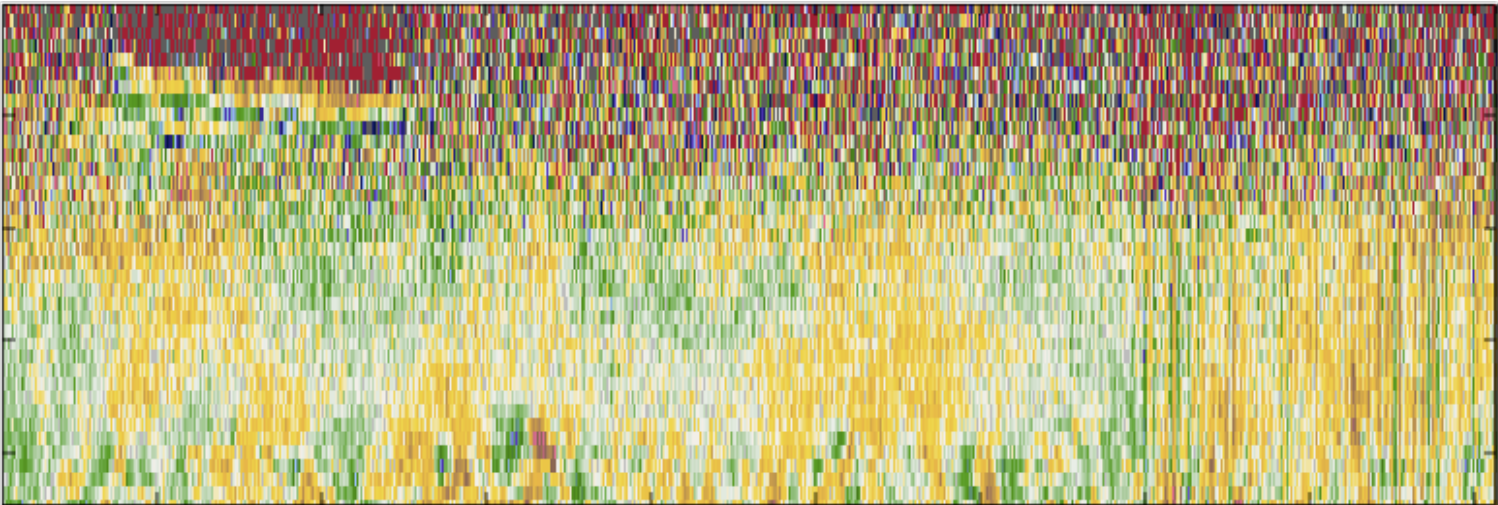
- ✓ Radial wind speed
- ✓ Motion compensated radial wind speed
- ✓ Wide band SNR
- ✓ Platform orientation / motion

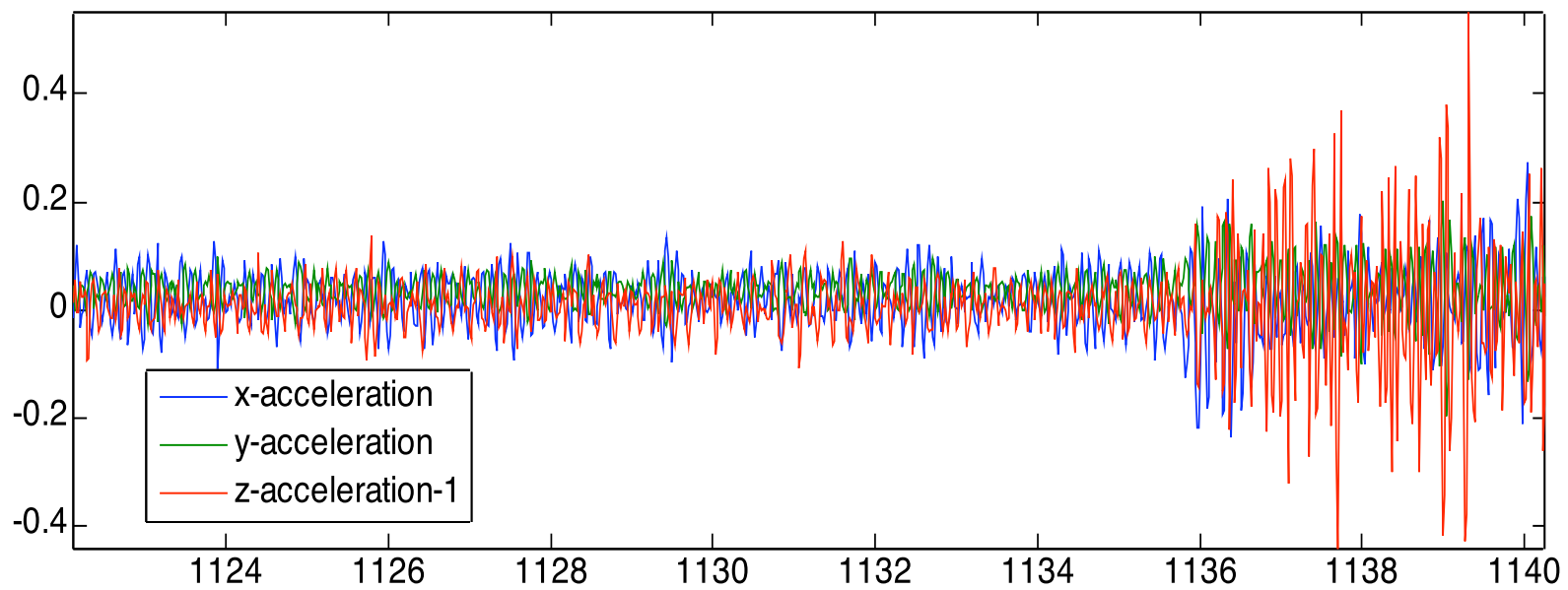
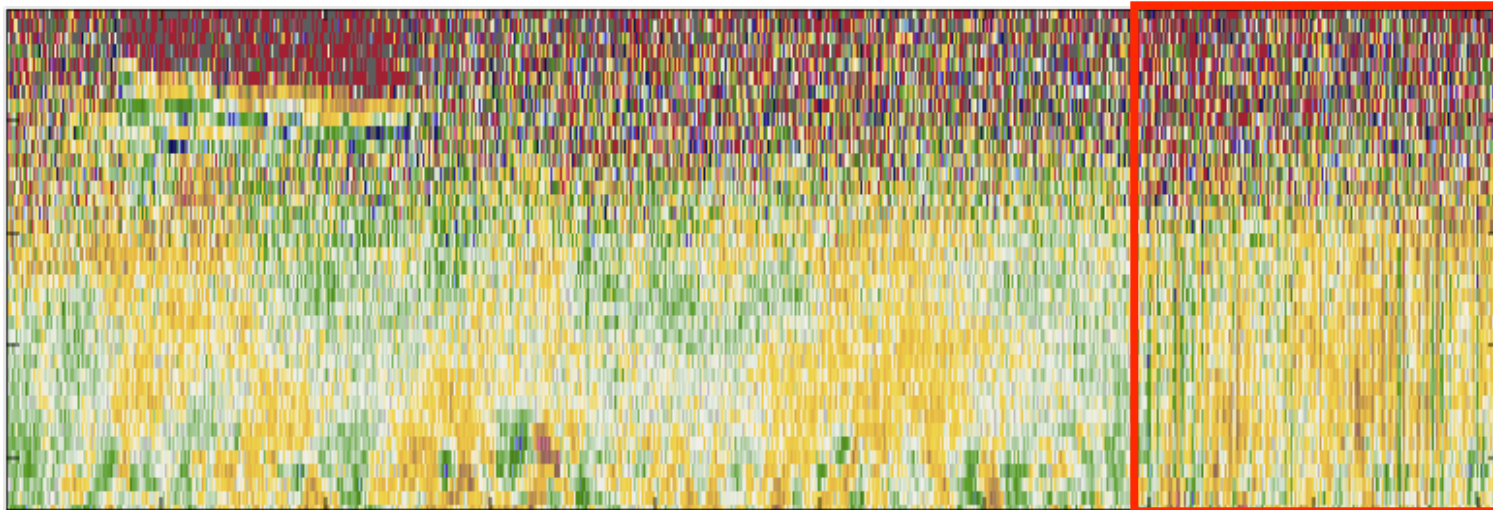
Post processed:

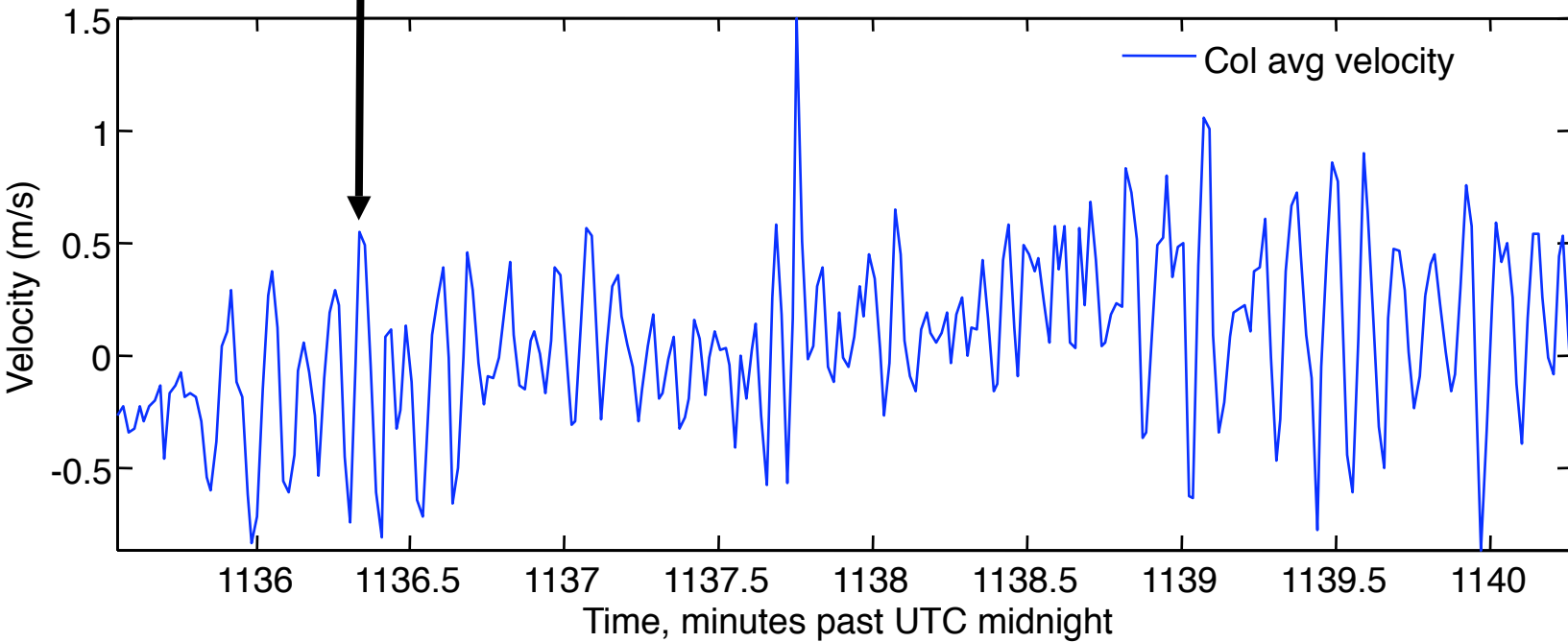
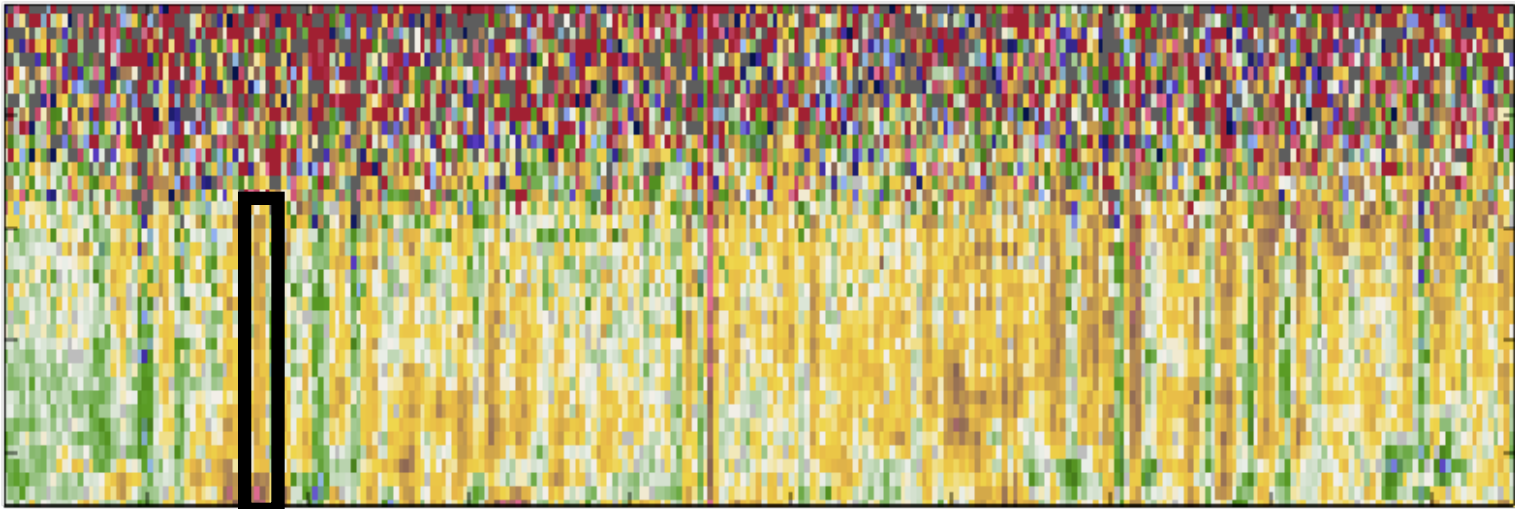
- ✓ Motion compensated radial wind speed (2nd cut)
- ✓ Residual wind speed
- ✓ Range corrected intensity

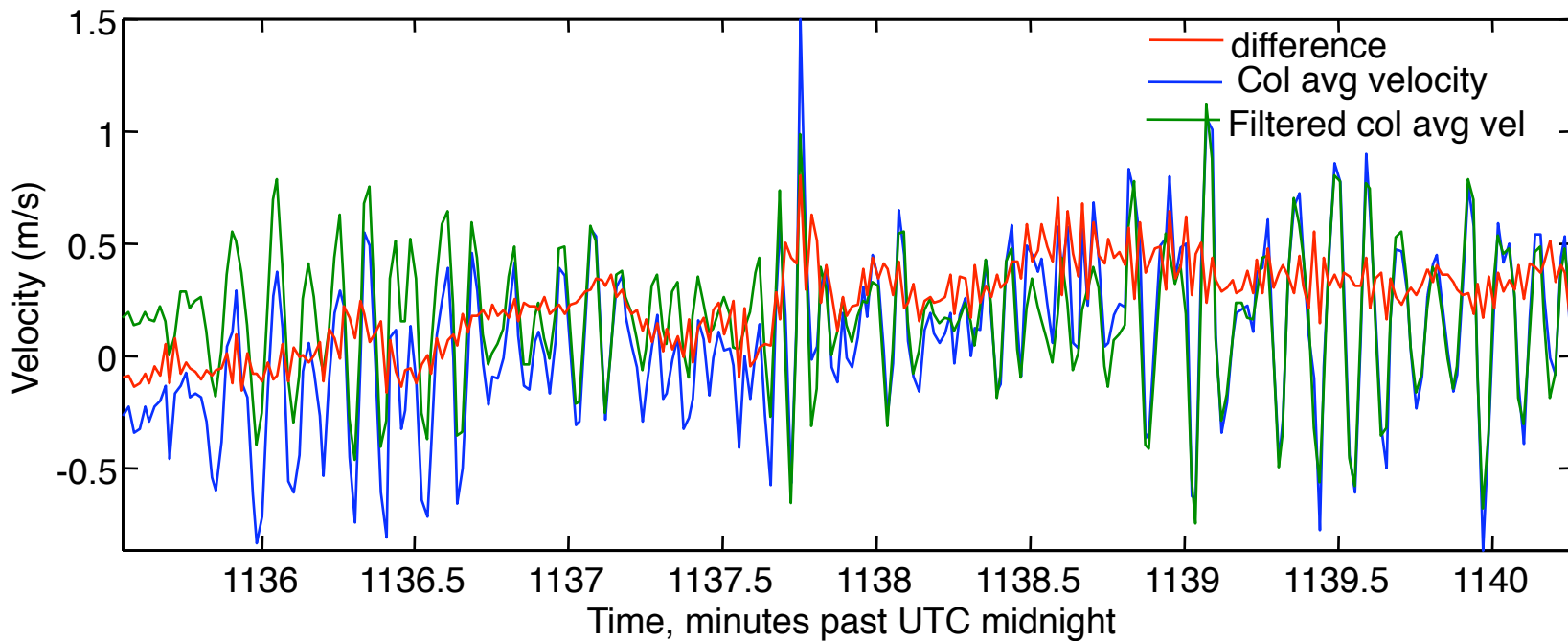
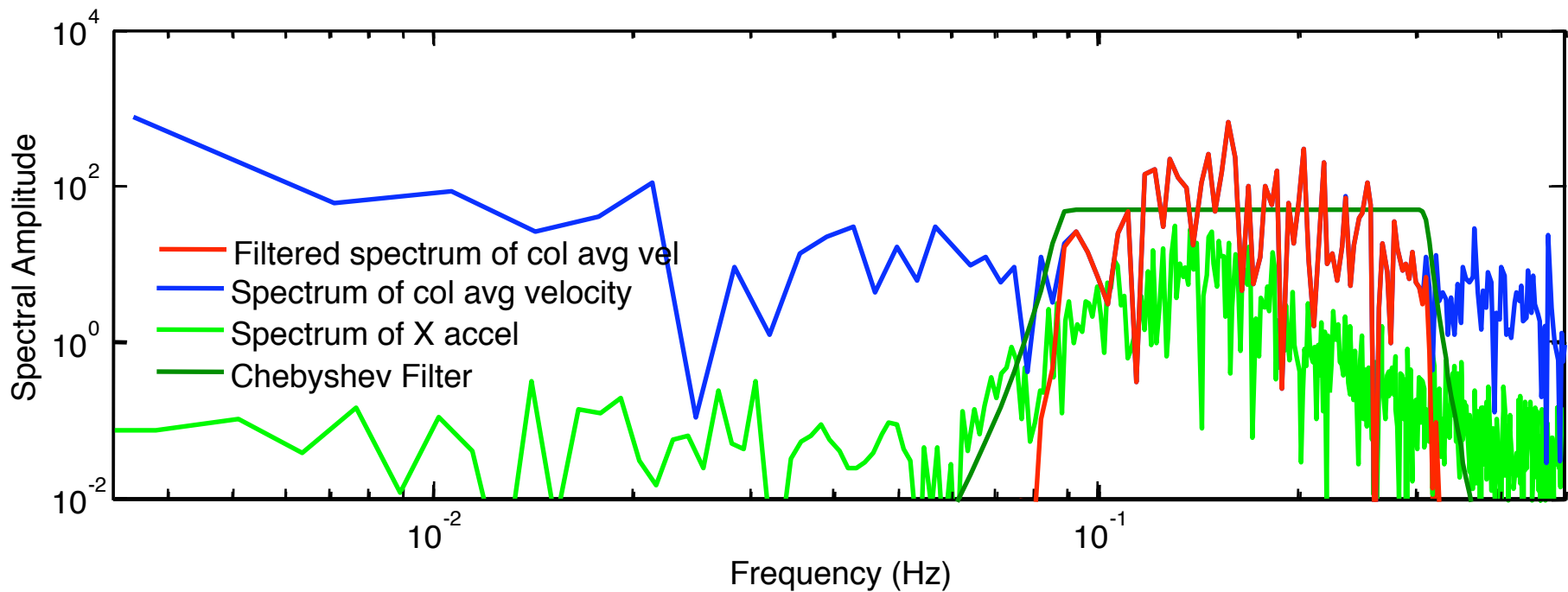
Products:

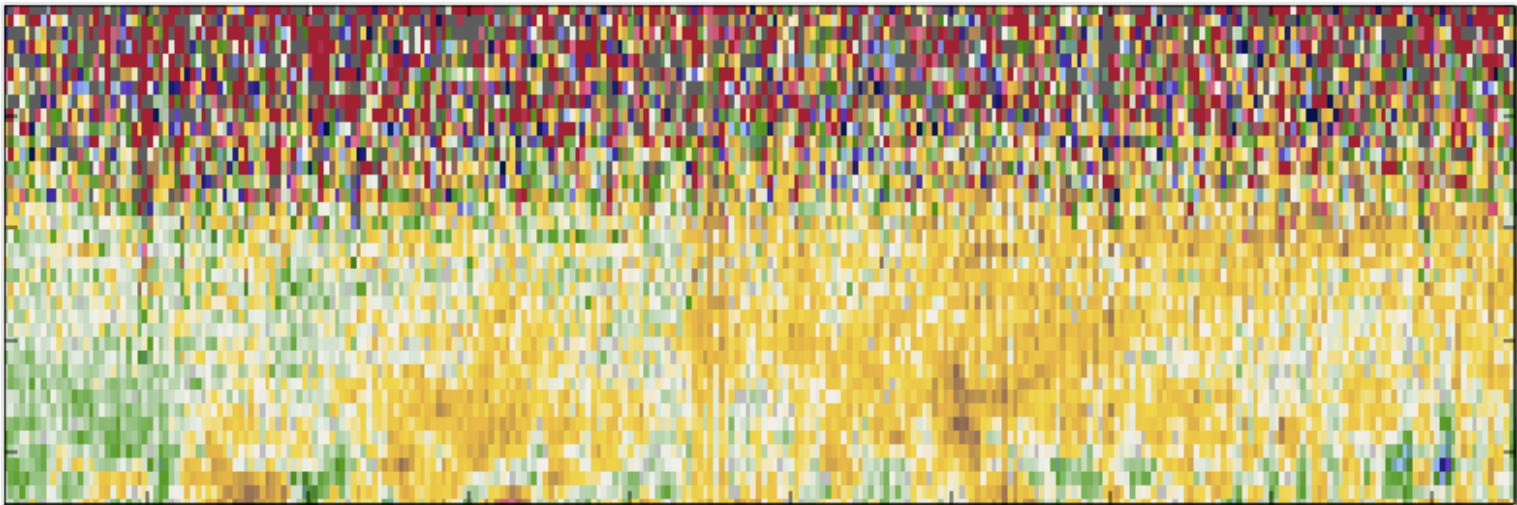
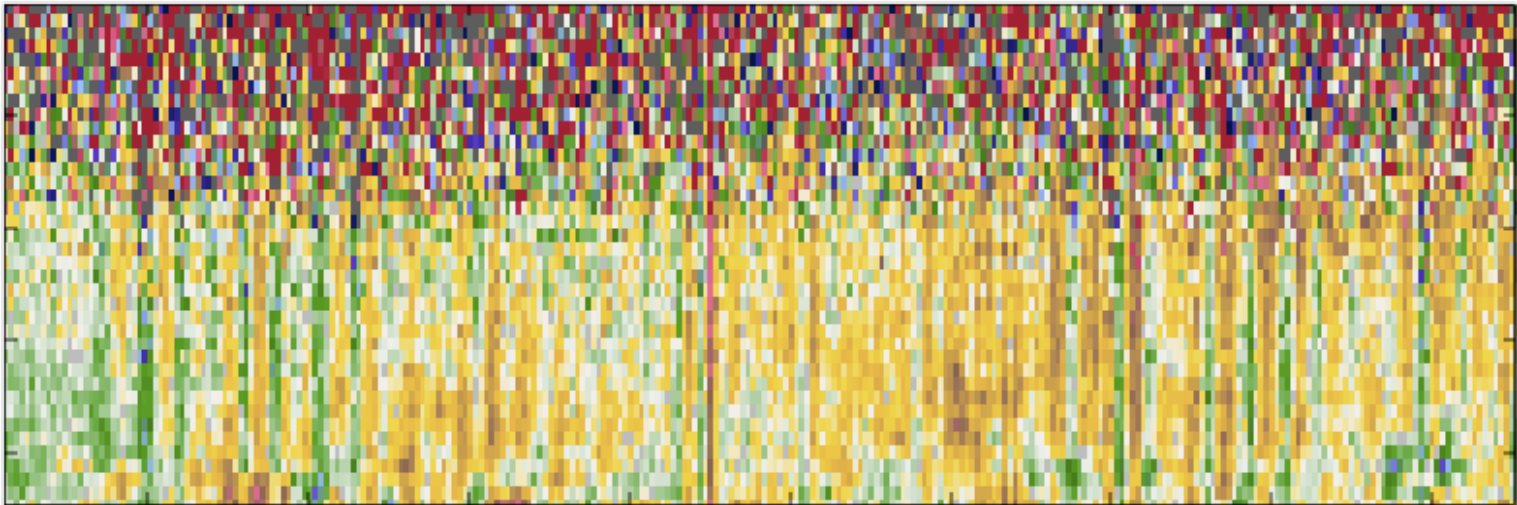
- ✓ Wind profiles
- ✓ Residual wind animations (vertical and horizontal scans)
 - o Vertical wind stares
 - ✓ Developed algorithm to remove residual velocity errors
 - o Still need to apply to data set
 - o Put animations and vertical stares on web page

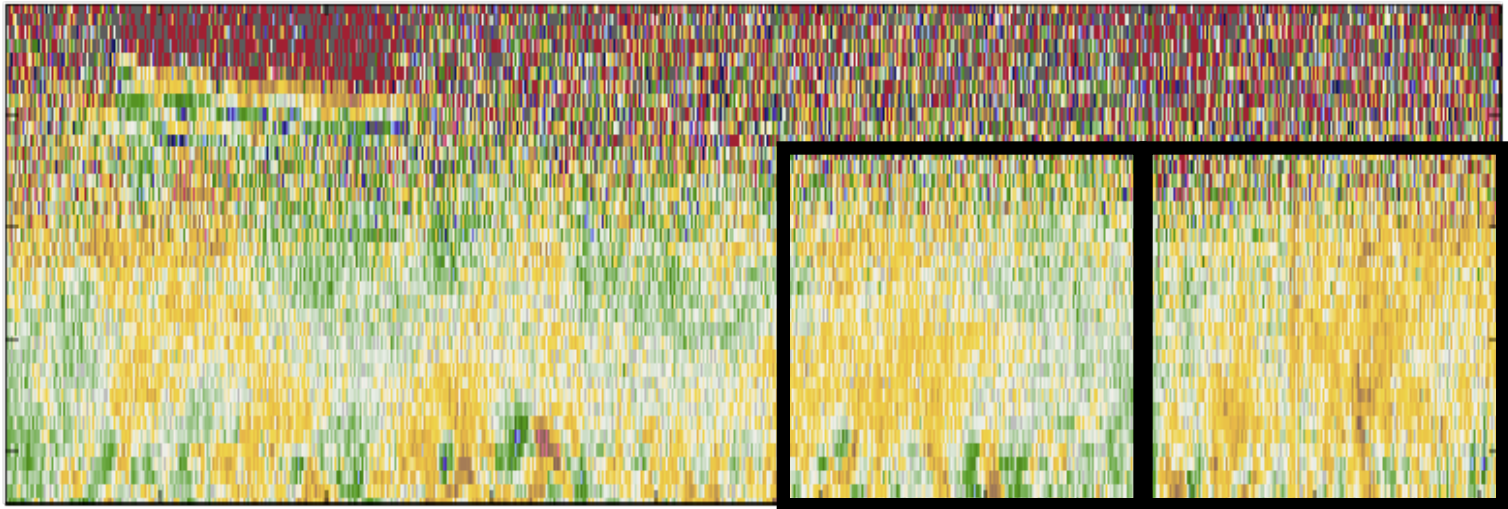
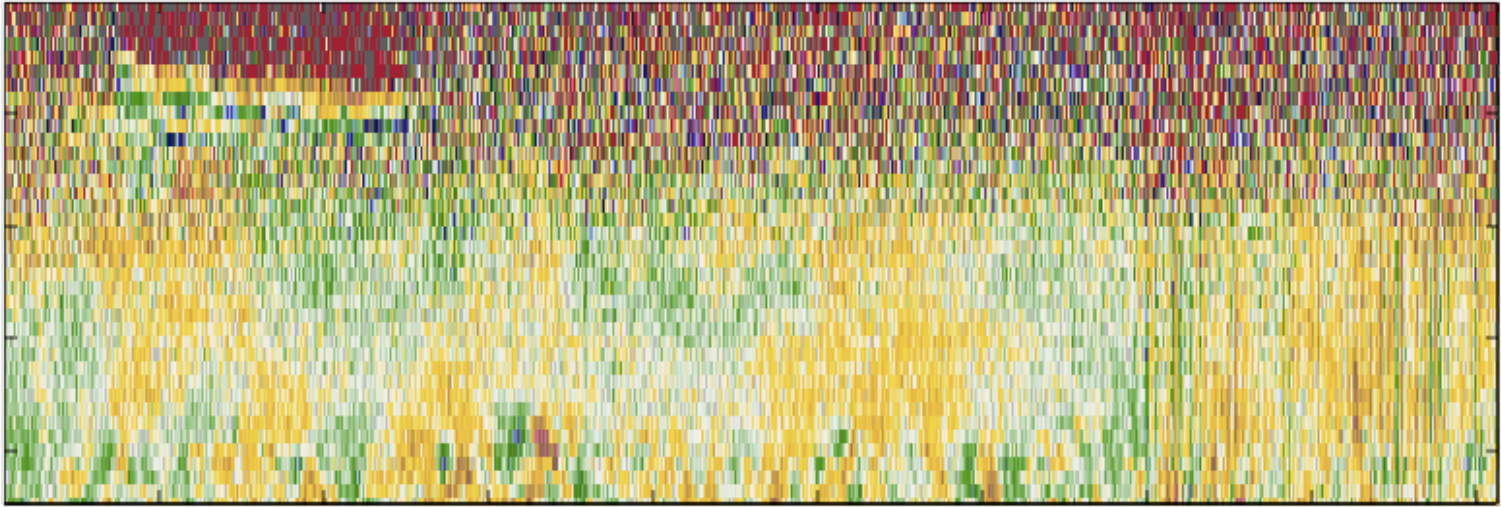






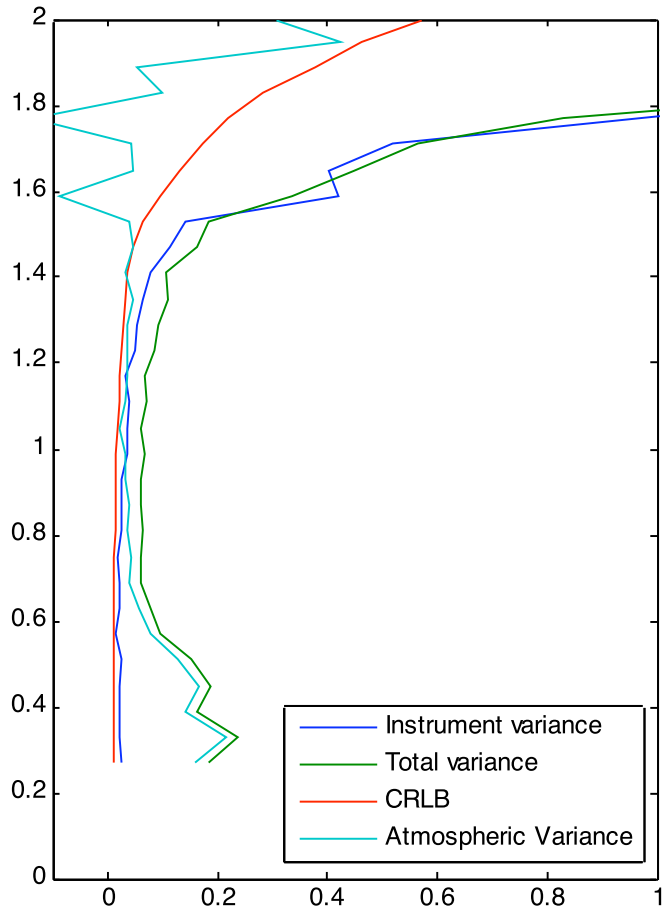




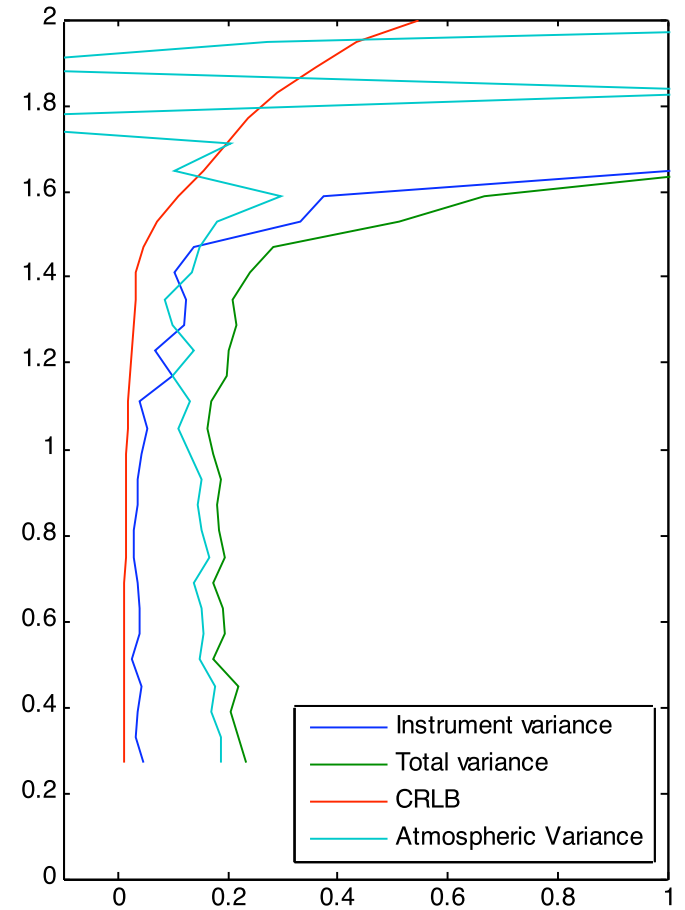


Variance Profiles

Time 1131.8–1135.4,
no correction

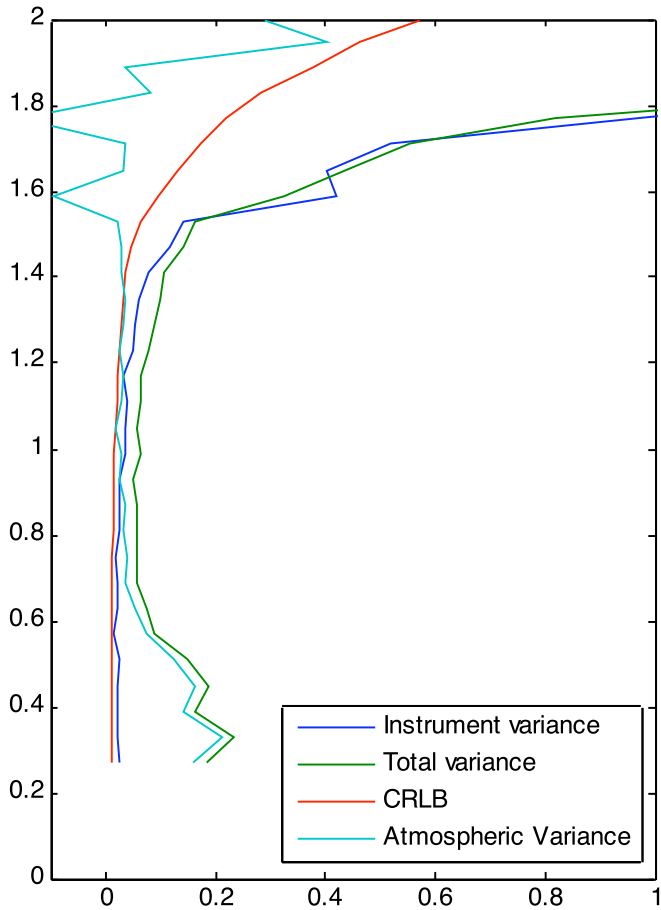


Time 1135.6–1140.3,
no correction

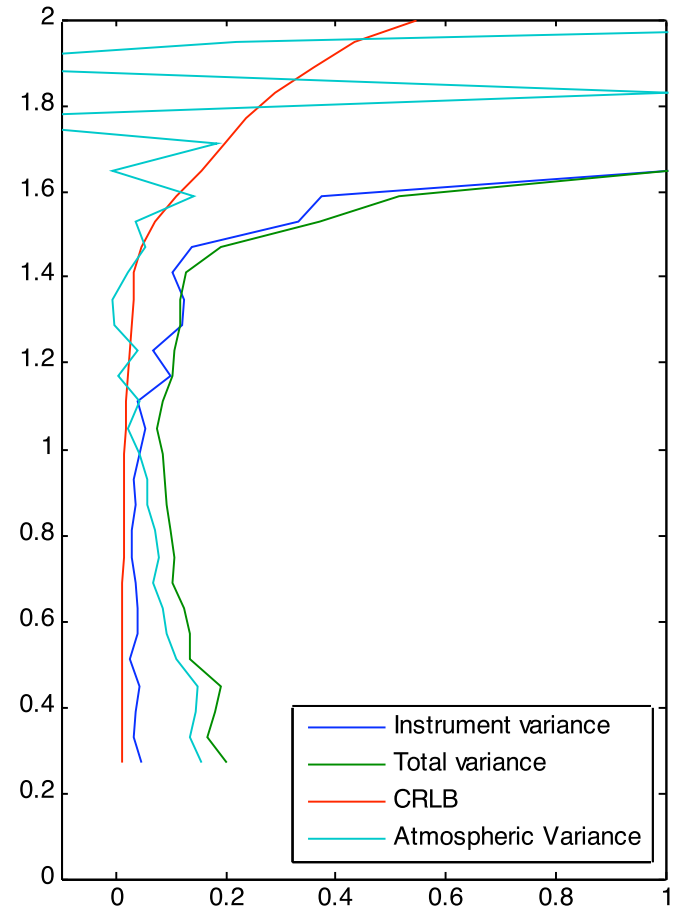


Variance Profiles

Time 1131.8–1135.4,
with correction

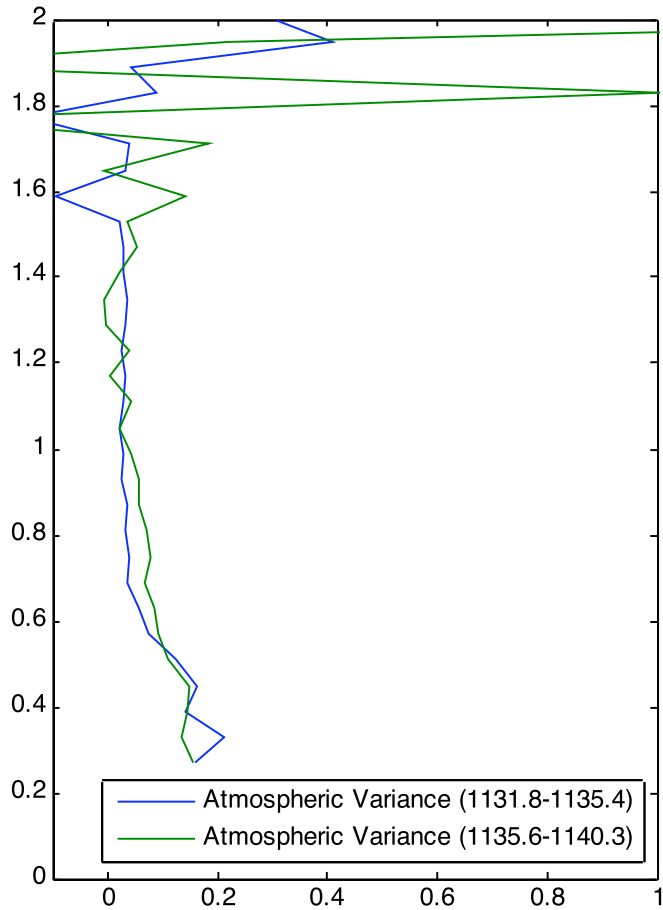


Time 1135.6–1140.3,
with correction

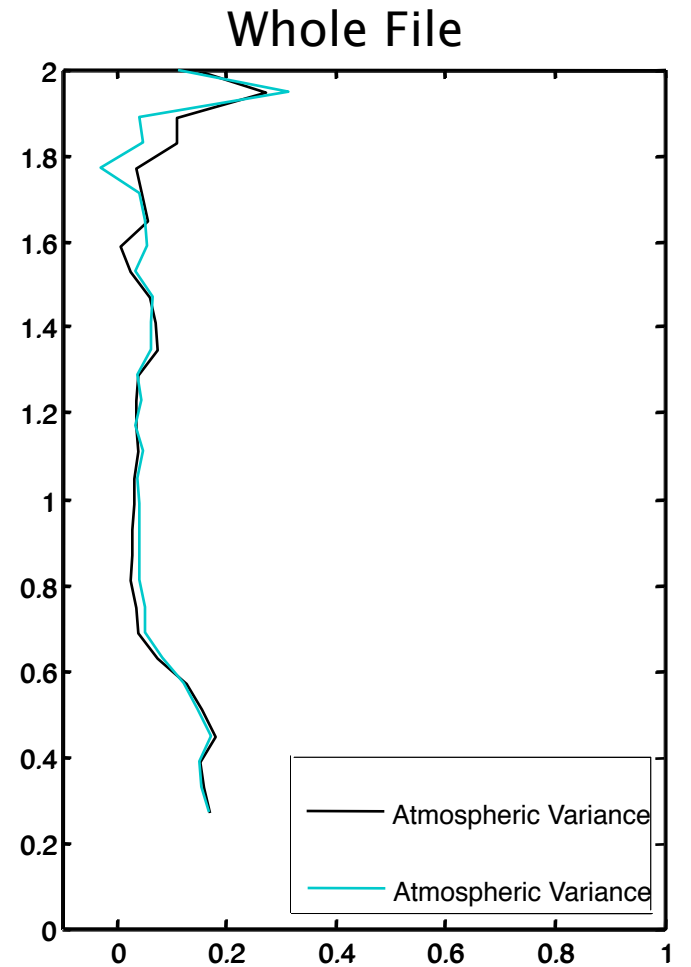


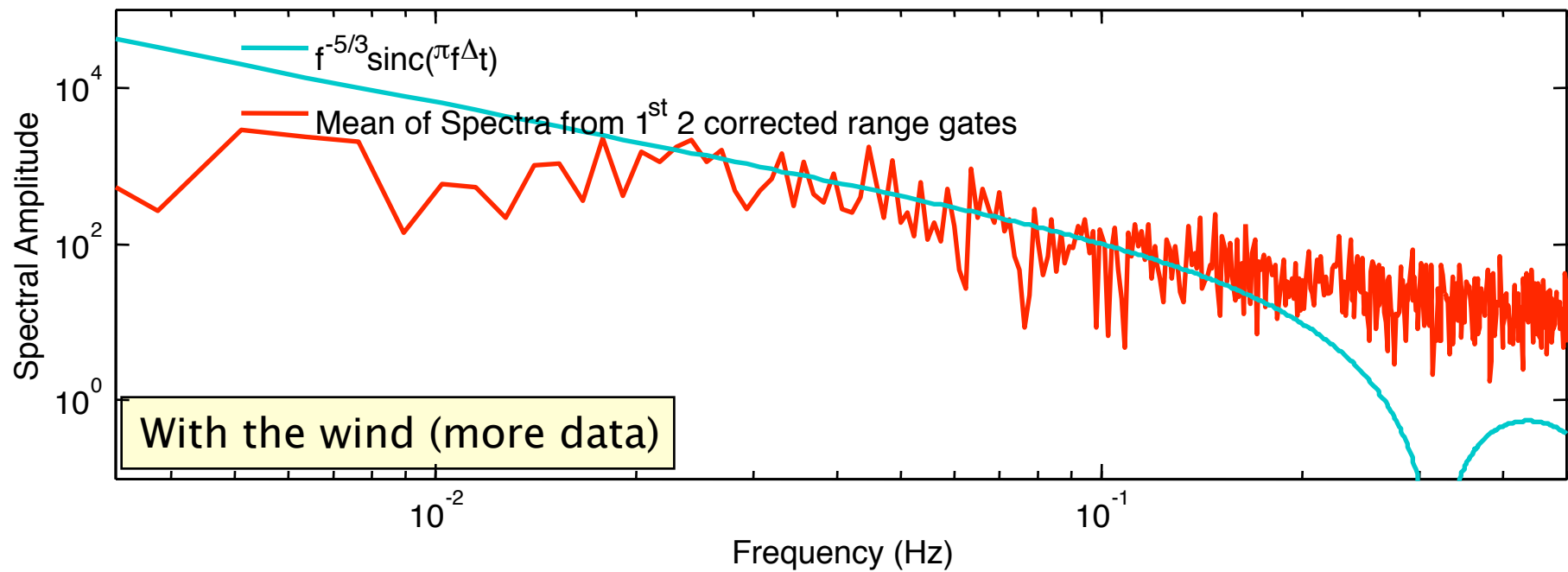
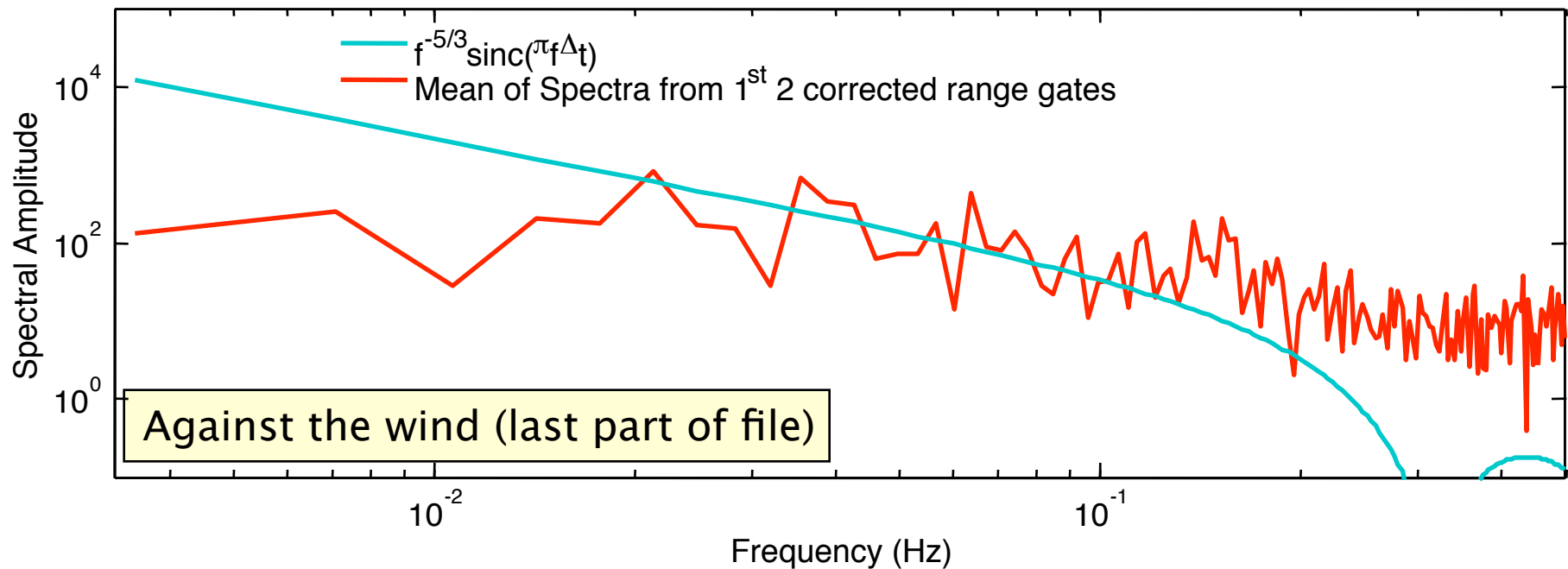
Variance Profiles

With correction



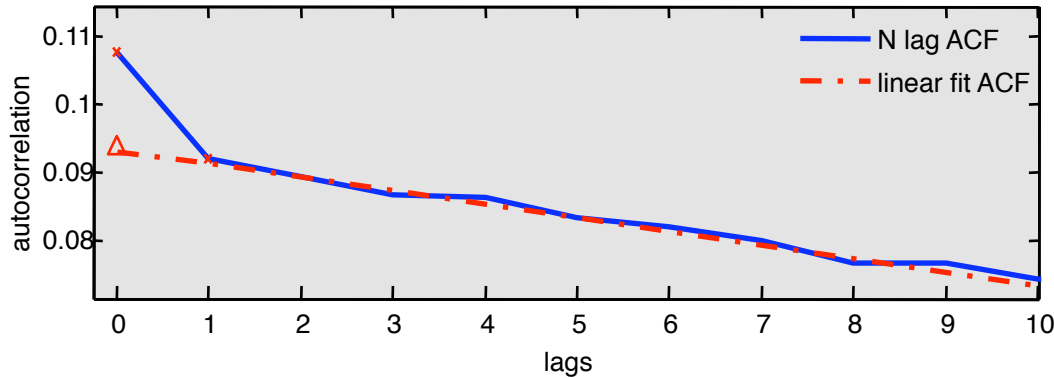
With wind (smooth part of file)





- Zeroth lag estimation: Mayor, et. al., J. Atmos. Oceanic Tech, 1997

Autocovariance function at 1.26 km Range



- Brovko-Zrnic Cramer-Rao Lower Bound: Rye & Hardesty, IEEE Trans Geoscience & Remote Sensing, 1993.

- Spectral noise floor estimation

Spectrum at 1.26 km range

