



Preliminary comparison between 146 and  
C-130 data from RICO flight 23 Jan 2005

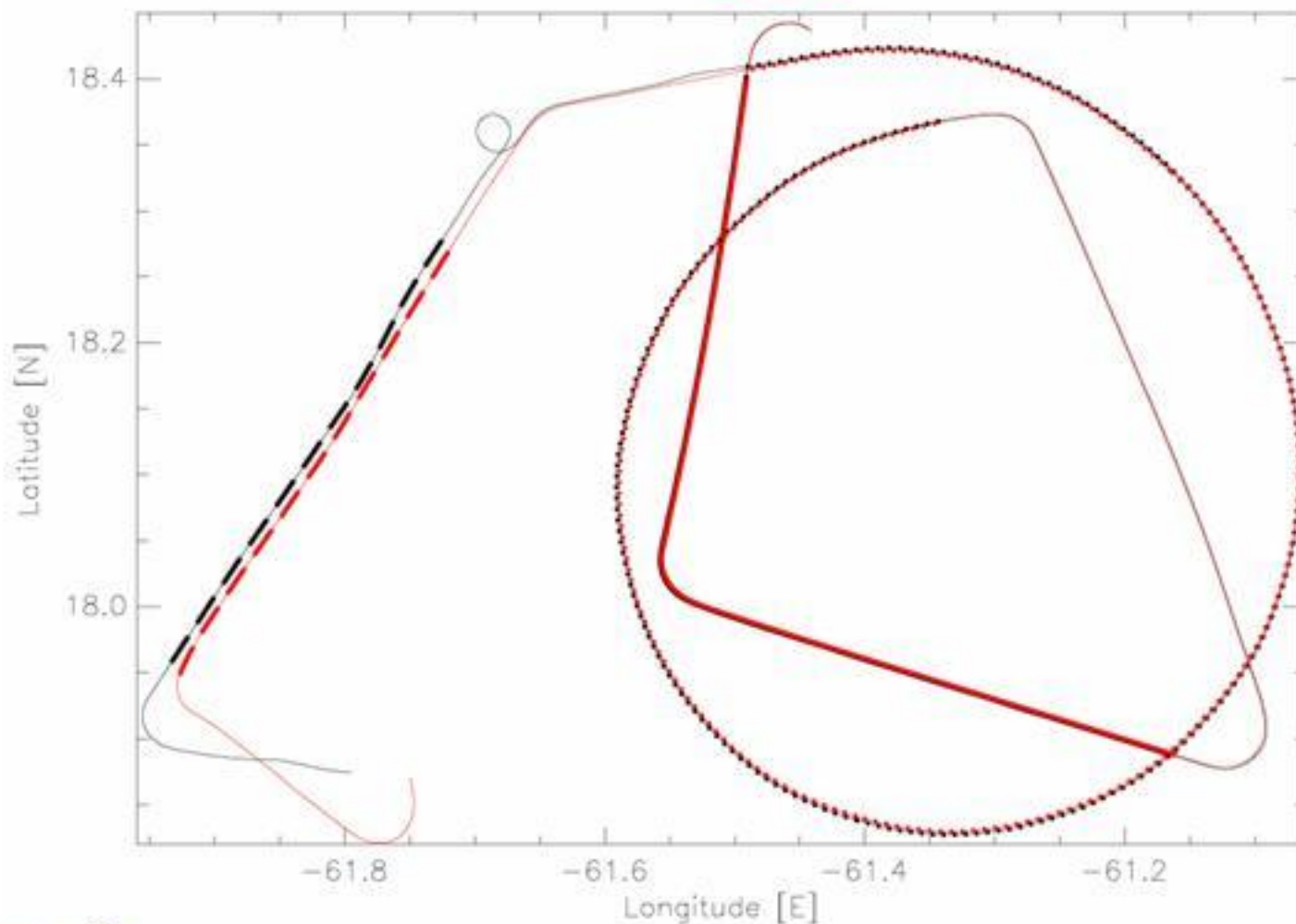
**Steven Abel**

- Clear air comparisons in L pattern @ FL080.
- Clear air comparisons in low level orbit @ FL010.
- Cloudy comparisons @ FL035. Note that 146 data is shifted back in time by 93 seconds as it was following the C-130 in cloud.

# Track Plot



- 146 L Pattern at FL080
- ..... 146 Orbit at FL010
- - - 146 In Cloud Run at FL035
- C-130 L Pattern at FL080
- ..... C-130 Orbit at FL010
- - - C-130 In Cloud Run at FL035

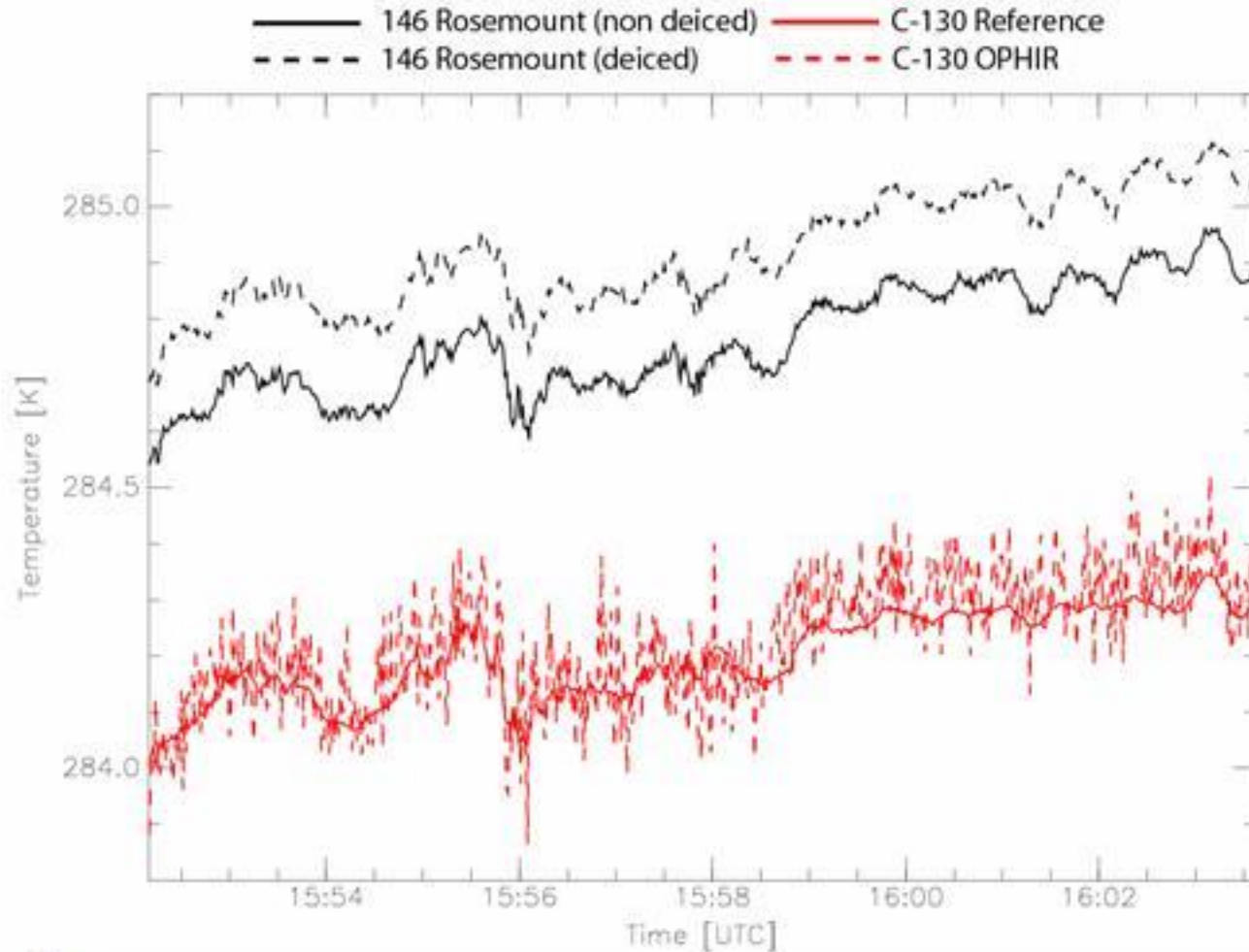




**L pattern**

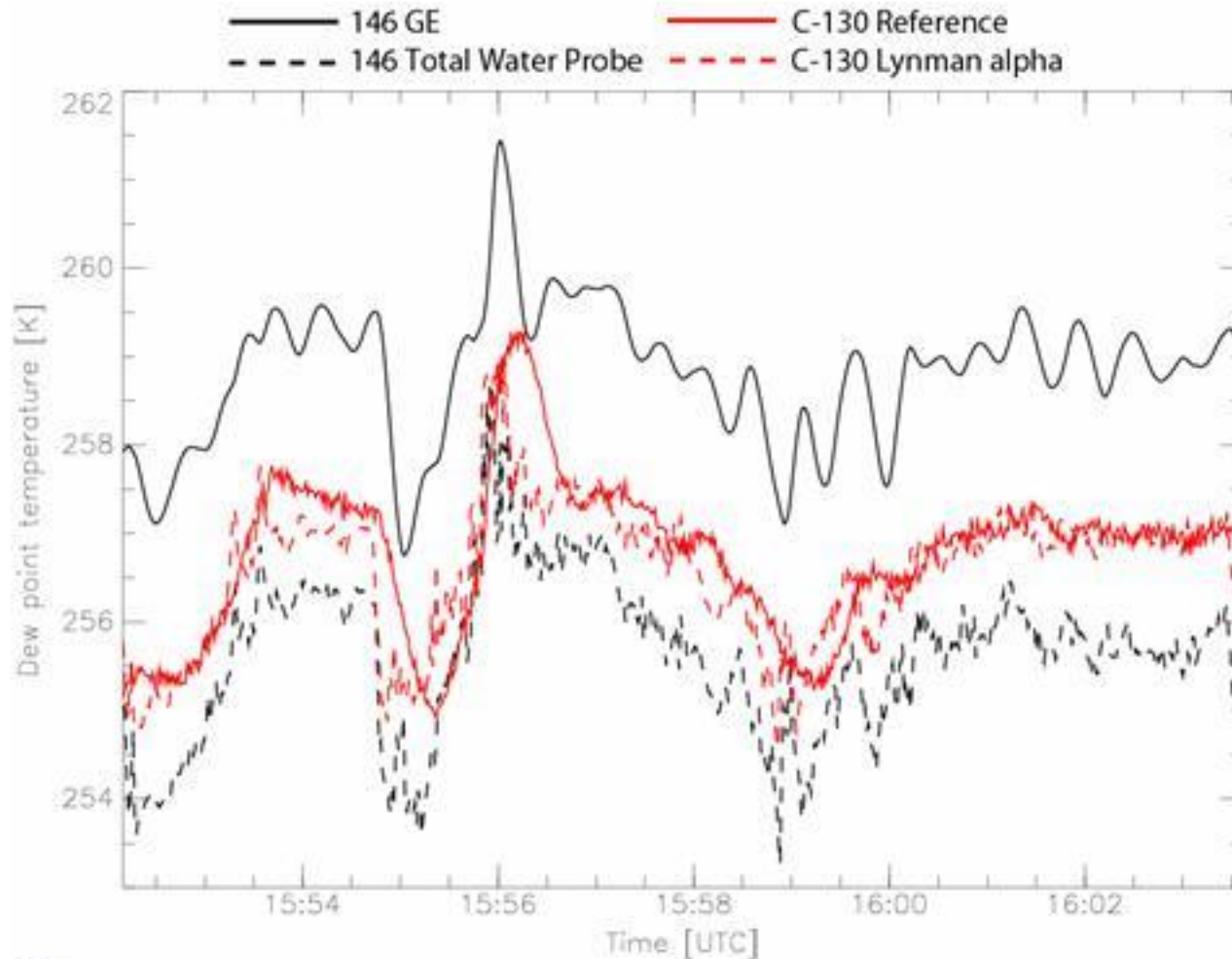
# Clear air comparisons from the L pattern

## 1. Temperature



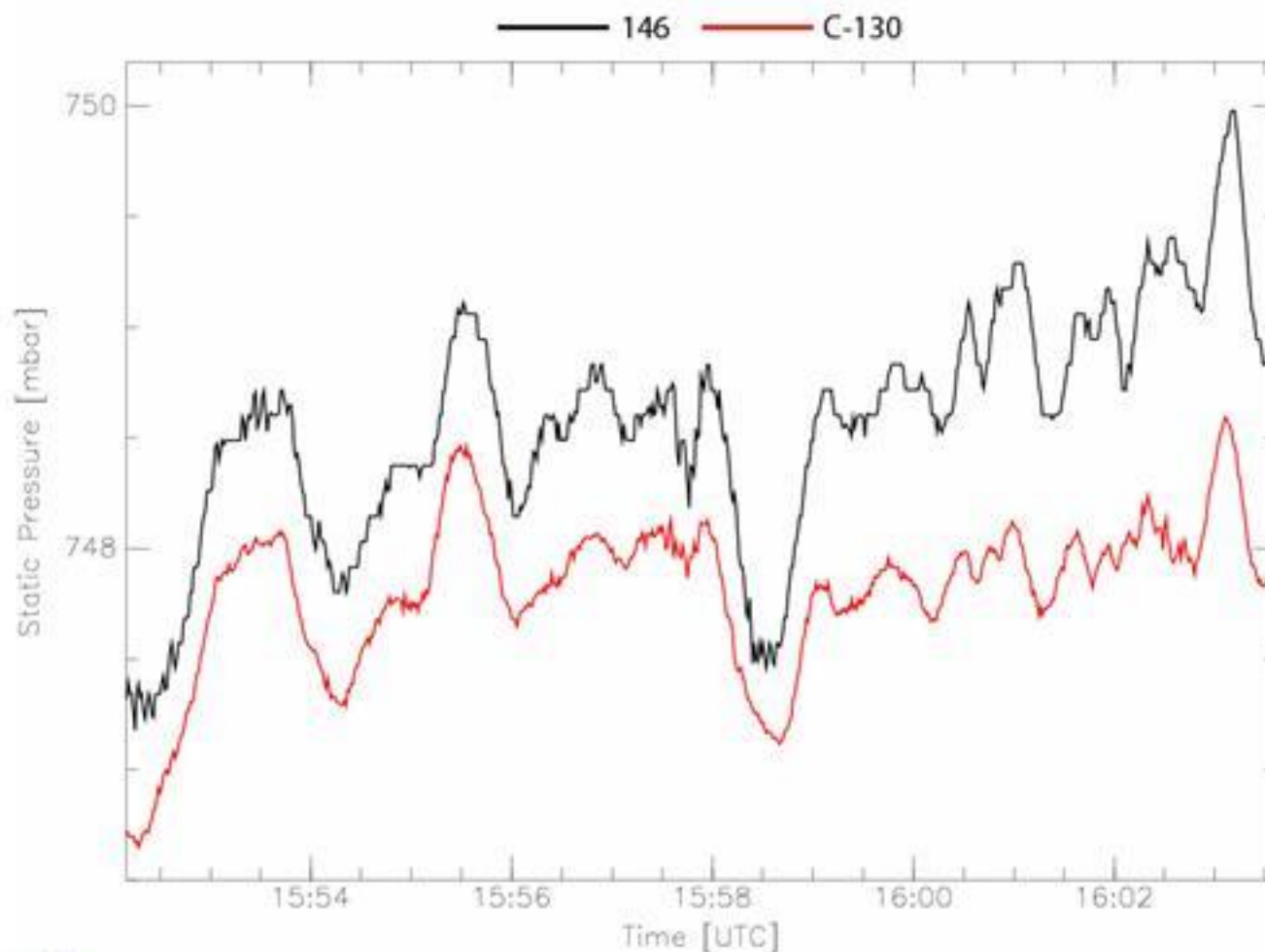
# Clear air comparisons from the L pattern

## 2. Dew Point Temperature



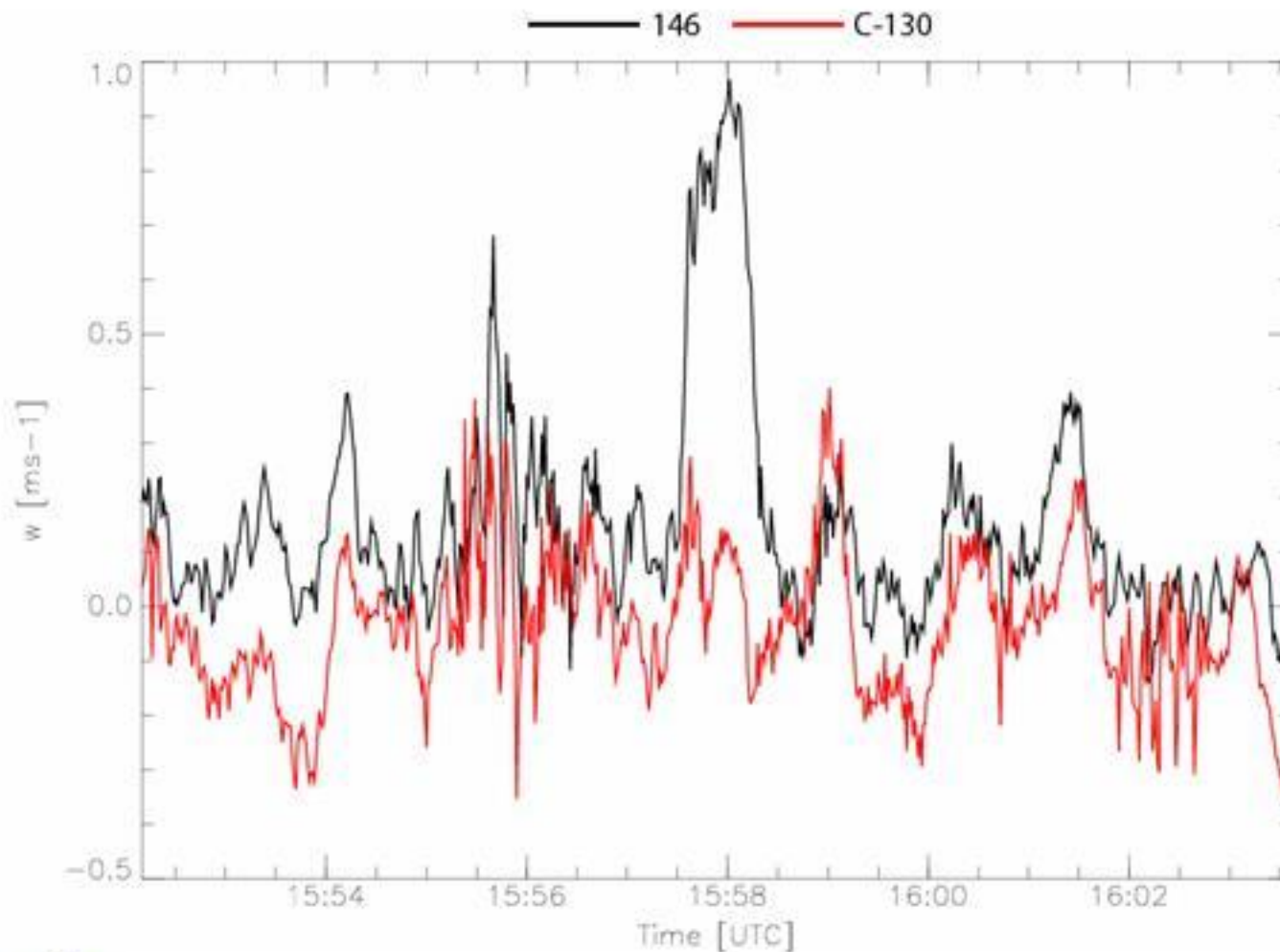
# Clear air comparisons from the L pattern

## 3. Static Pressure



# Clear air comparisons from the L pattern

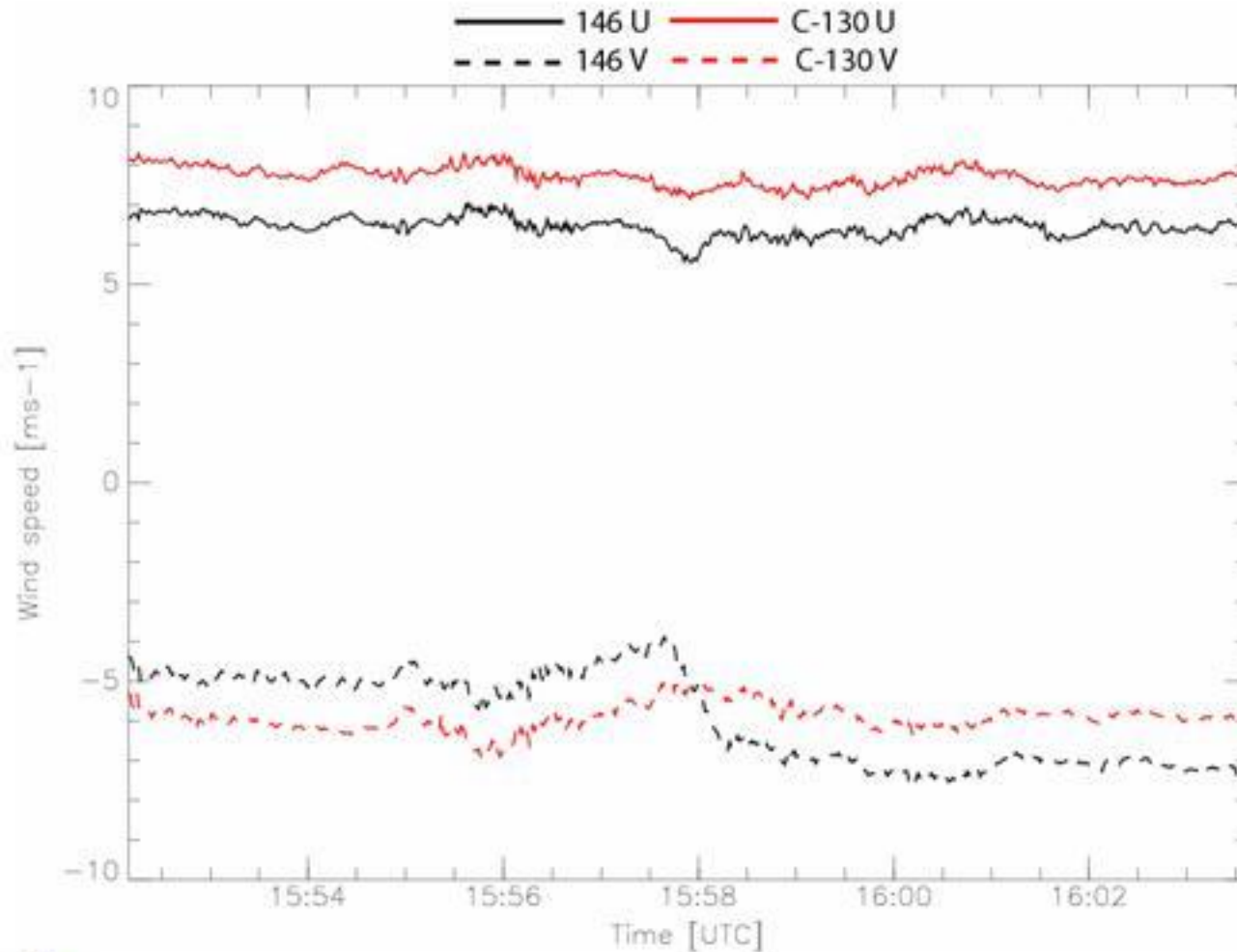
## 4. Vertical Wind





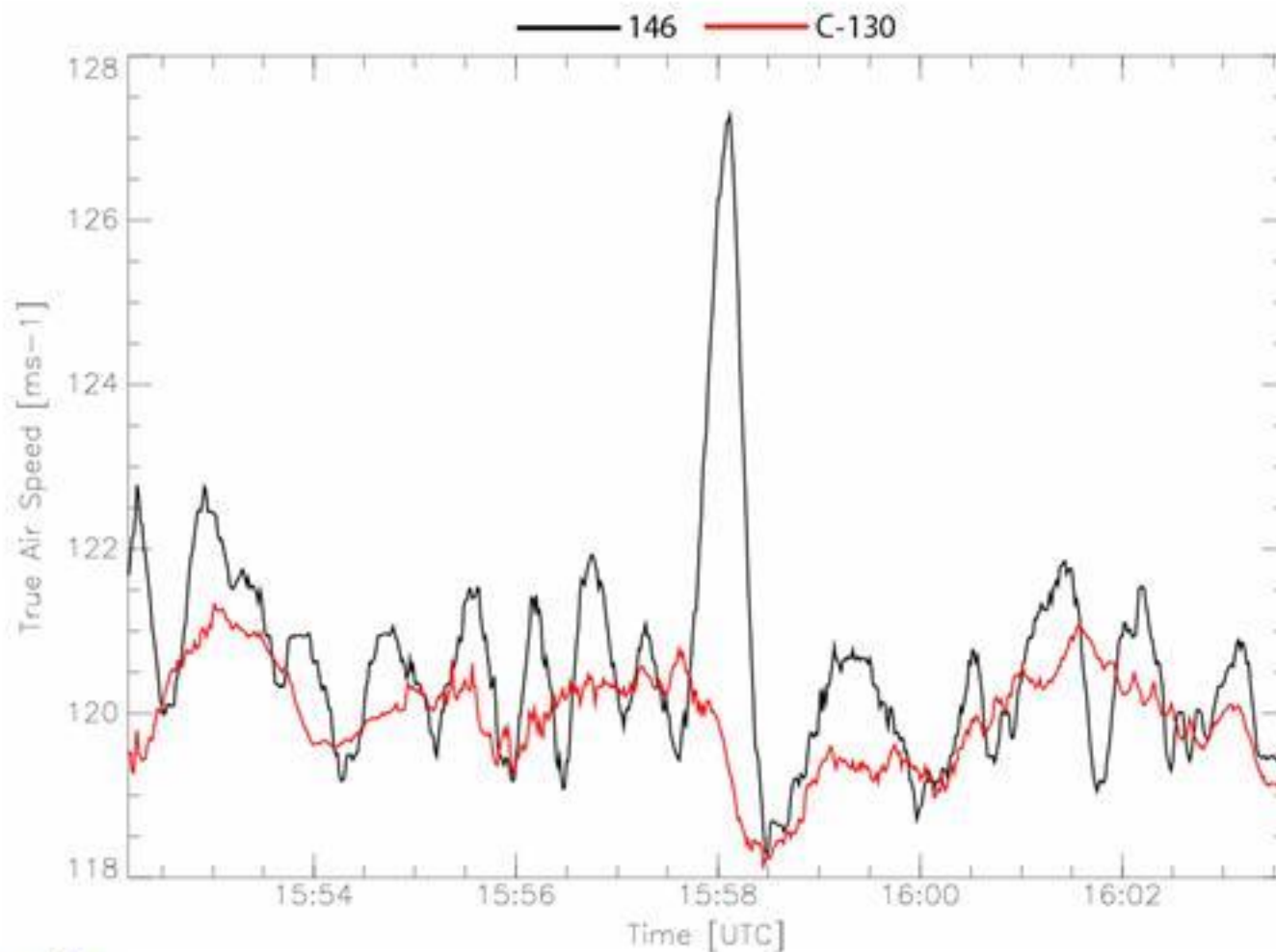
# Clear air comparisons from the L pattern

## 5. U and V components



# Clear air comparisons from the L pattern

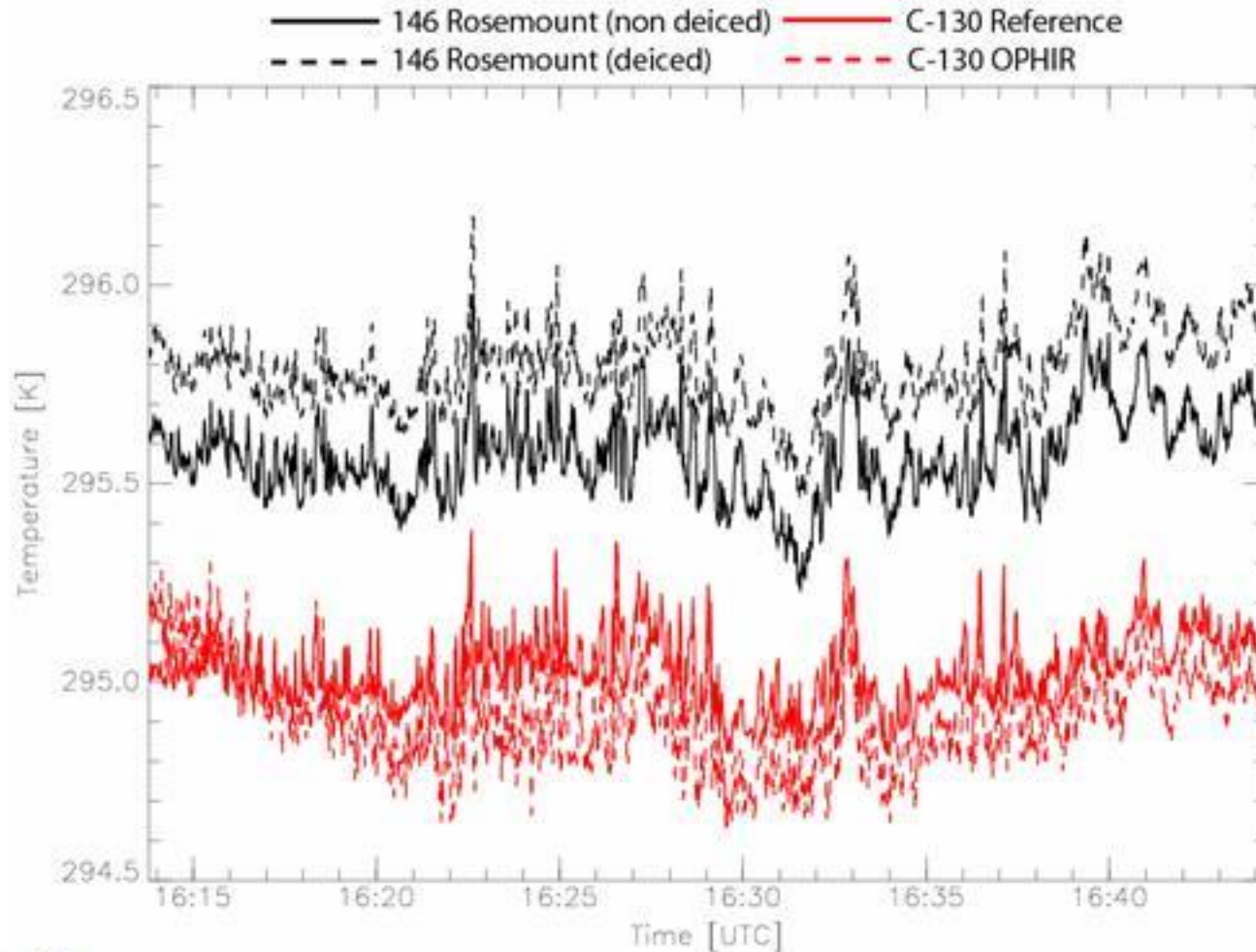
## 6. True Air Speed



**Low level orbit**

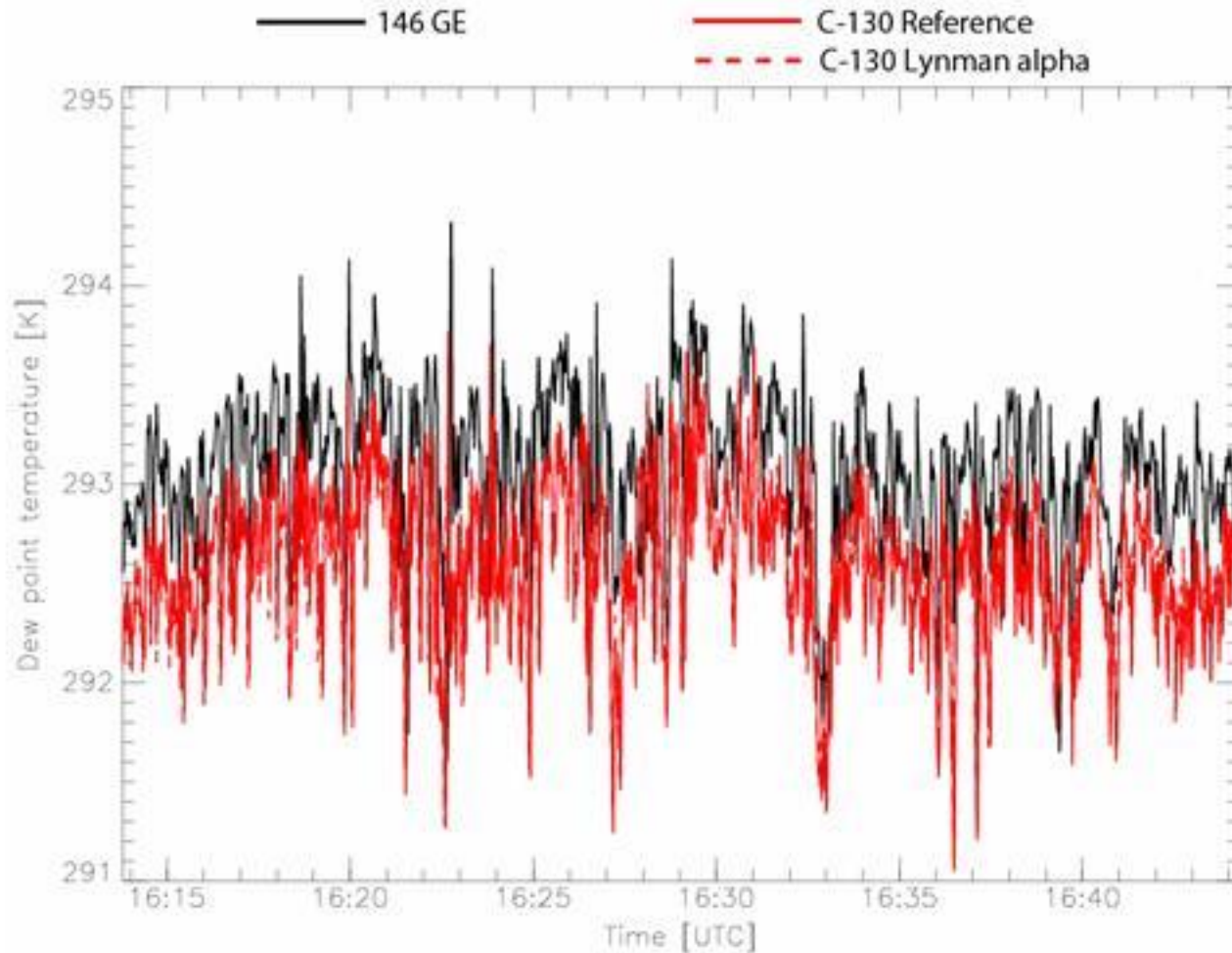
# Clear air comparisons from the orbit

## 1. Temperature



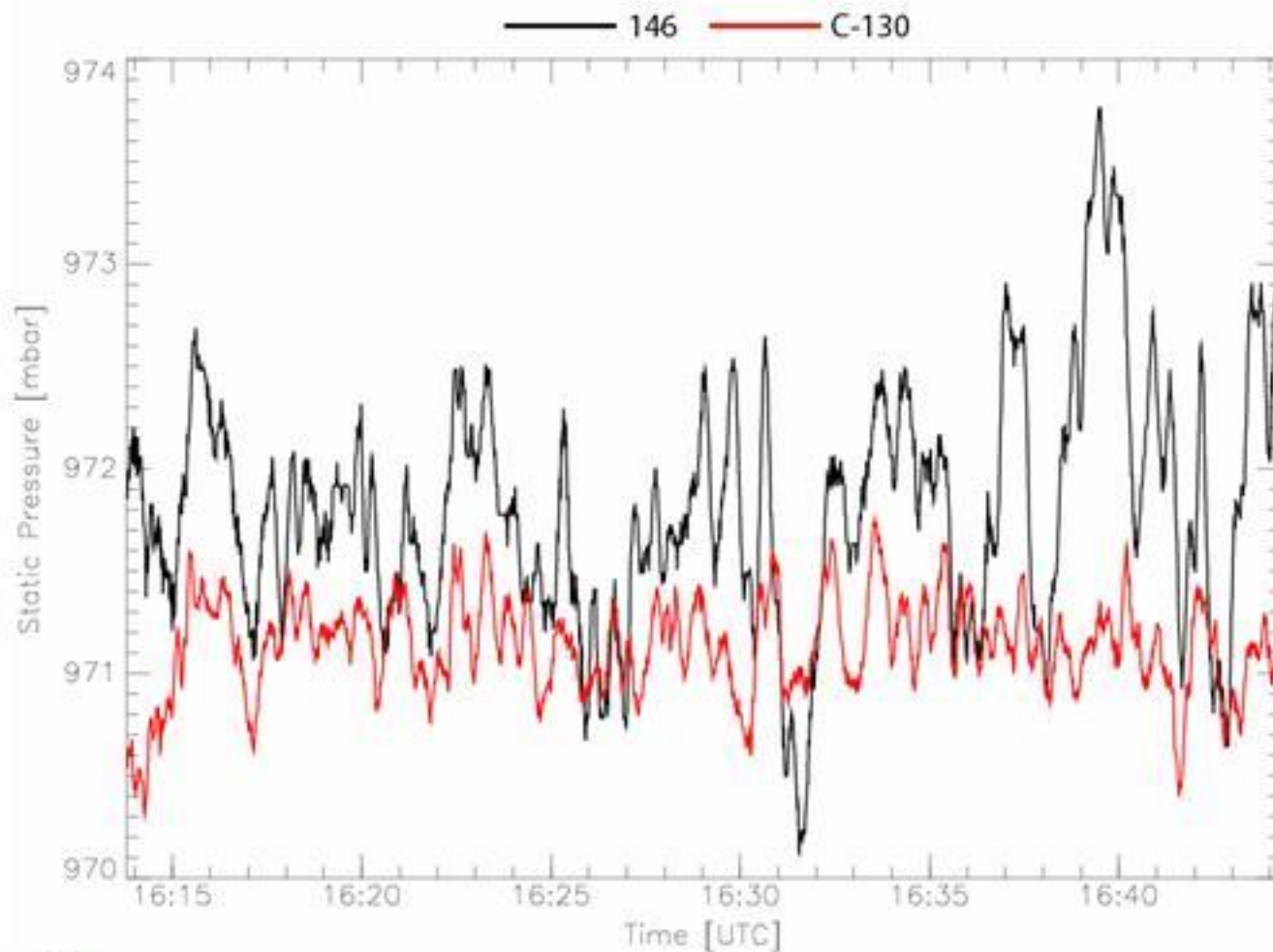
# Clear air comparisons from the orbit

## 2. Dew Point Temperature



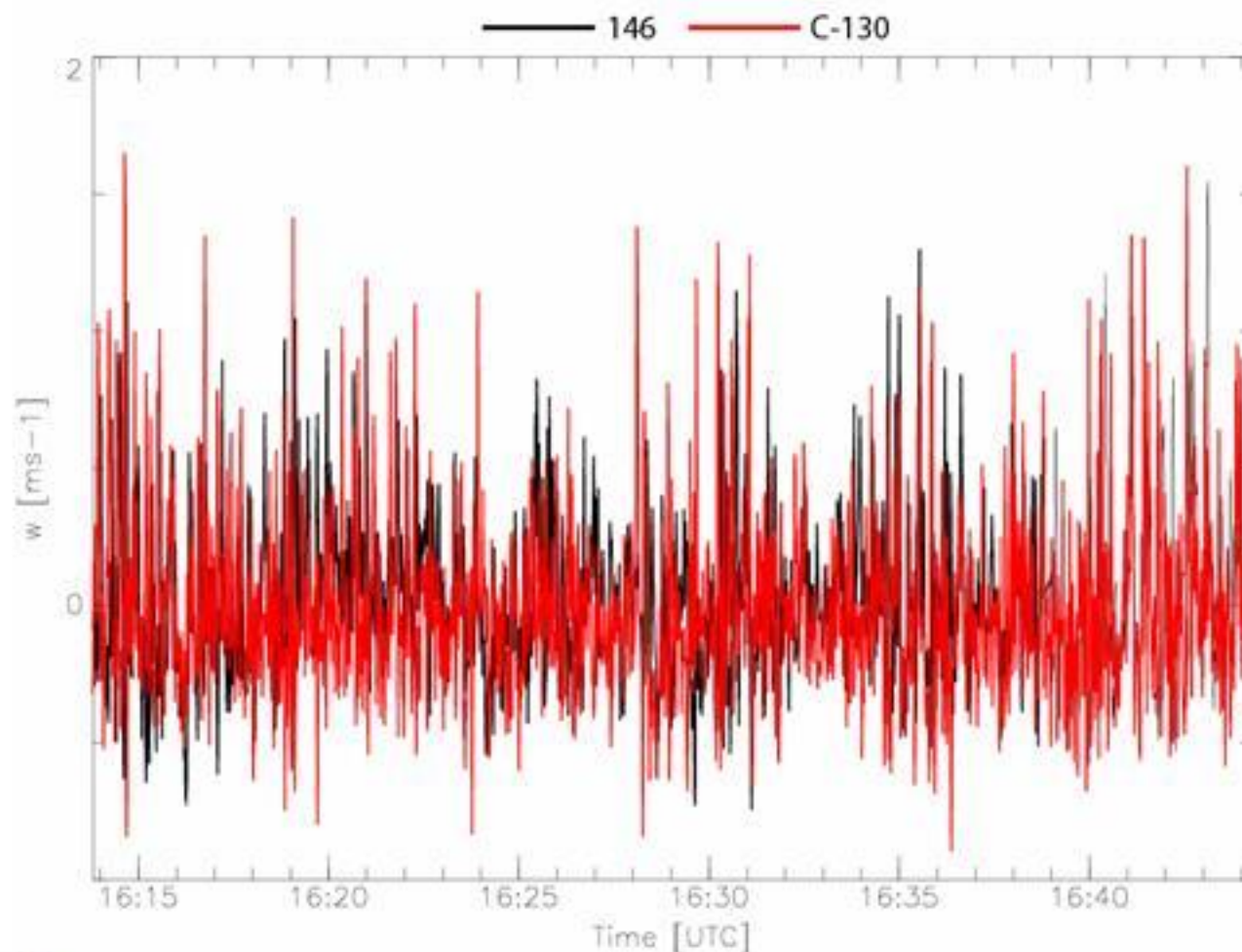
# Clear air comparisons from the orbit

## 3. Static Pressure



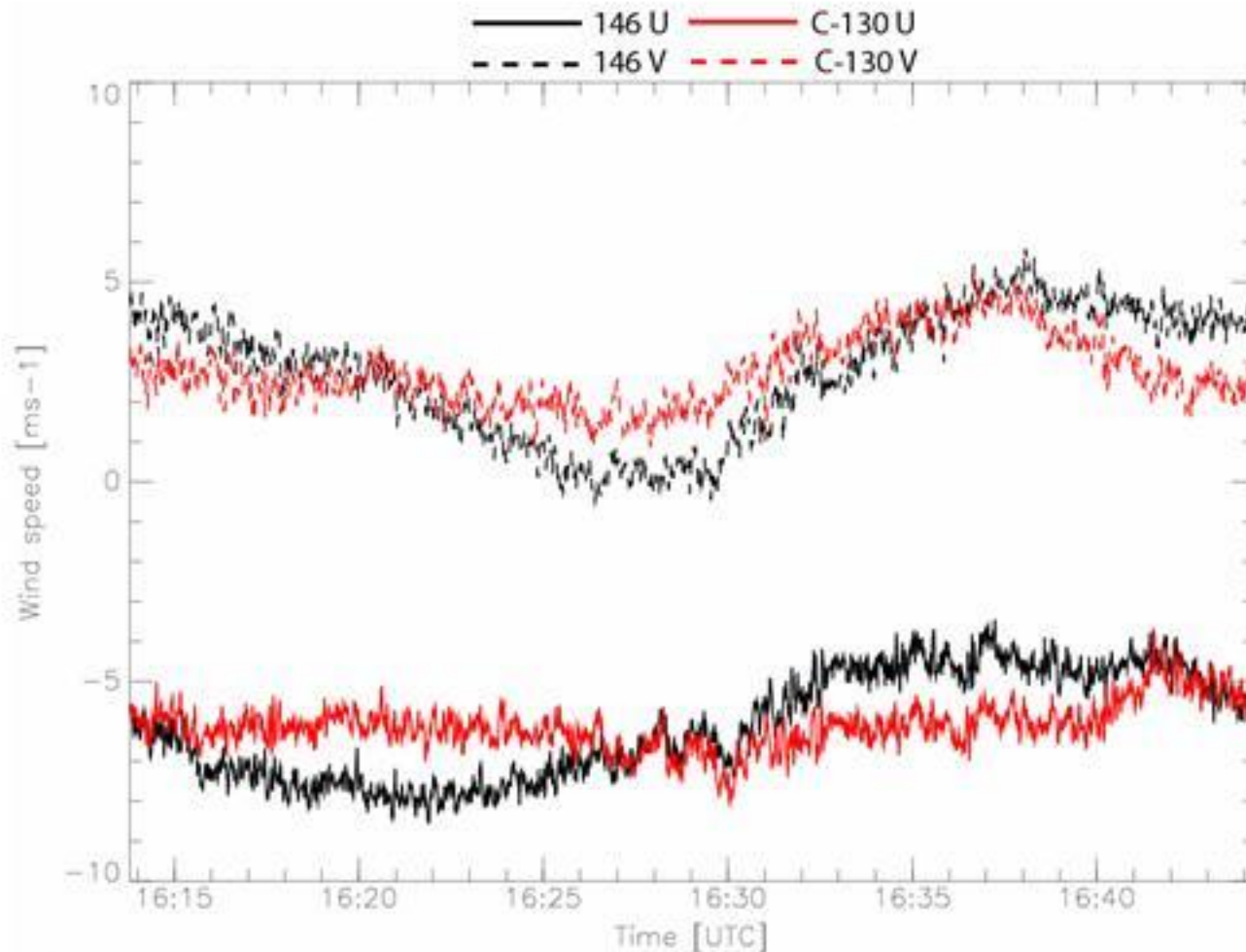
# Clear air comparisons from the orbit

## 4. Vertical Wind



# Clear air comparisons from the orbit

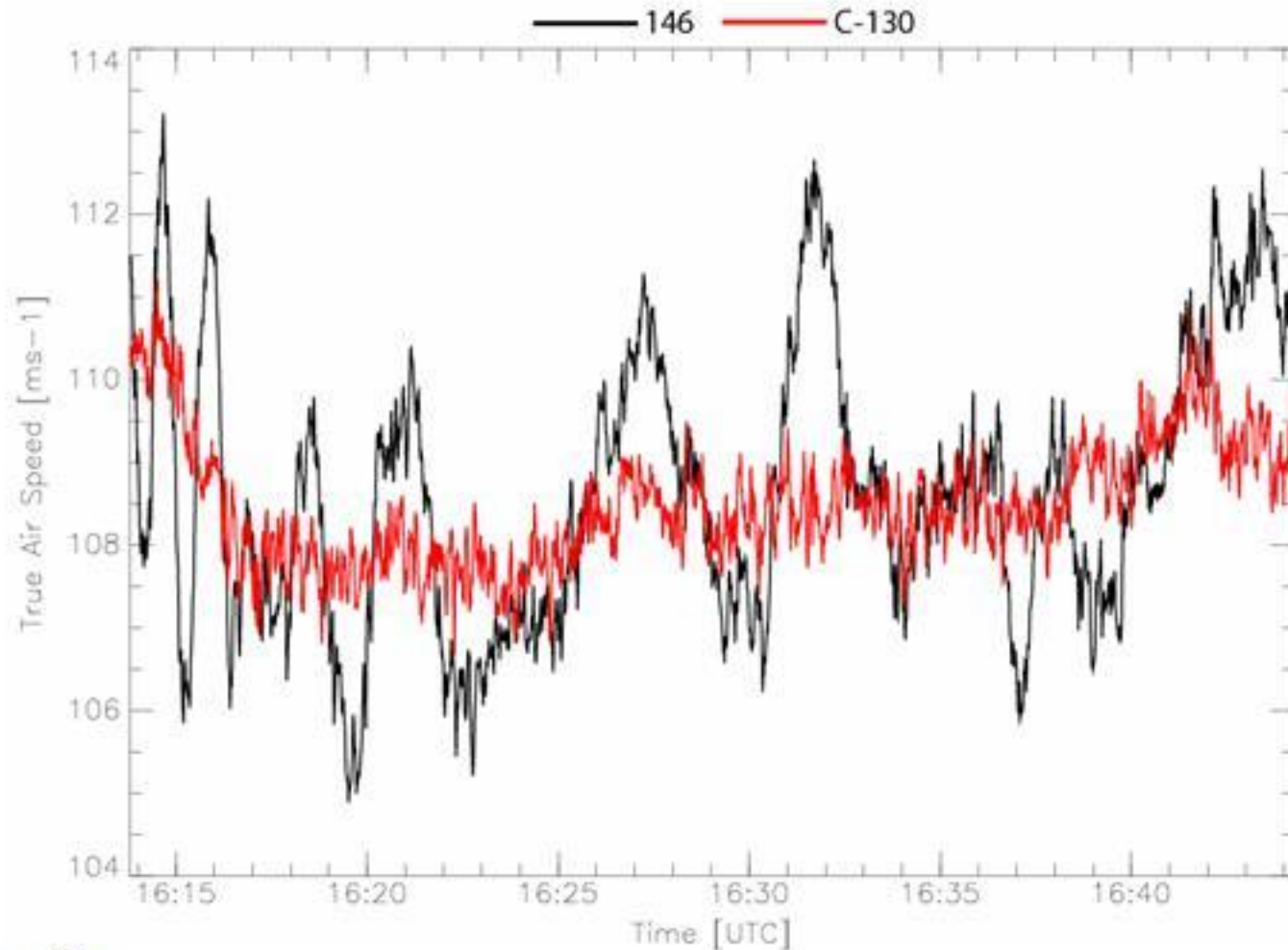
## 5. U and V components





# Clear air comparisons from the orbit

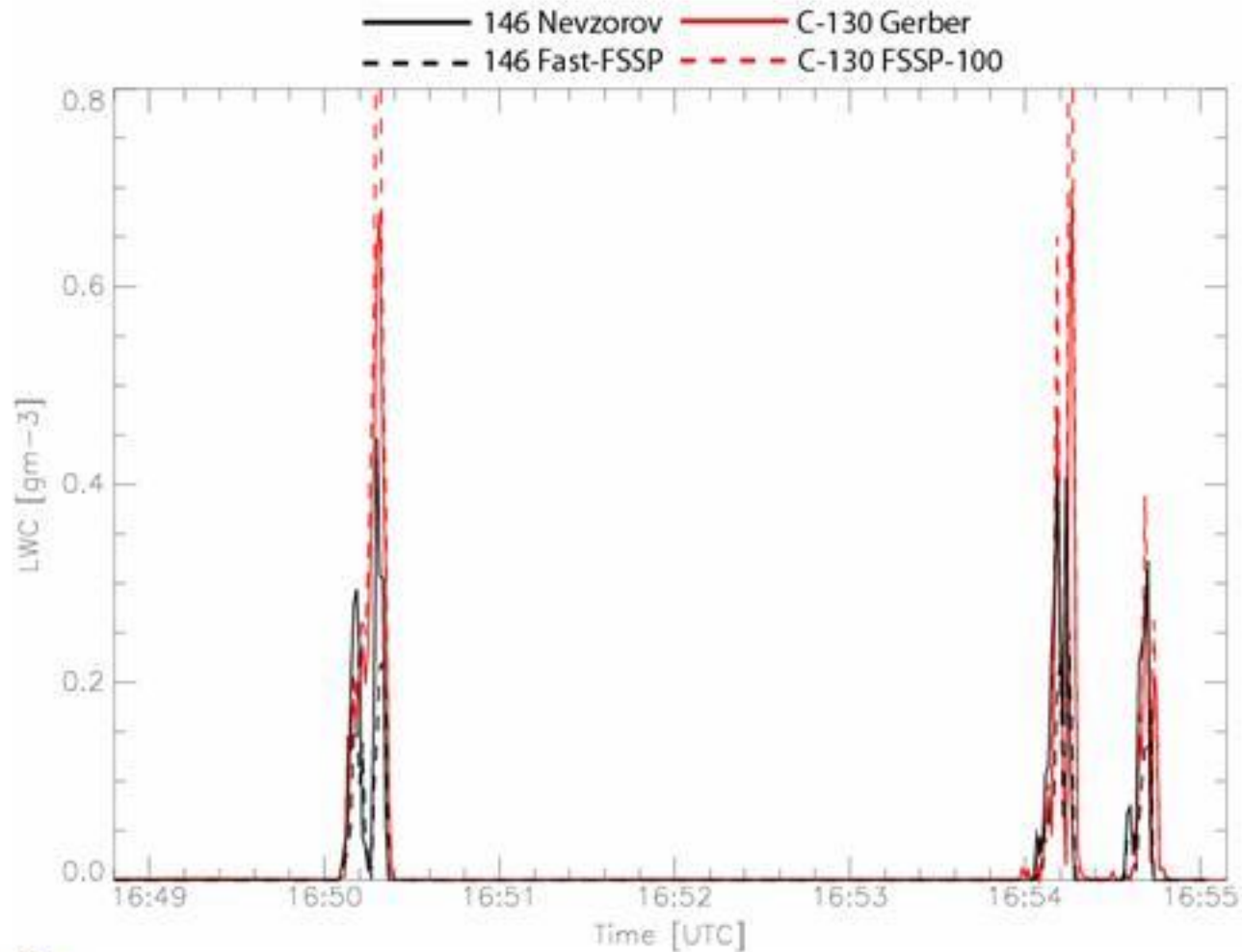
## 6. True Air Speed



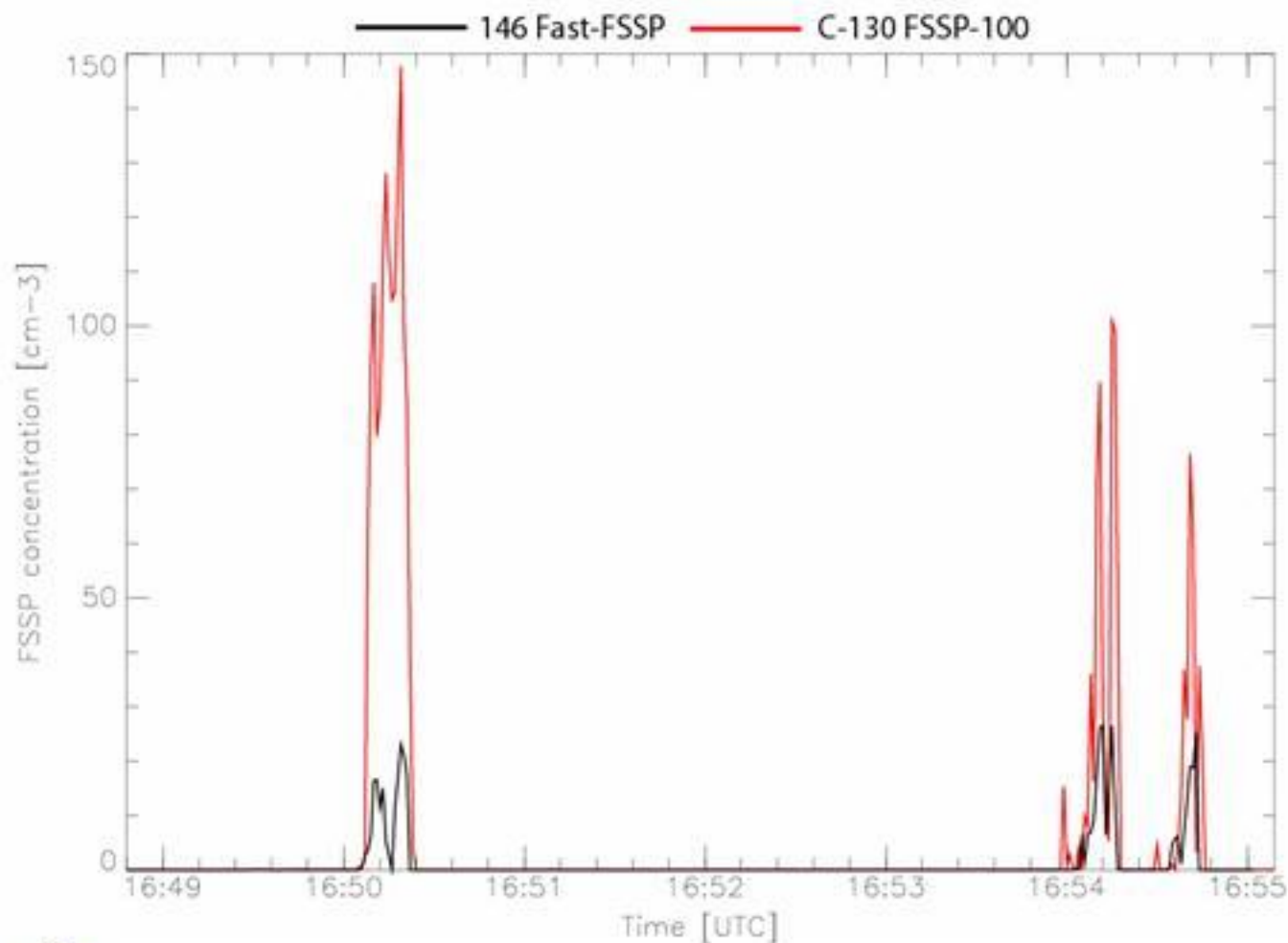


**Cloud run**

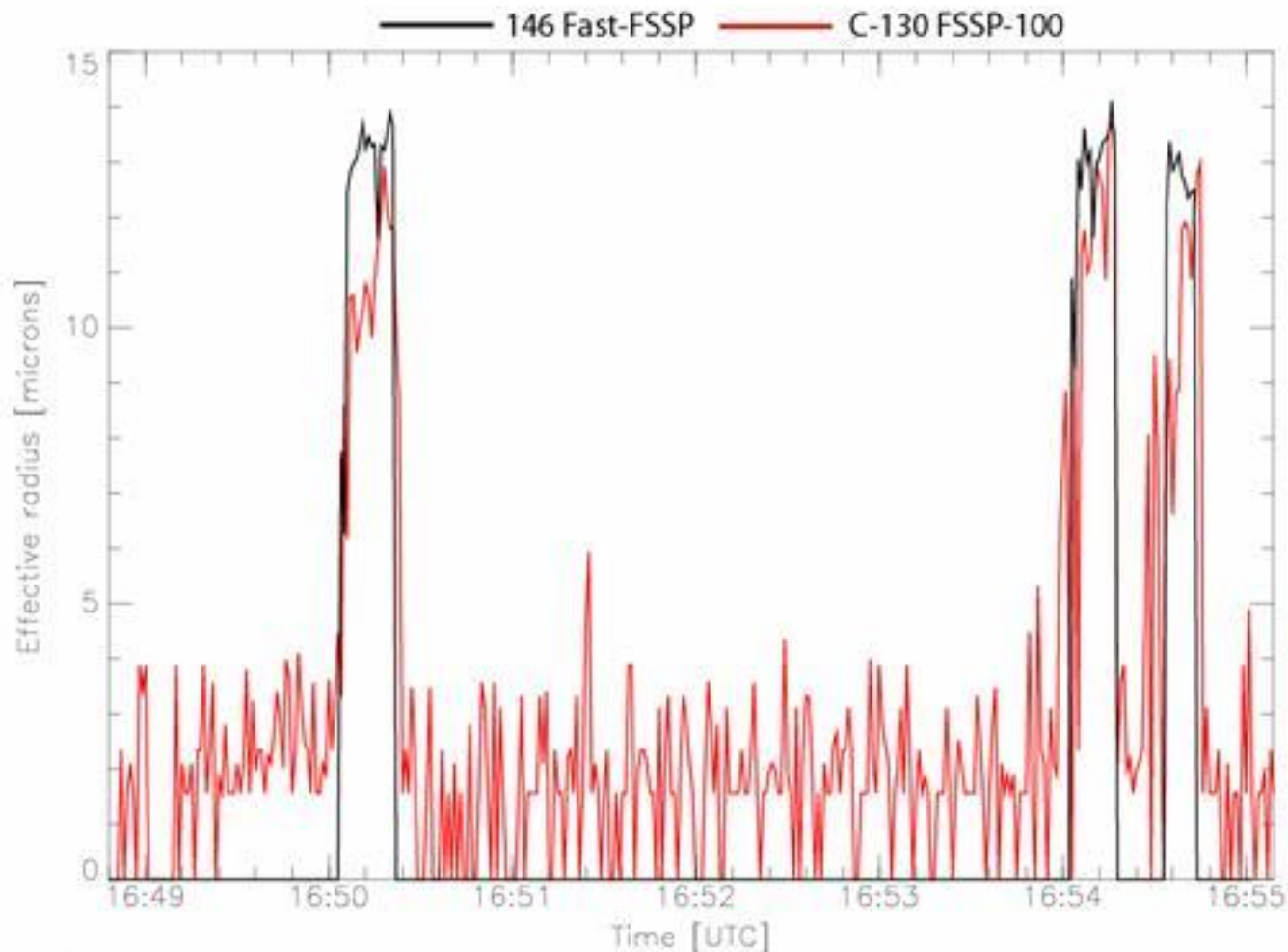
# In cloud comparisons 1. LWC



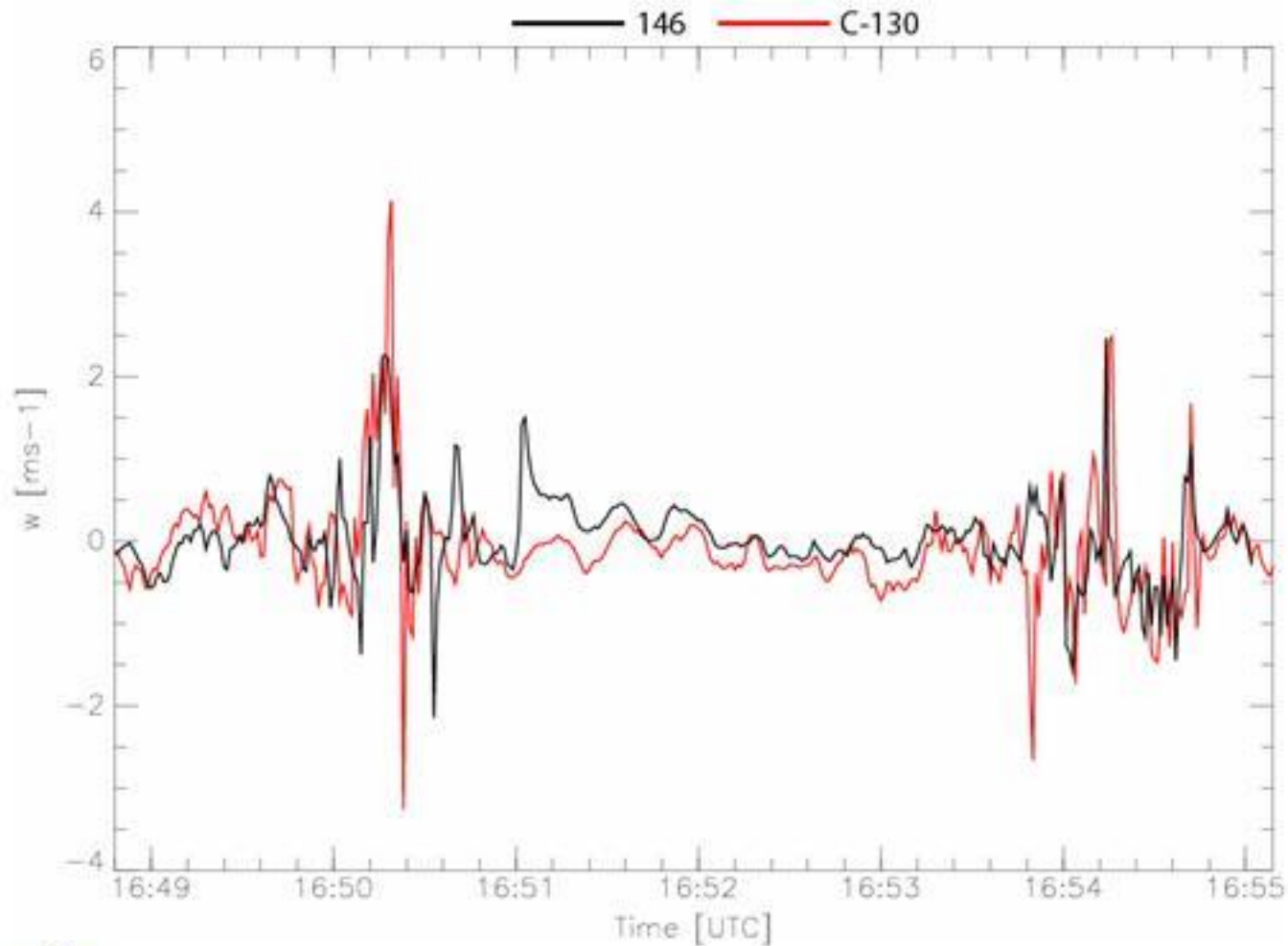
# In cloud comparisons 2. Concentration



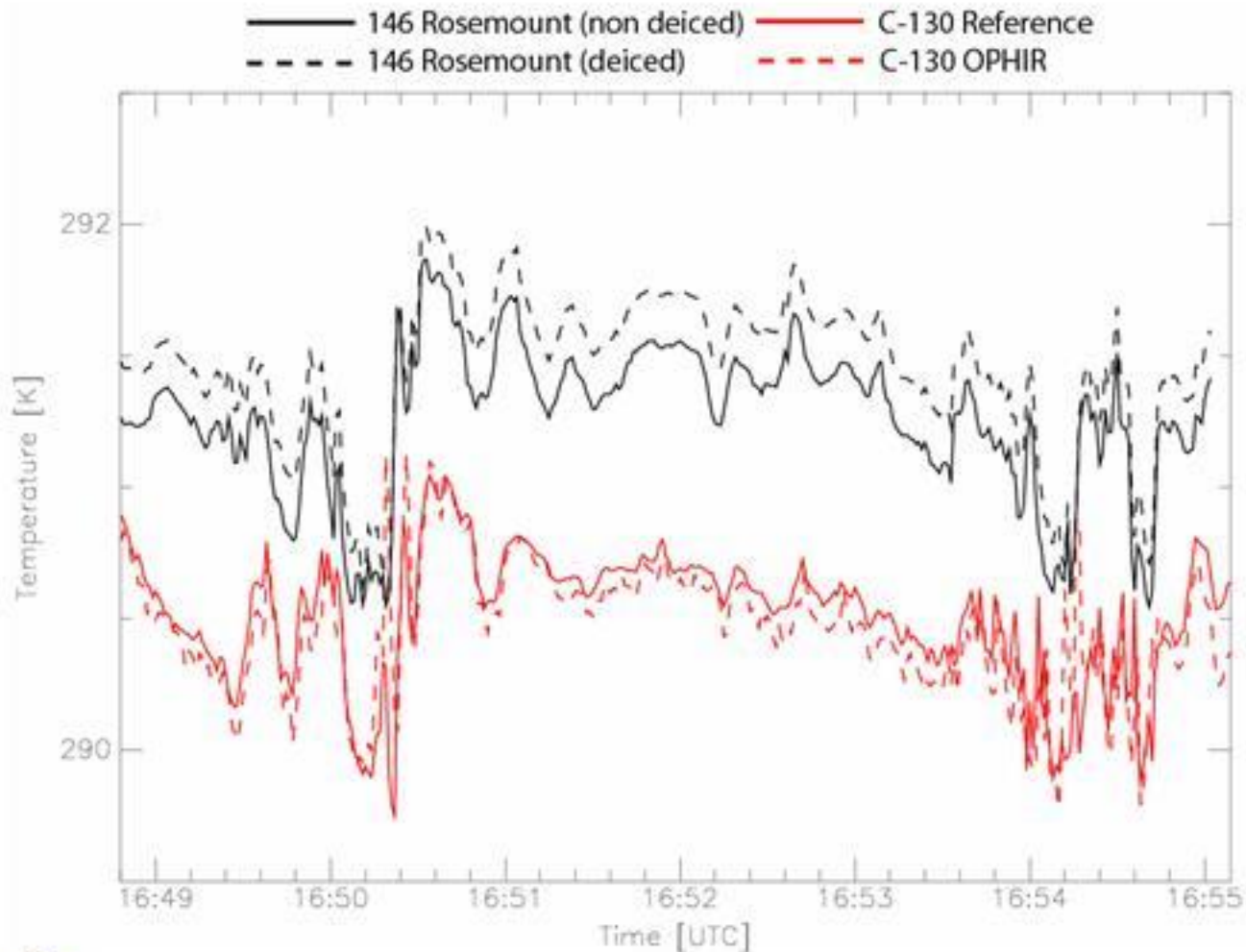
# In cloud comparisons 3. Effective radius



# In cloud comparisons 4. Vertical velocity



# In cloud comparisons 5. Temperature



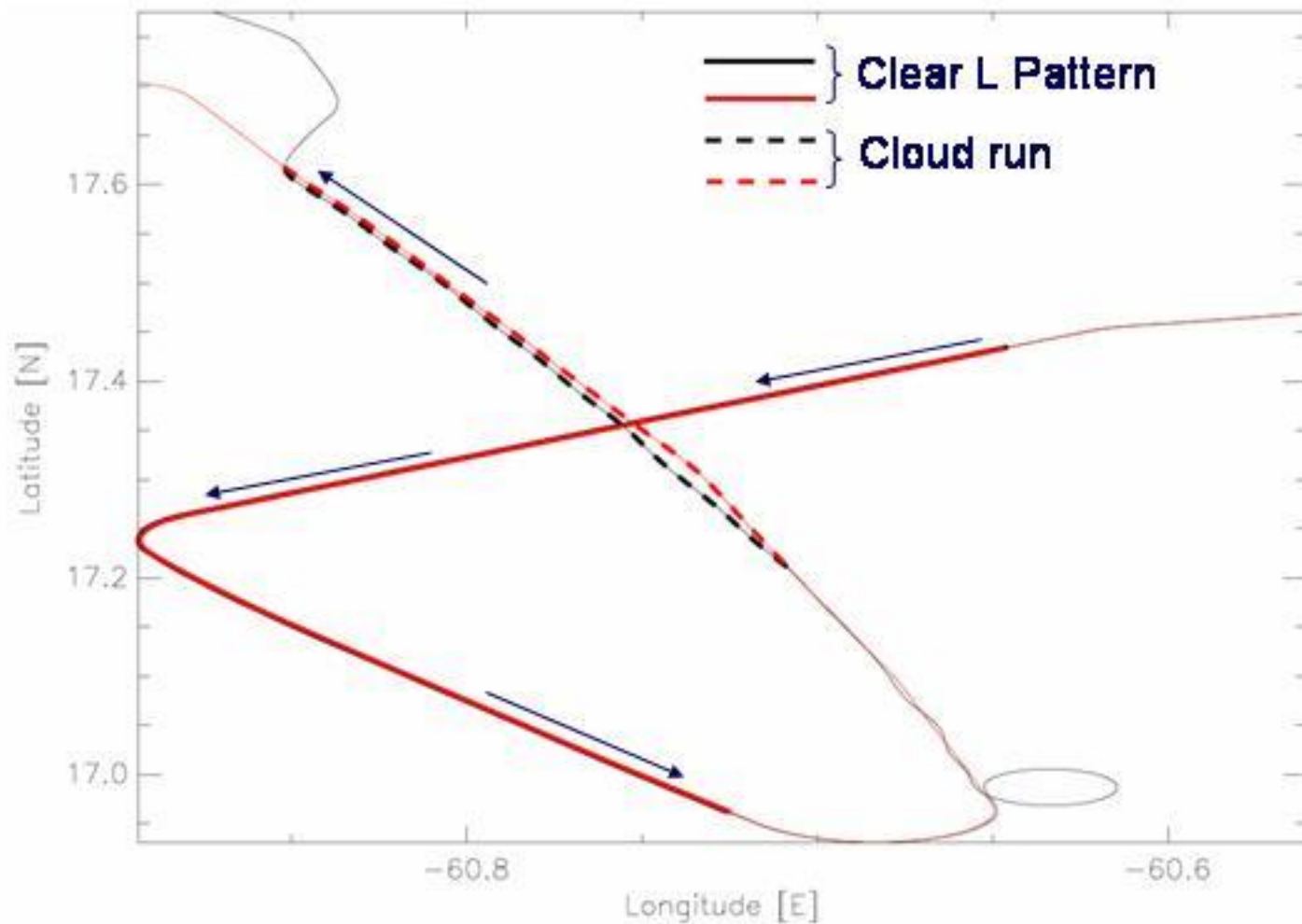


Preliminary comparison between 146 and King  
Air data from RICO flight 18/01/2005

Steven Abel

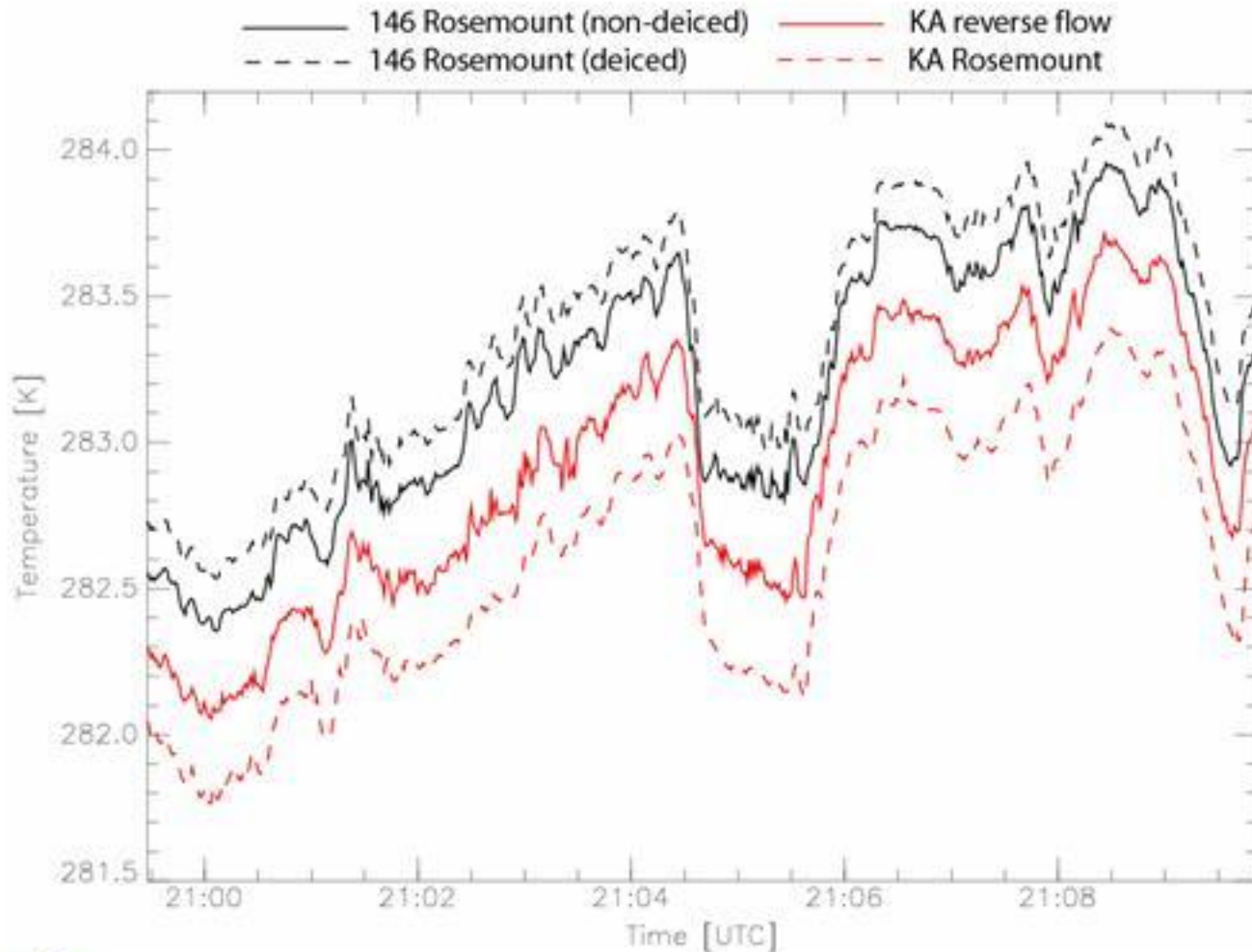


- Clear air comparisons.
- Cloudy comparisons. Note that 146 data is shifted back in time by 95 seconds as it was following the King Air in cloud.



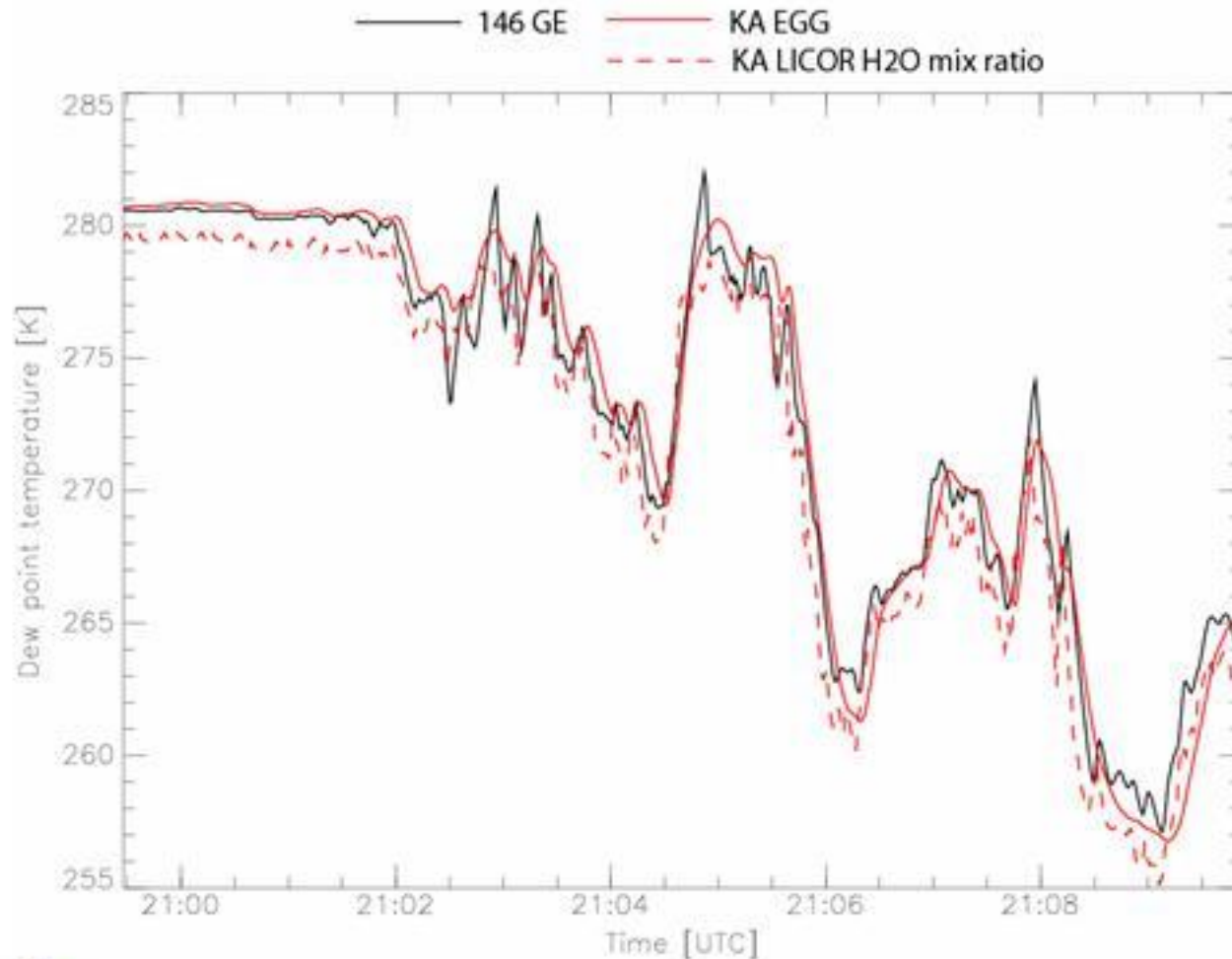
# Clear air comparisons from the L pattern

## 1. Temperature



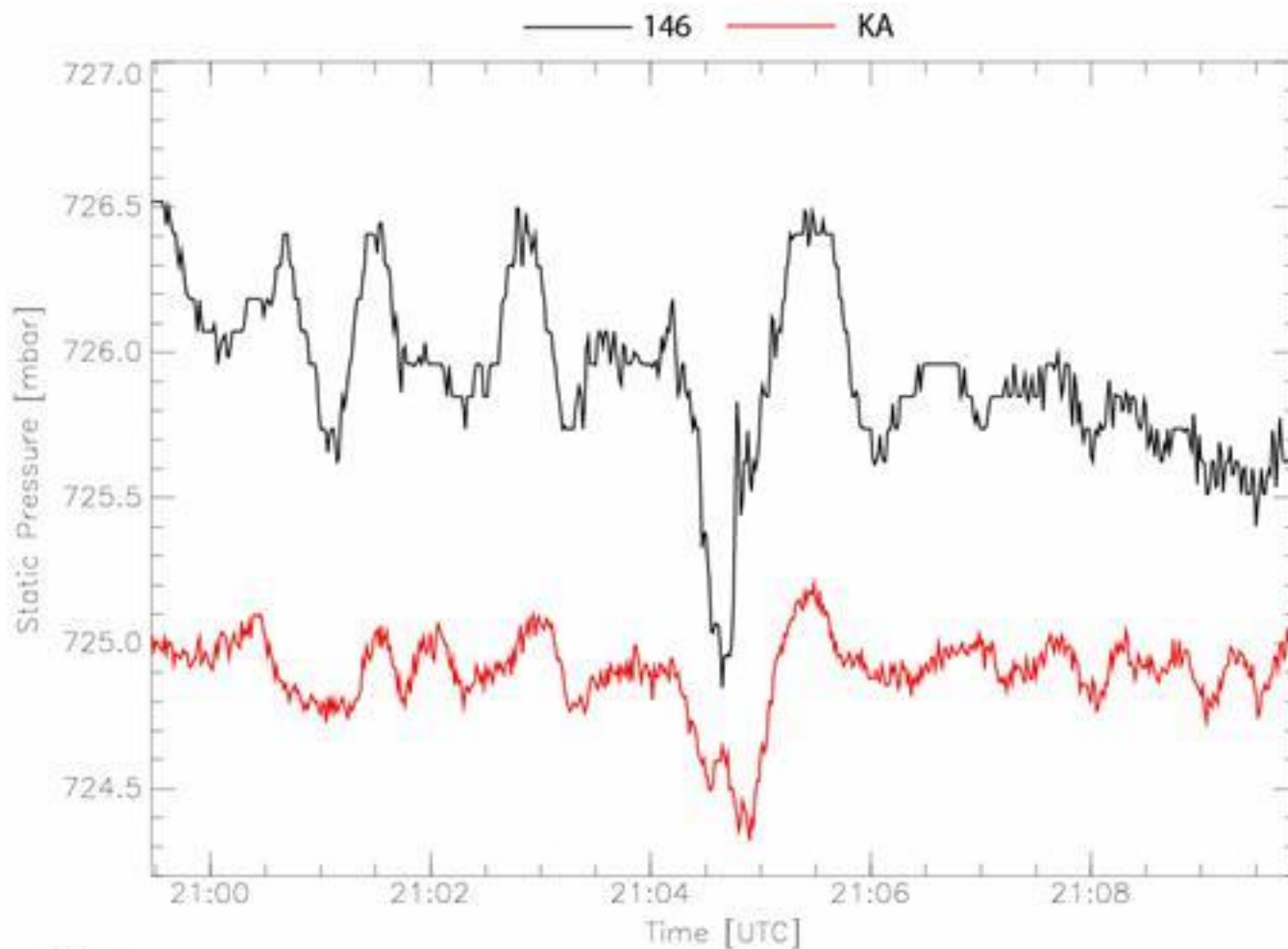
# Clear air comparisons from the L pattern

## 2. Dew Point Temperature



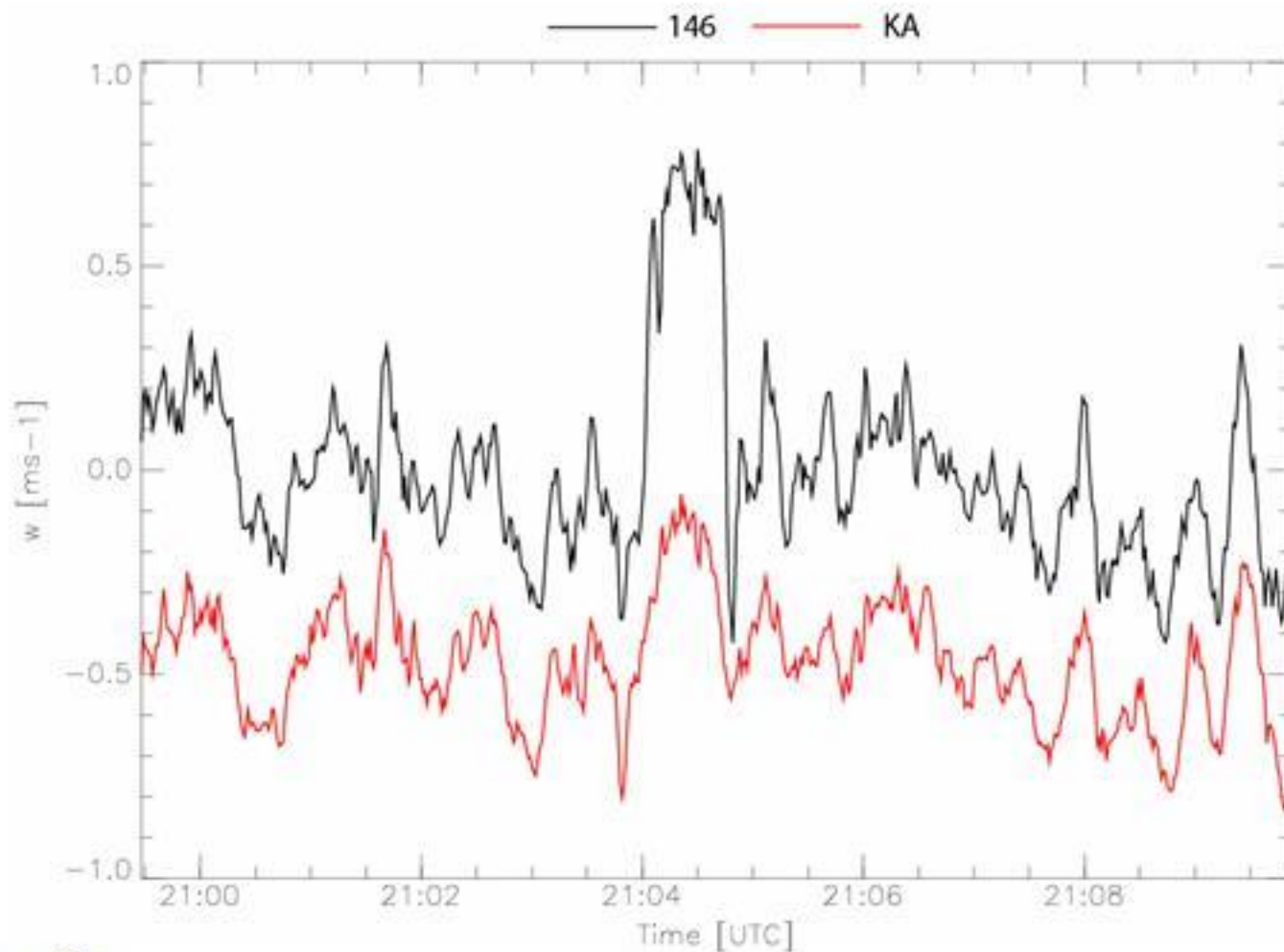
# Clear air comparisons from the L pattern

## 3. Static Pressure



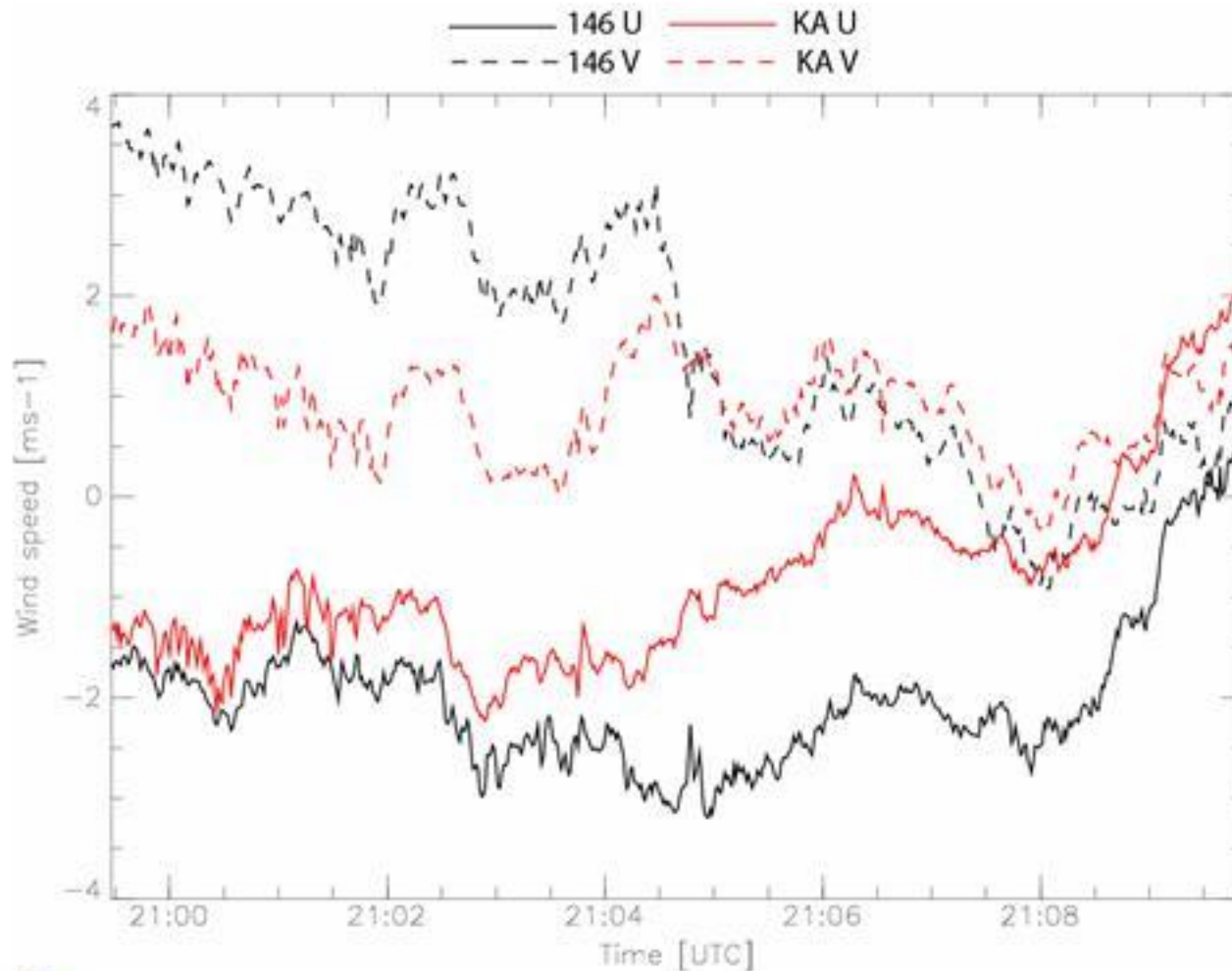
# Clear air comparisons from the L pattern

## 4. Vertical Wind



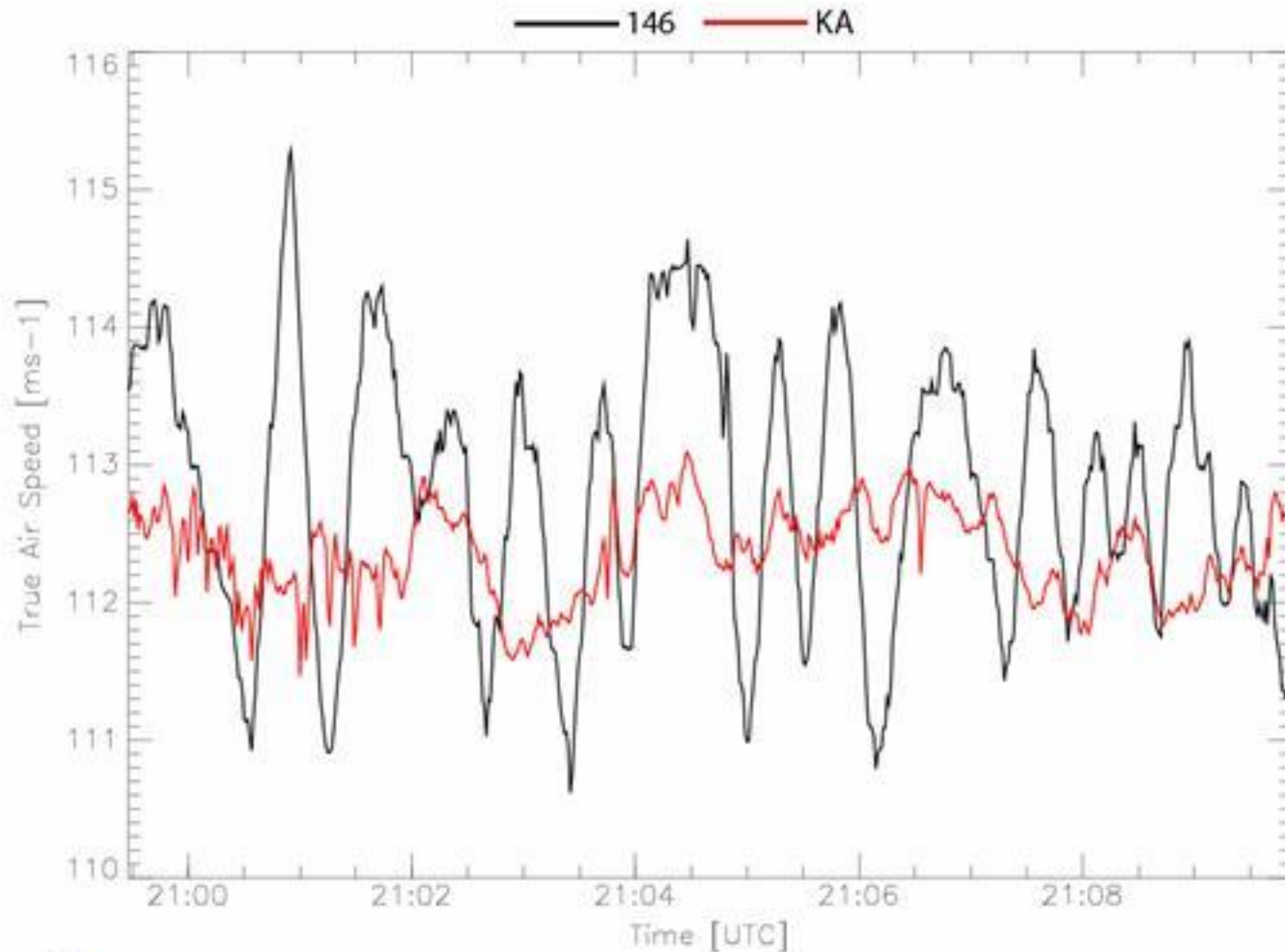
# Clear air comparisons from the L pattern

## 5. U and V components



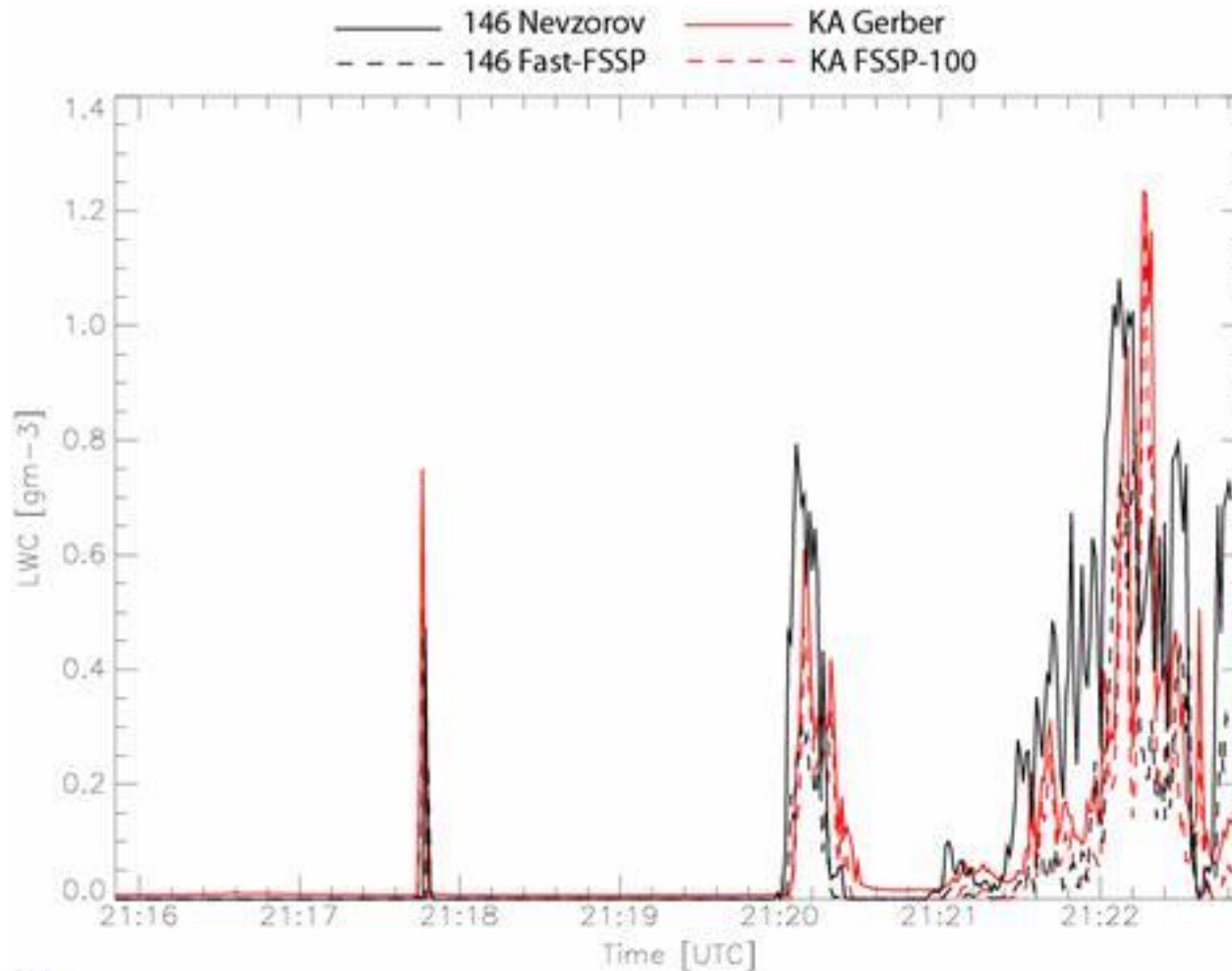
# Clear air comparisons from the L pattern

## 6. True Air Speed

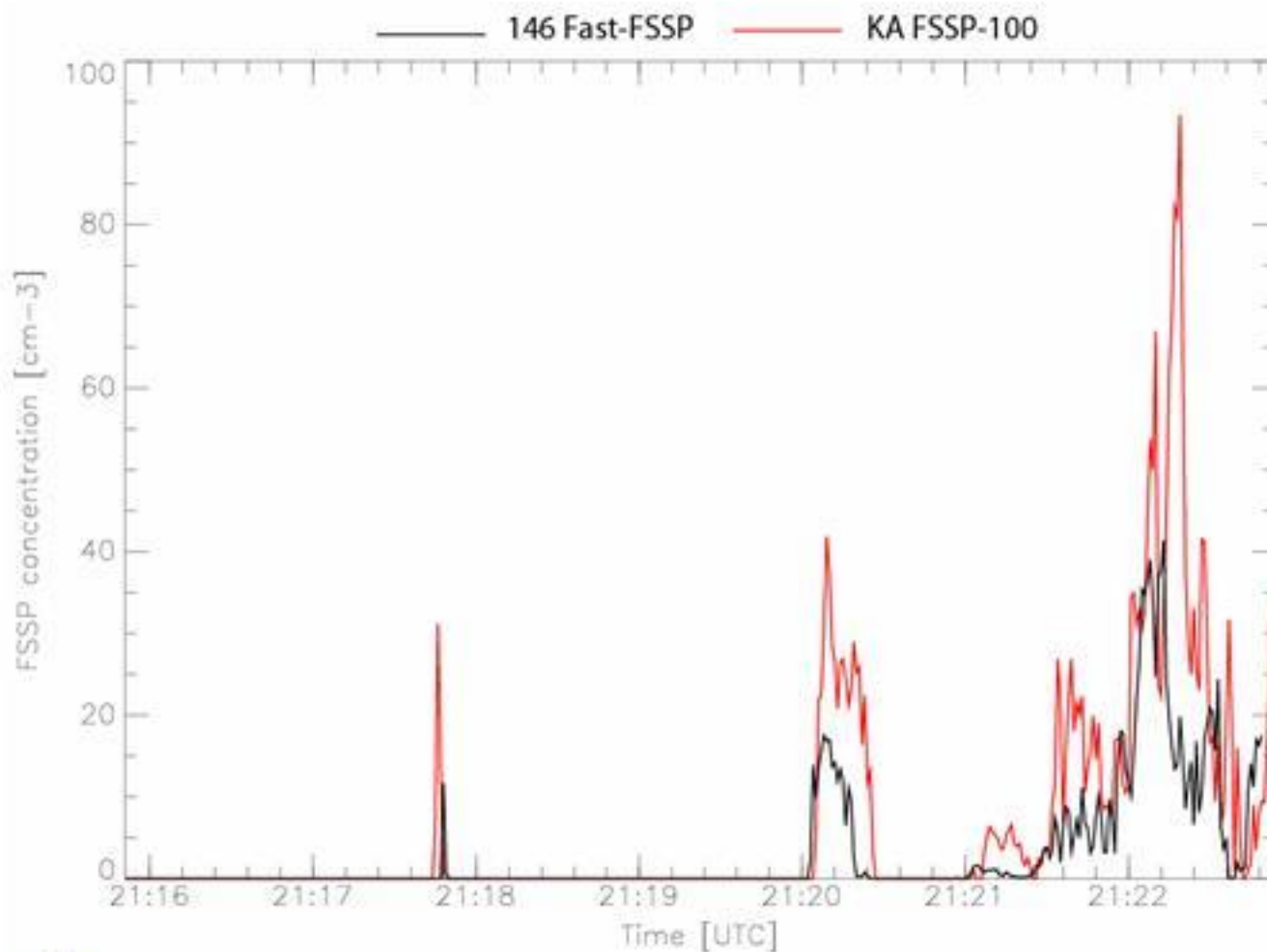




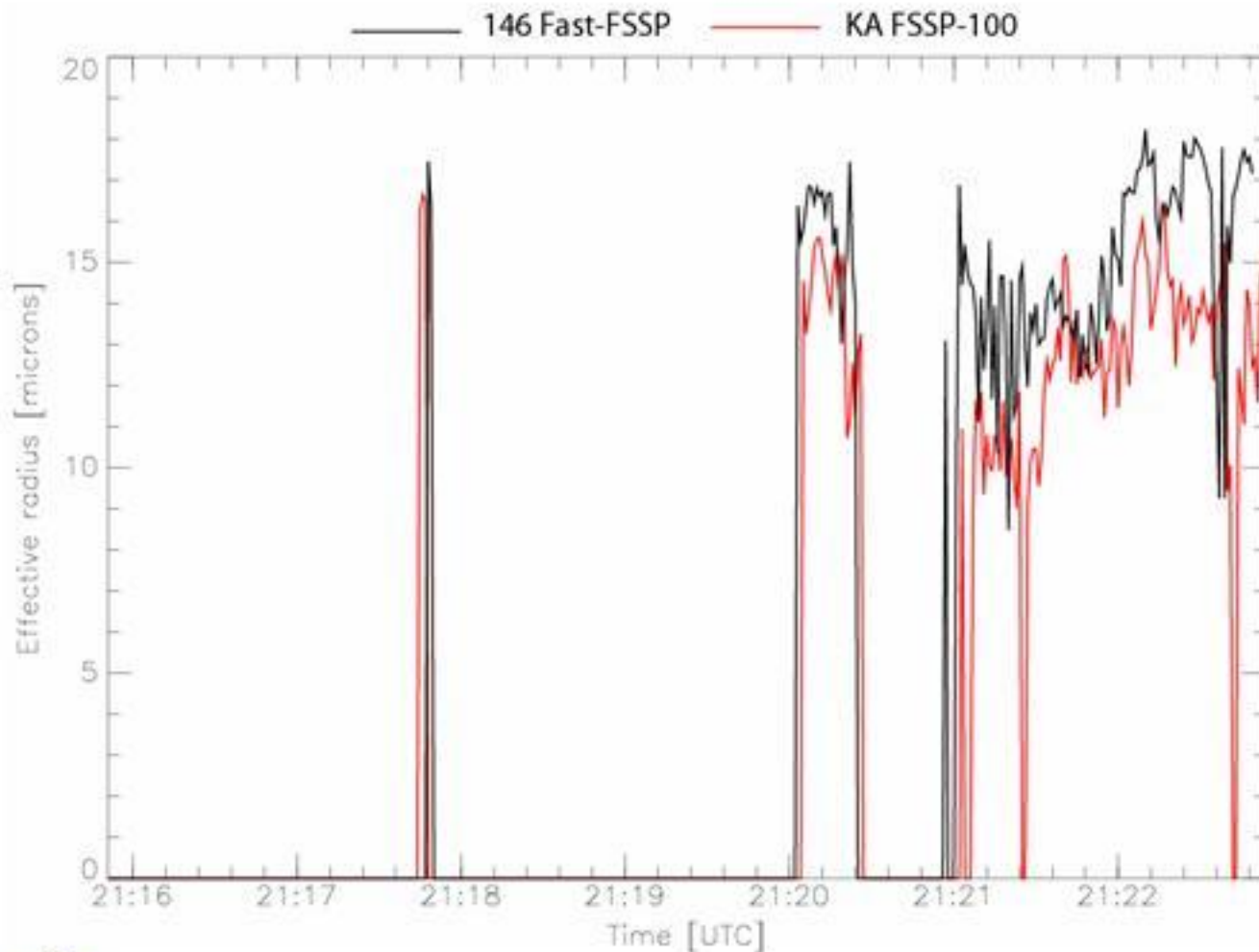
# In cloud comparisons 1. LWC



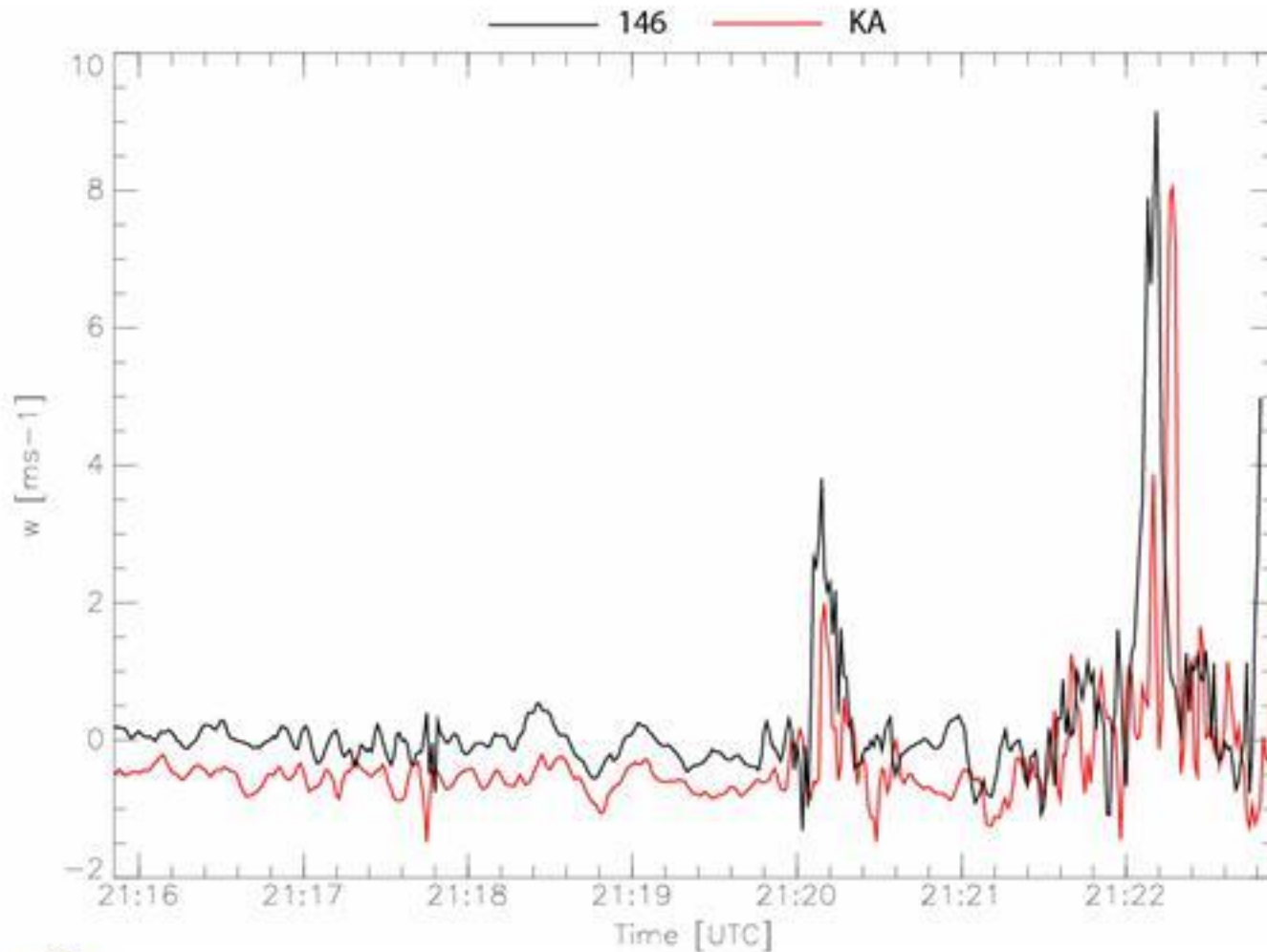
# In cloud comparisons 2. Concentration



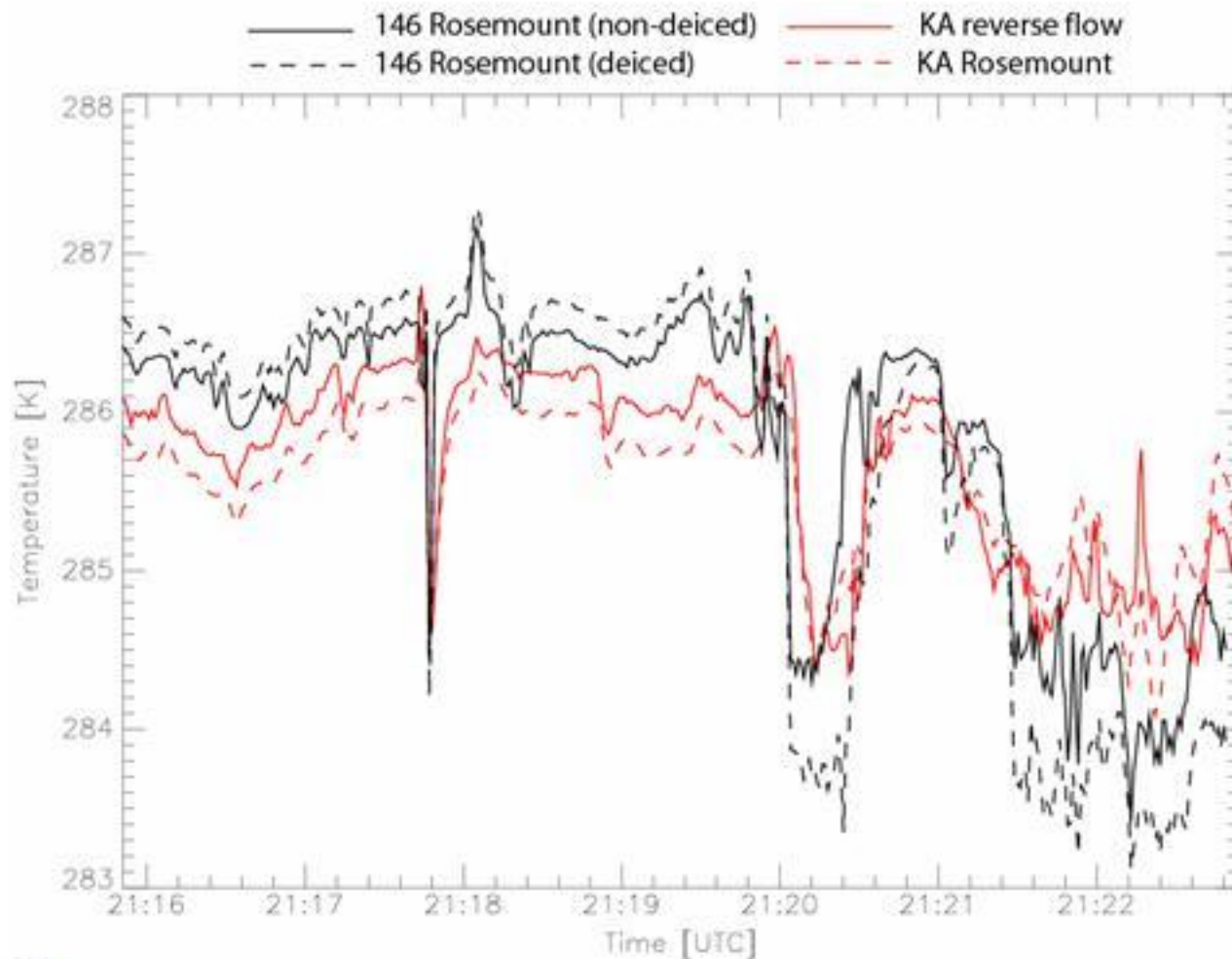
# In cloud comparisons 3. Effective radius



# In cloud comparisons 4. Vertical velocity



# In cloud comparisons 5. Temperature



- Temperature
  - 146 Rosemount warmer than both C130 (0.6-0.7 K) and KA (~0.5K)
  - 146 deiced warmer than 146 non-deiced (uncertainty in adiabatic recovery factor)
- Dew point
  - 146 > C130 (~2K at 256K, ~0.5K at 293K)
  - 146 good agreement with KA EGG (~0.2K at 280K)
- Static pressure
  - 146 > C130 (~0.7hPa) and KA (~1.0hPa)
  - difference is larger (and for C130, in wrong sense) than expected from estimated altitude separations

- vertical wind
  - on L-patterns, good general agreement in magnitude of fluctuations – need to examine stats
  - on low-alt orbit, appears to be good general agreement but need to check stats of high-rate data (variance and skewness)
- horizontal wind
  - 146 exhibits heading-related differences with both C130 and KA
  - likely related to errors in sideslip angle calibration
  - need to look at comparisons of mean TAS and compare with expected differences based on changes in separation.