

AMTM Temperature Variance

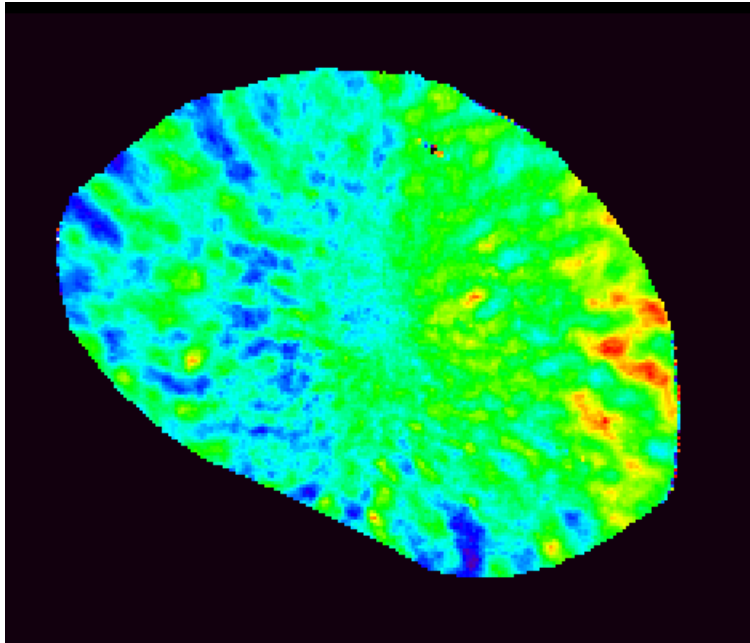
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Pautet,

Introduction

- Temperature variance to indicate the wave activities at OH altitude (~87 km)
- Ground-based: day to day variability and seasonal variations.
- DEEPWAVE: variations along the flight using the AMTM temperature measurements

- Land flight: RF 22
- Ocean flight: RF 25

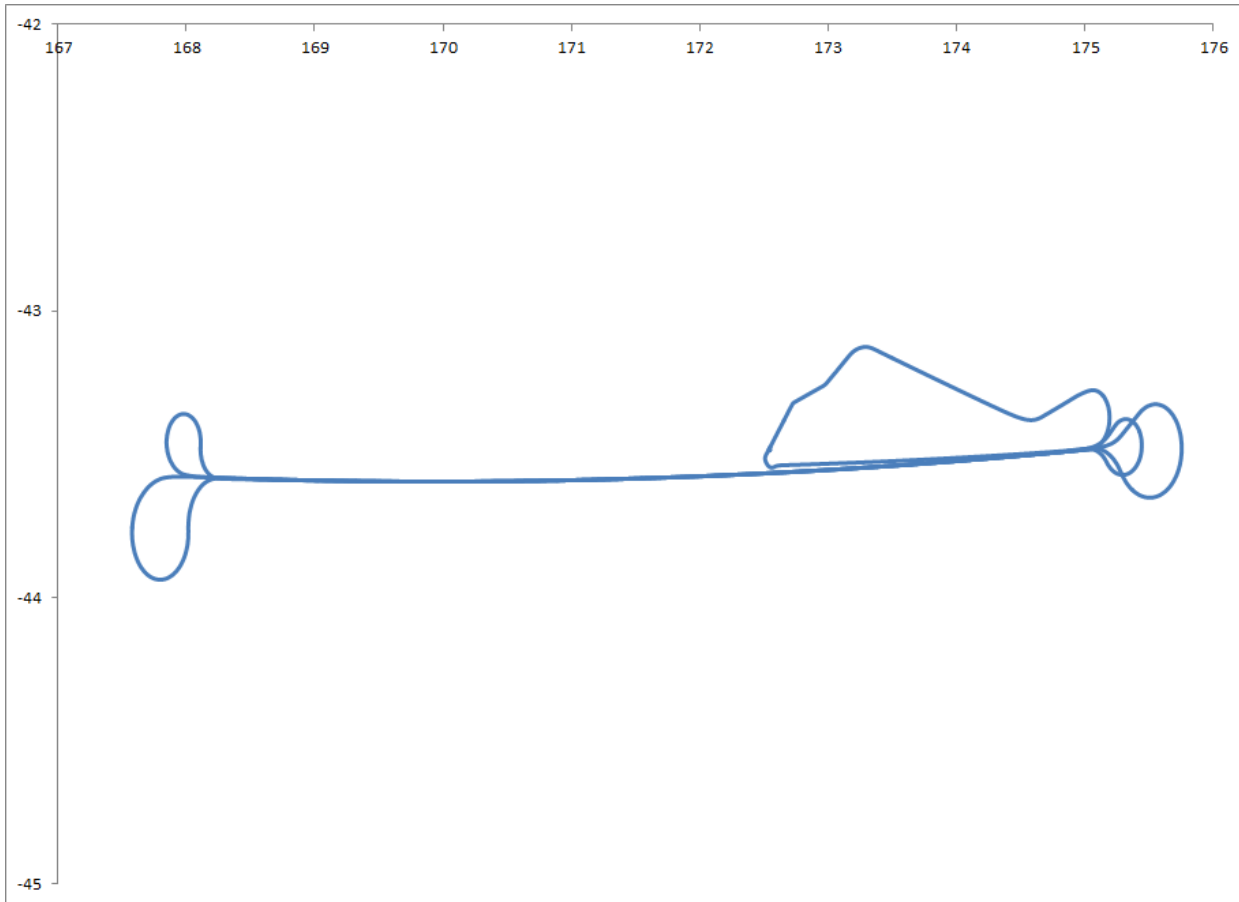
Temperature Variance along the Mission Flights



AMTM:

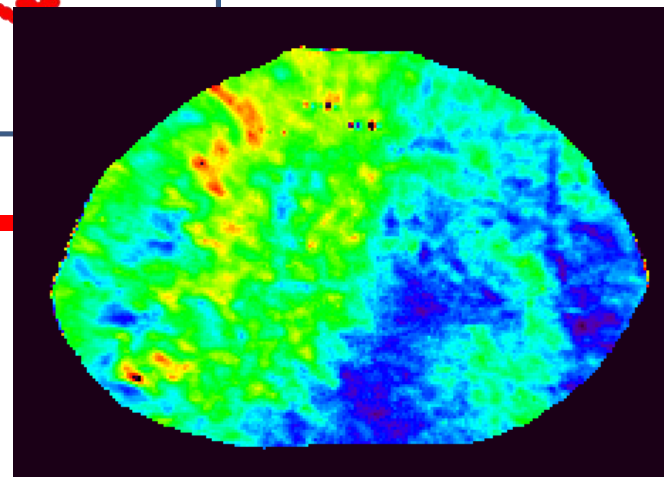
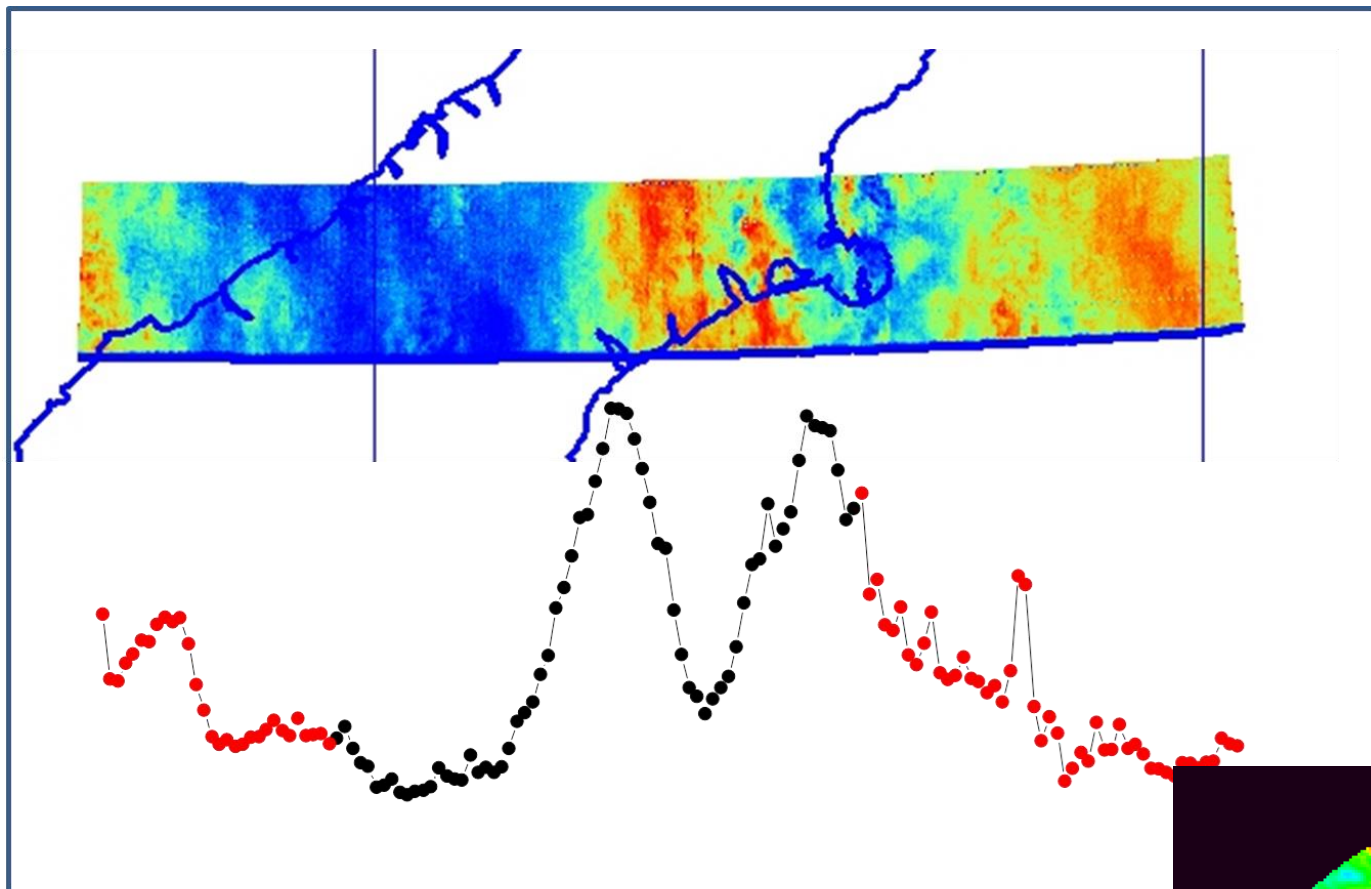
- Temperature every ~16 seconds
- FOV: 80x120 km
- $T' = T_{i,j} - T_{\text{mean}}$

RF 22 – July 13-14

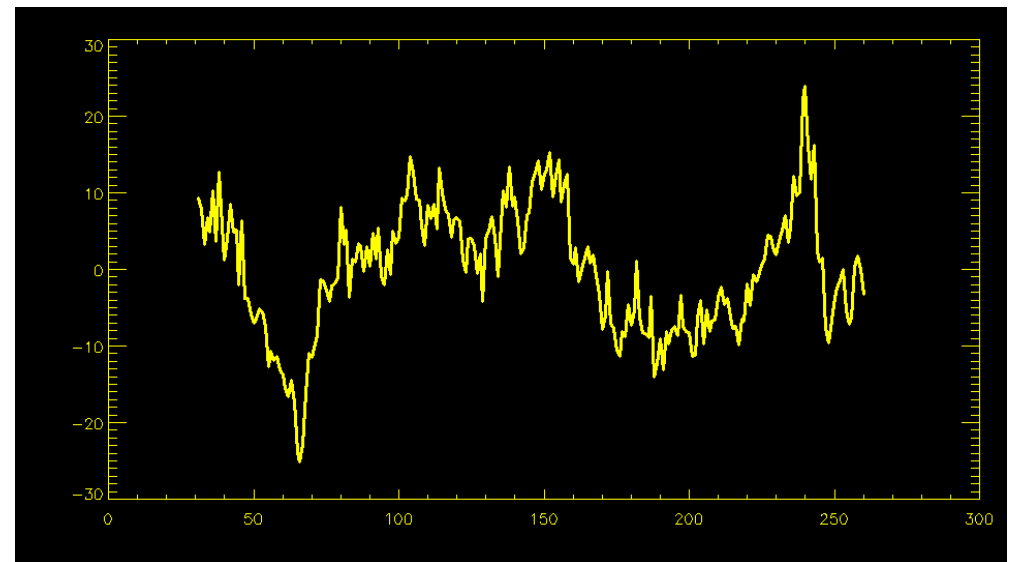
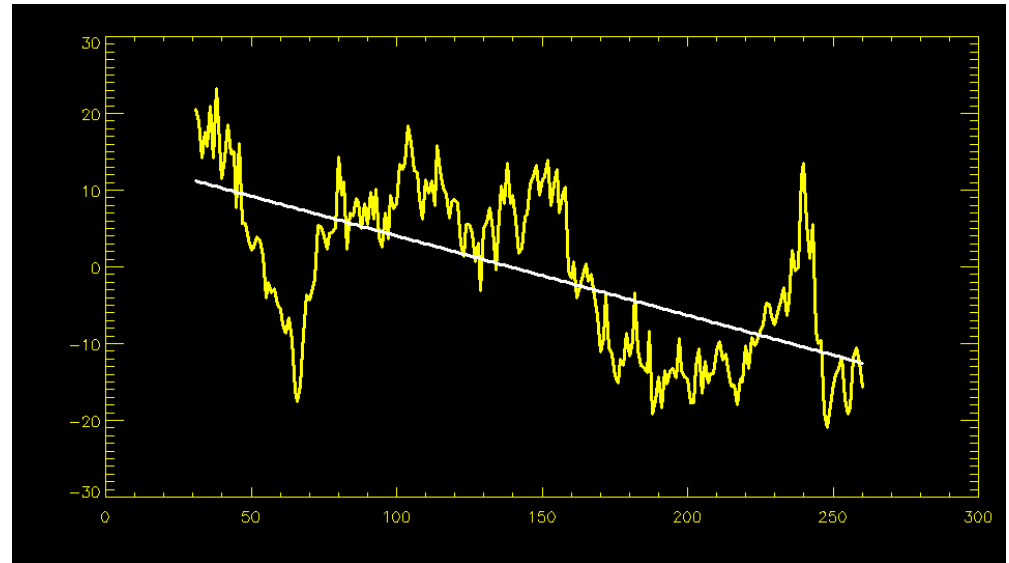
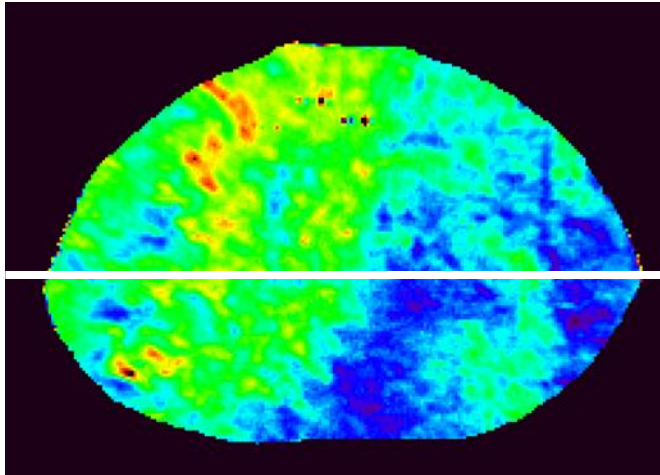


- South Island (4 legs) – Mountain waves
- Data from 6:00 to 9:25 UT (3:25)
- Falcon

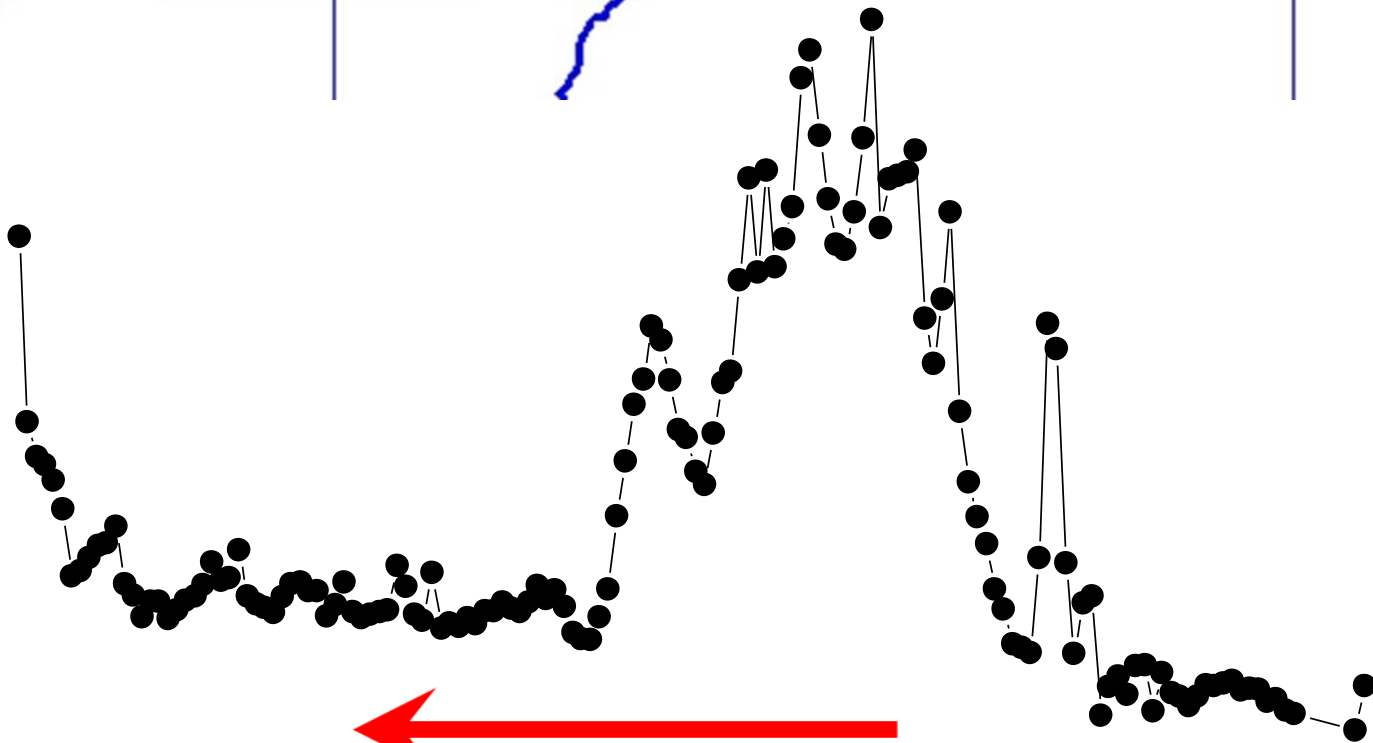
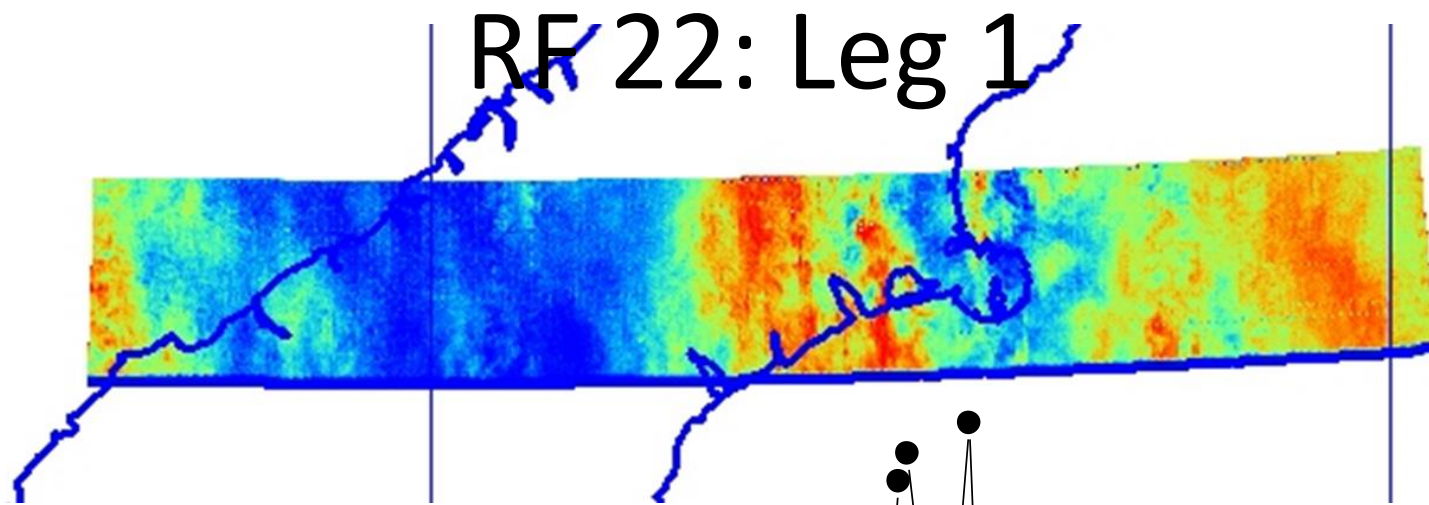
RF 22- leg 1



Linear trend removal

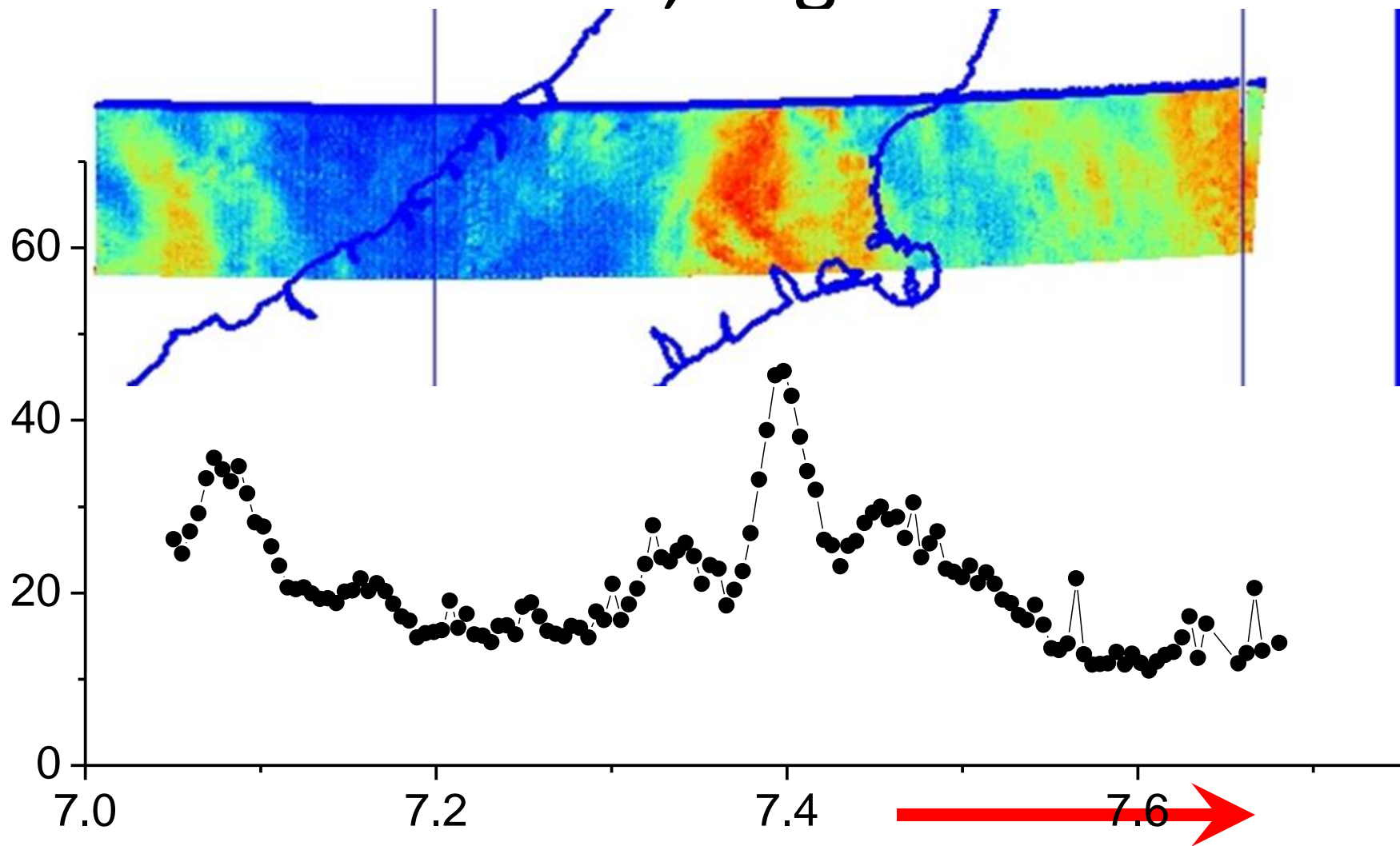


RF 22: Leg 1

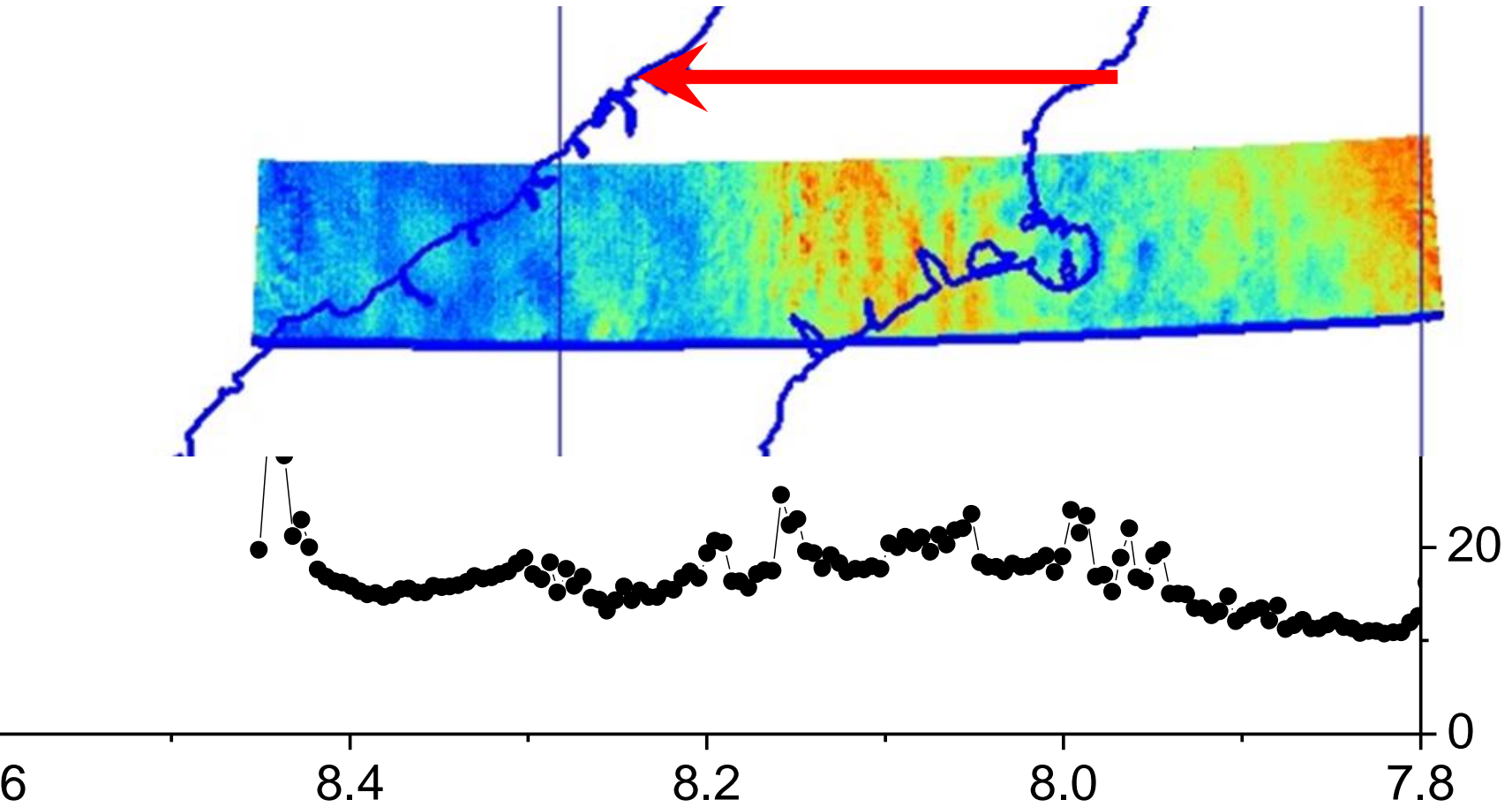


7.0 6.8 6.6 6.4 6.2

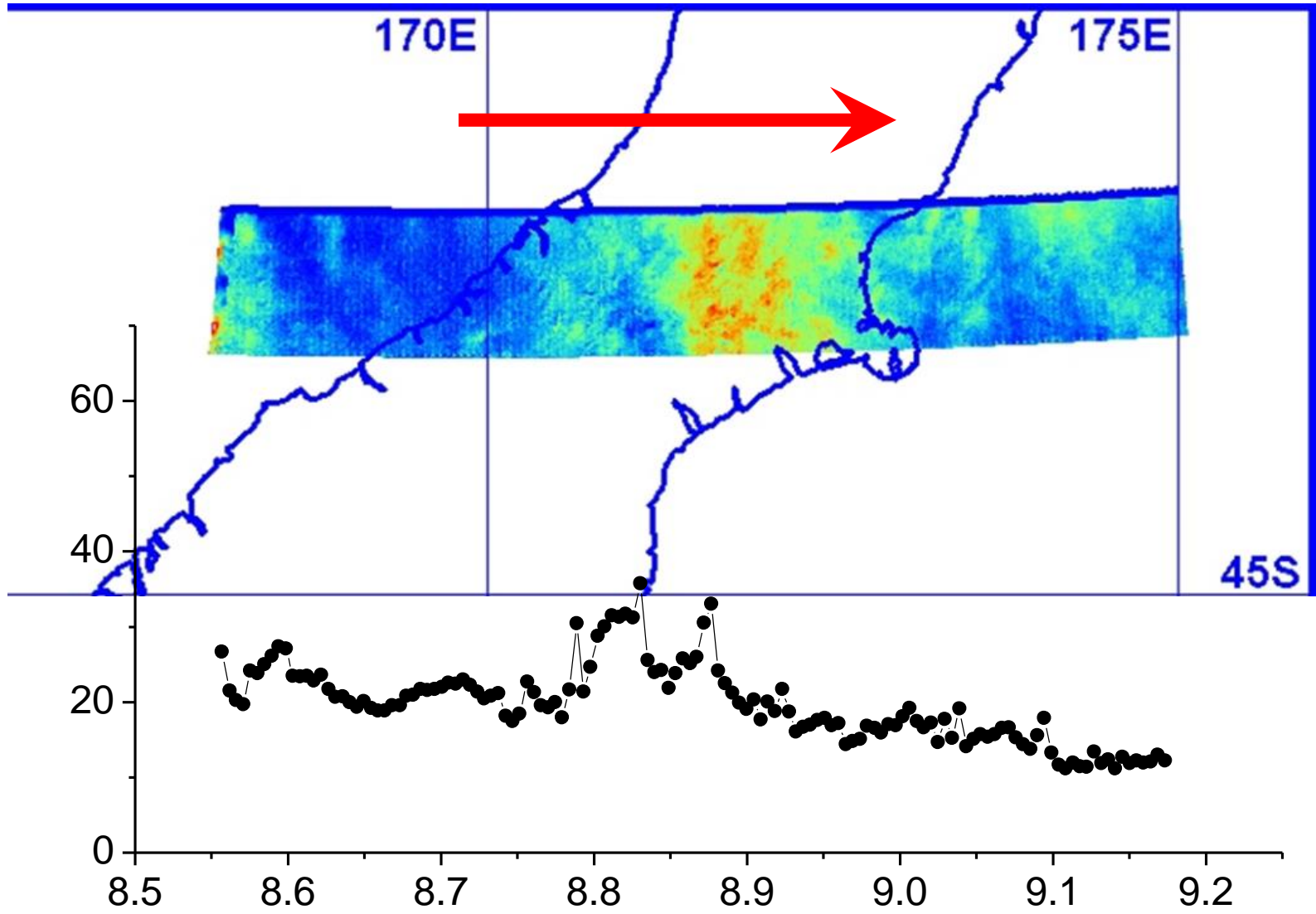
RF 22, Leg 2



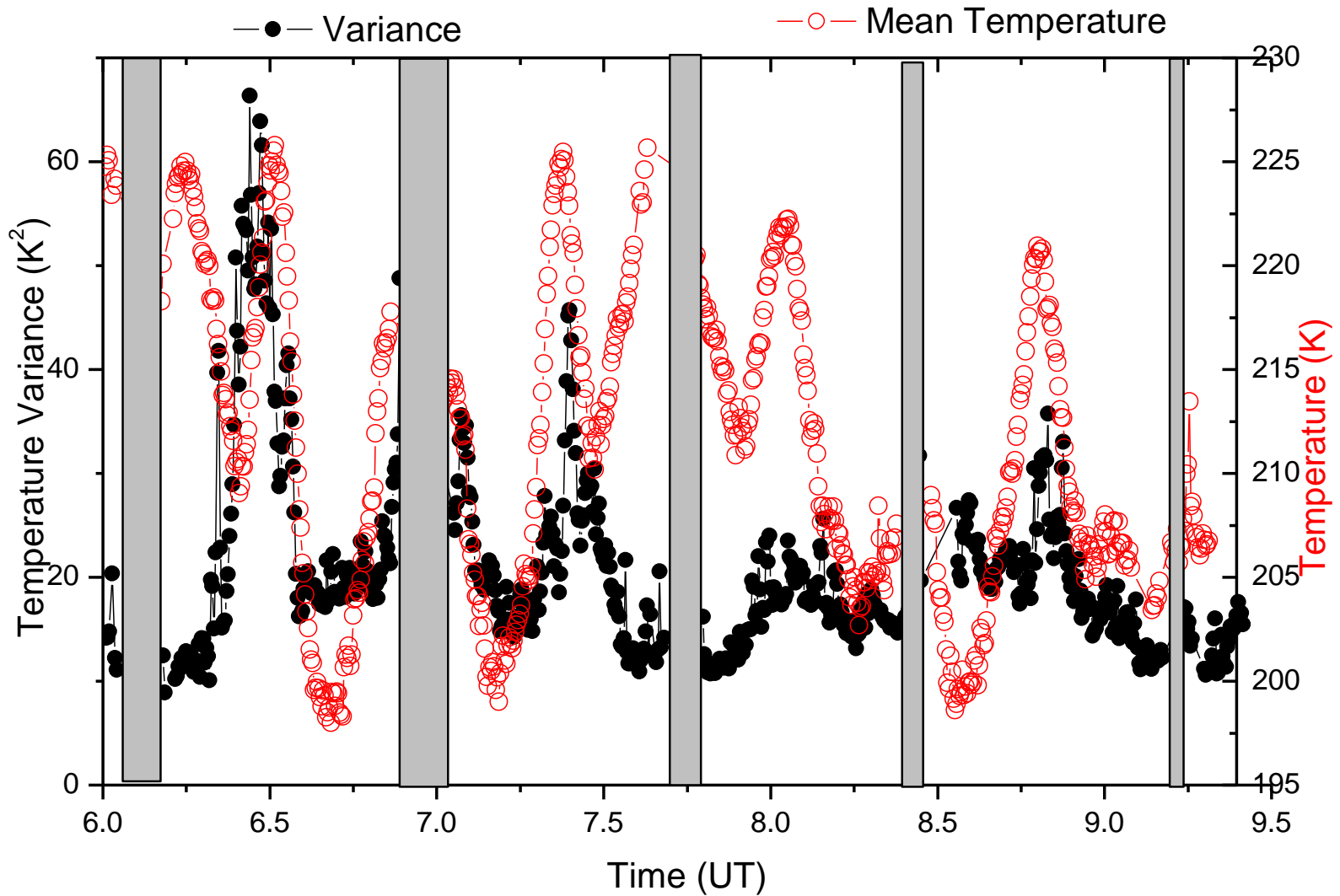
RF 22: Leg 3



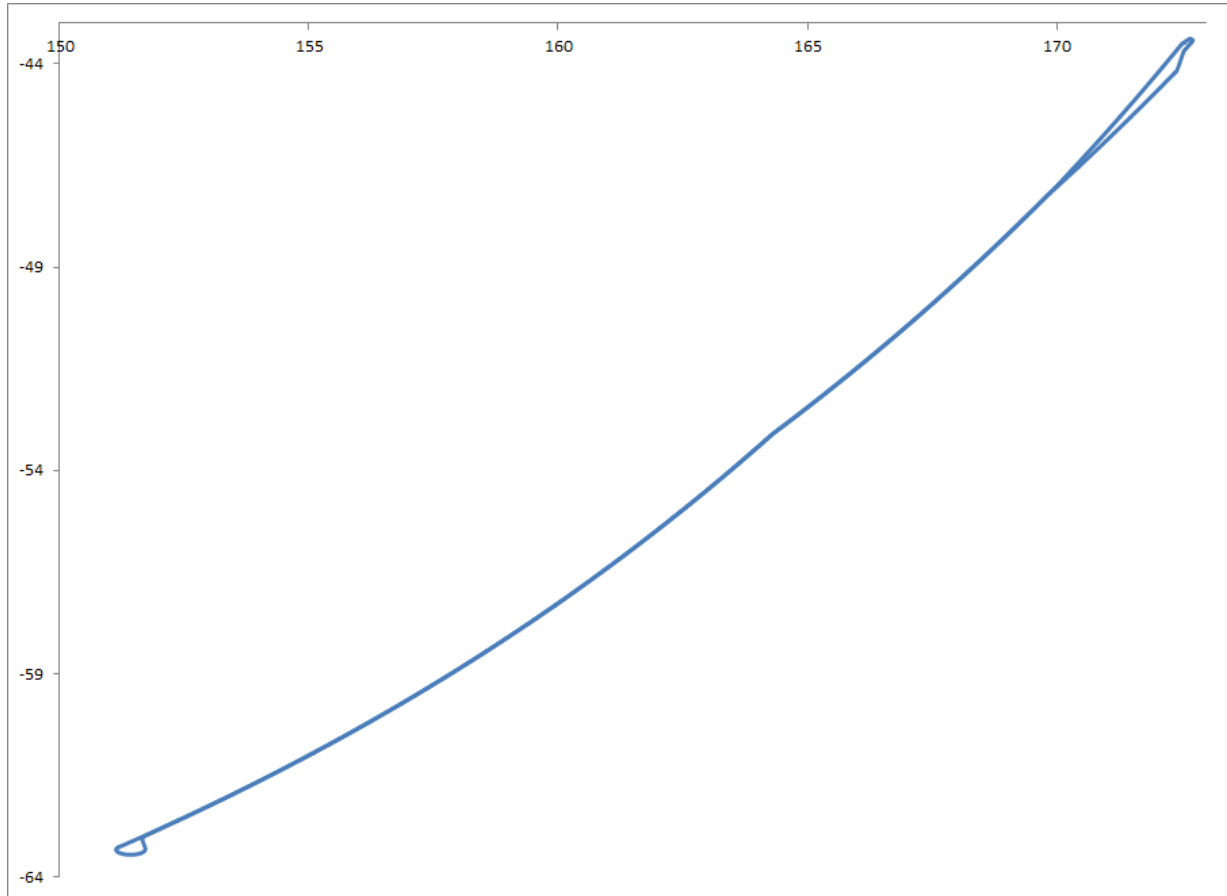
RF 22: leg 4



RF 22: Temperature and Variance

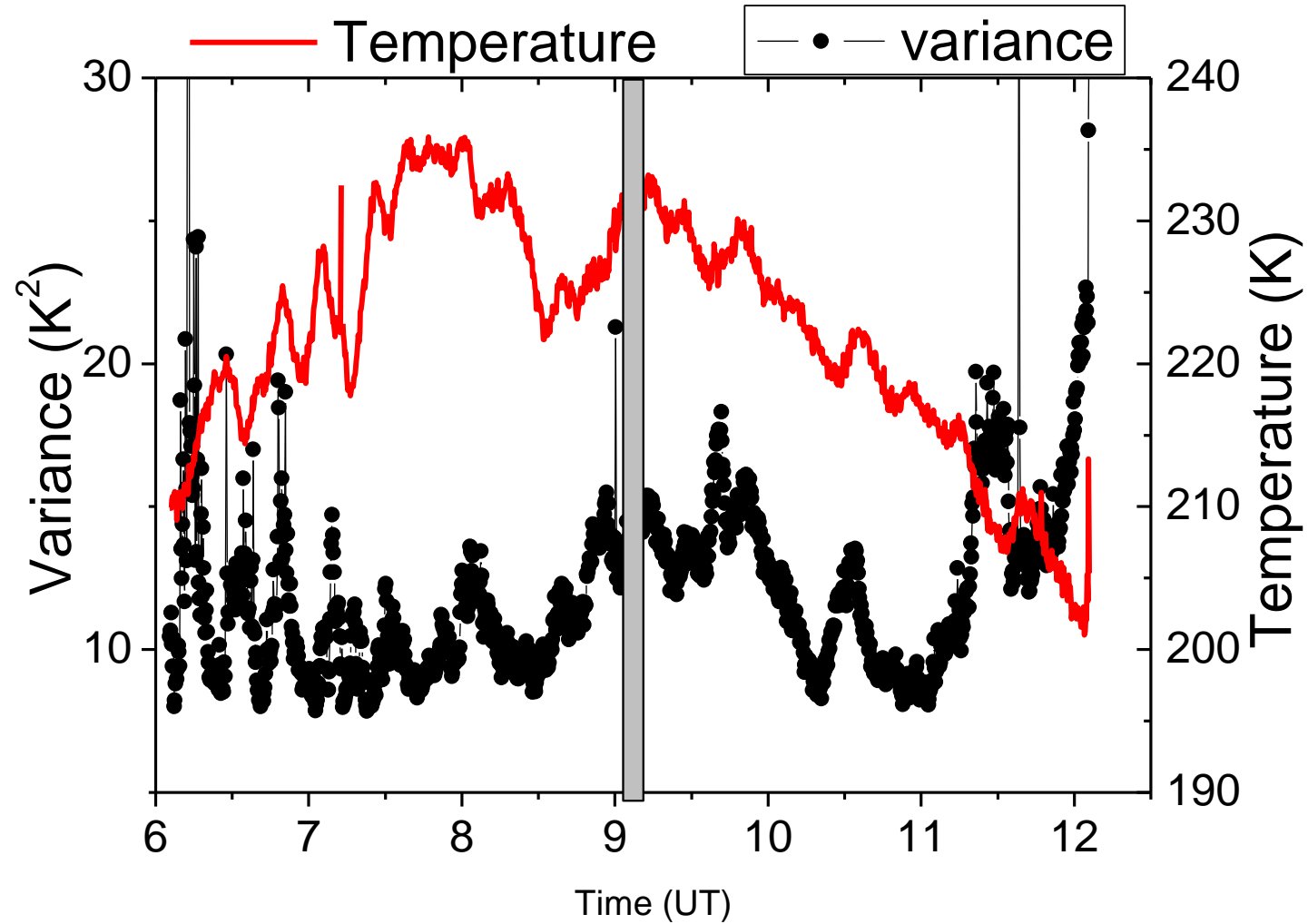


RF 25 – July 18-19

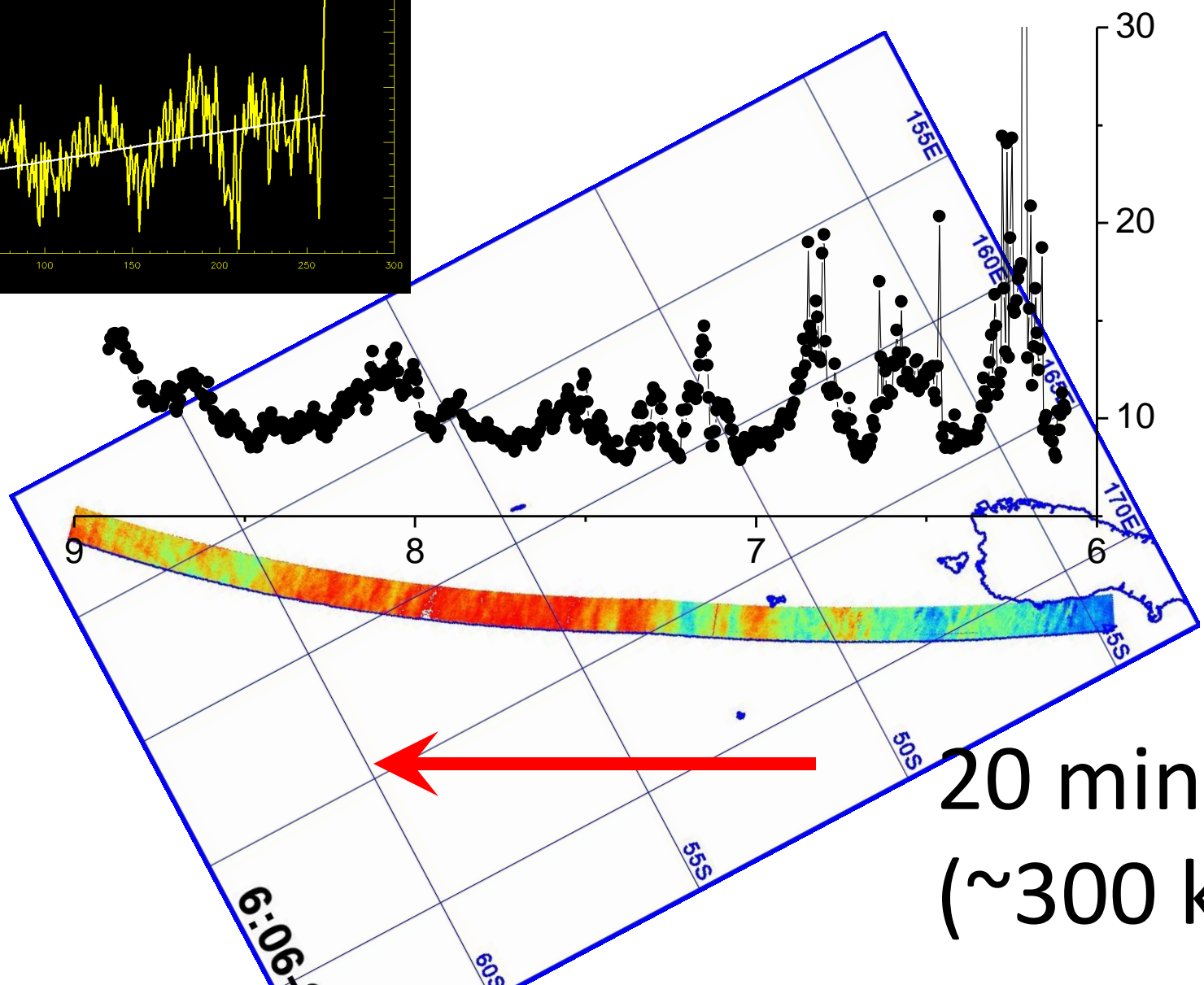
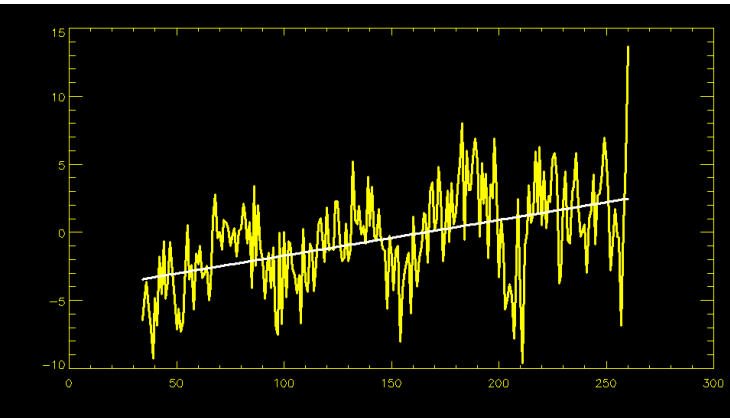


- Southern Ocean – Comparison with AIRS
- Data from 6:05 to 12:05 UT (6:00)
- 63S!

Tides in the Mean Temperature

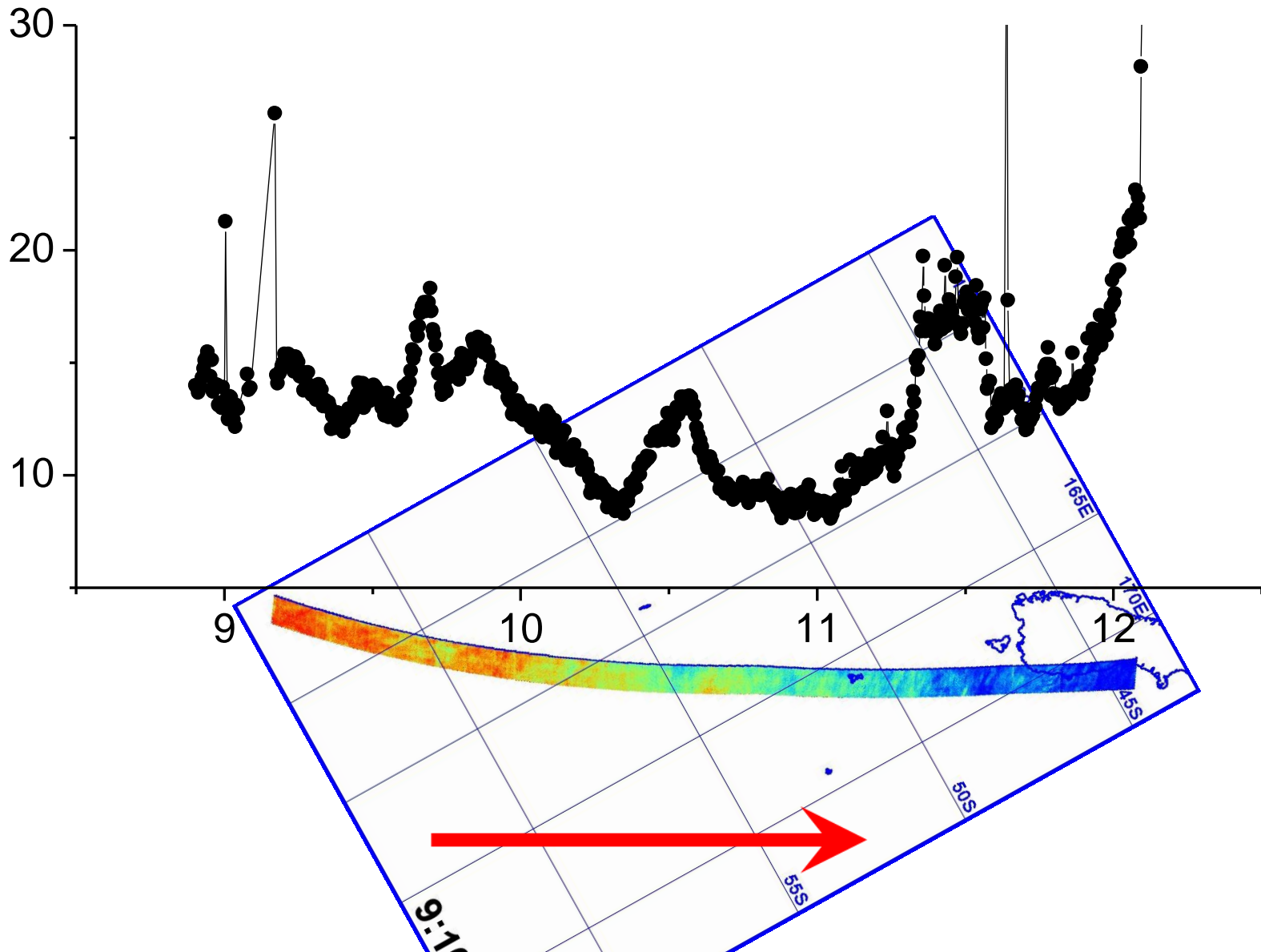


RF 25: Leg 1



20 minute
(~300 km)

RF 25: Leg 2



Summary

- Mean variance:
 - RF 22 (land): $\sim 21 \text{ K}^2$
 - RF 25 (ocean): 12 K^2
- Tidal signature in the mean temperature
- Large scale wave modulation of variance
- Compare to Rayleigh lidar and flight level wave energy results
- ECMWF and AIRS data along the flight track