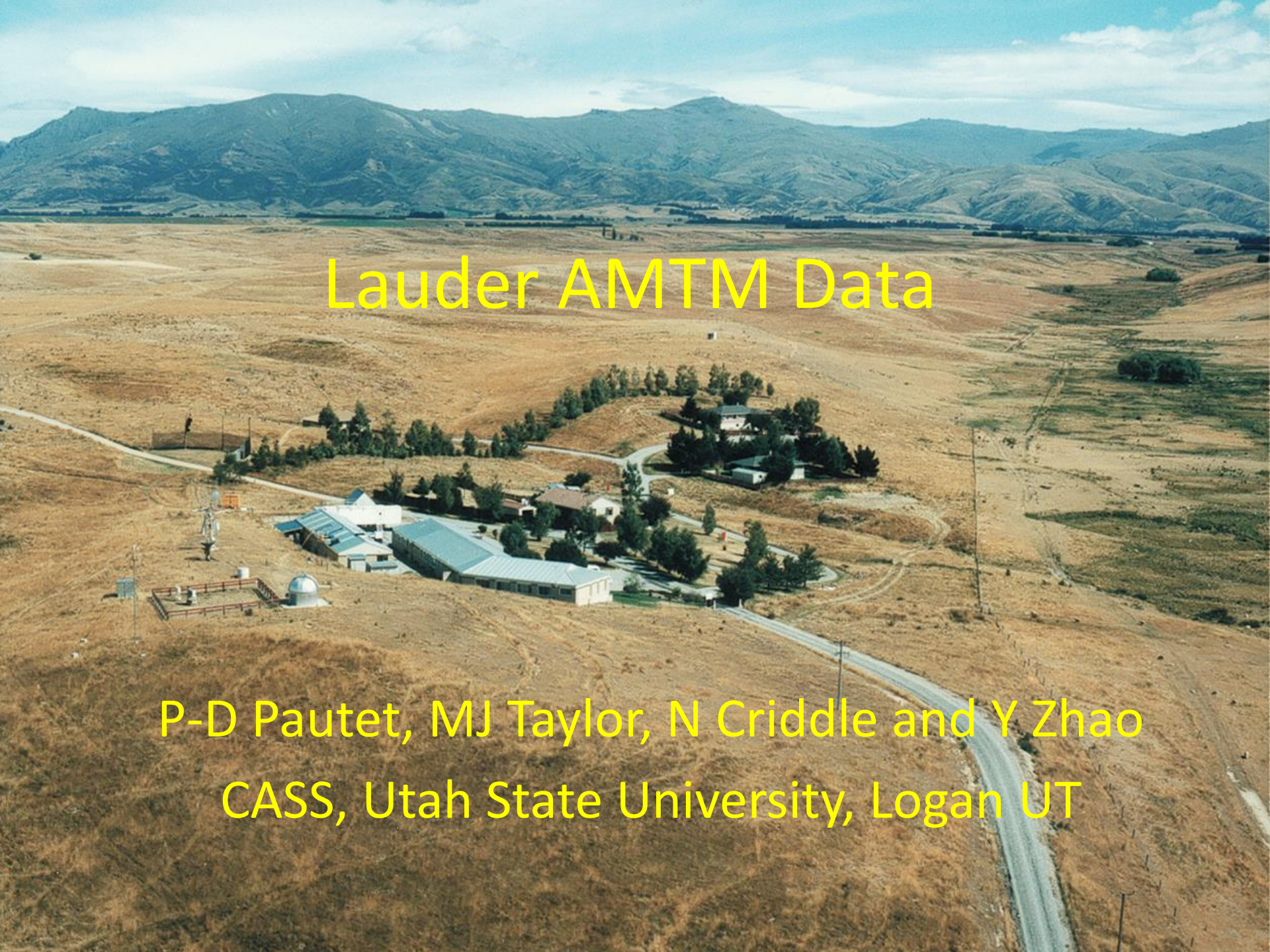


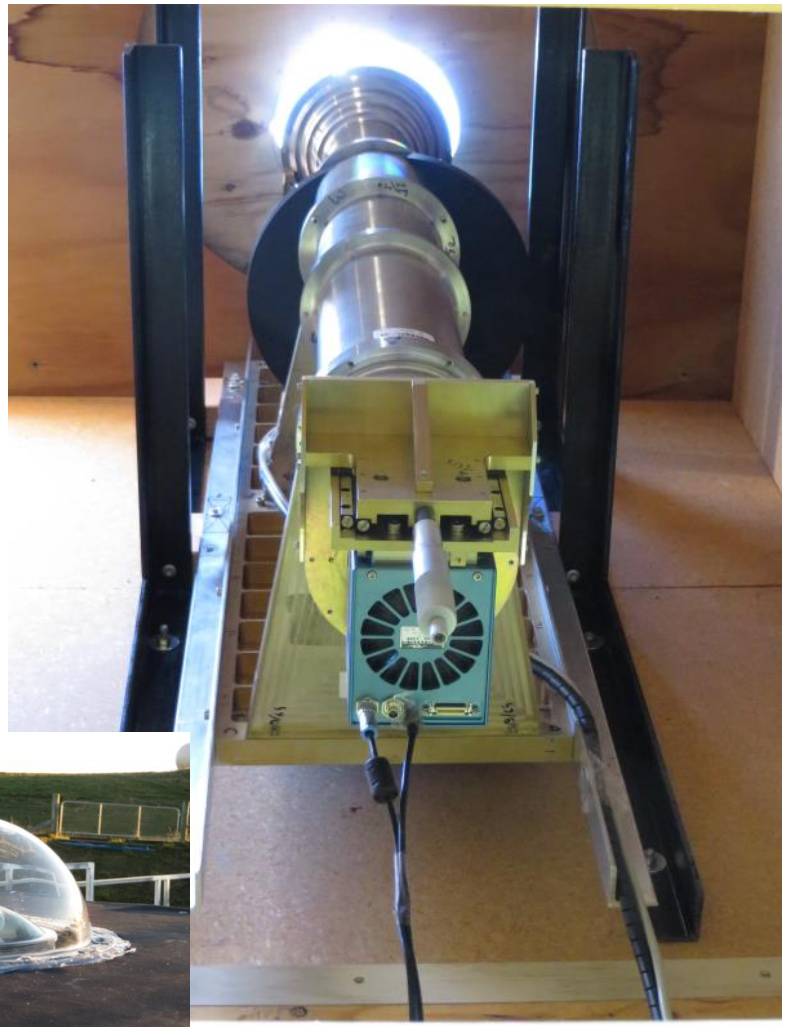
Lauder AMTM Data

P-D Pautet, MJ Taylor, N Criddle and Y Zhao
CASS, Utah State University, Logan UT

Ground-Based Correlative Measurements at Lauder Observatory

Lauder is ~5hrs drive from Christchurch

Ground-Based AMTM Measurements, Lauder Observatory (45.0°S)



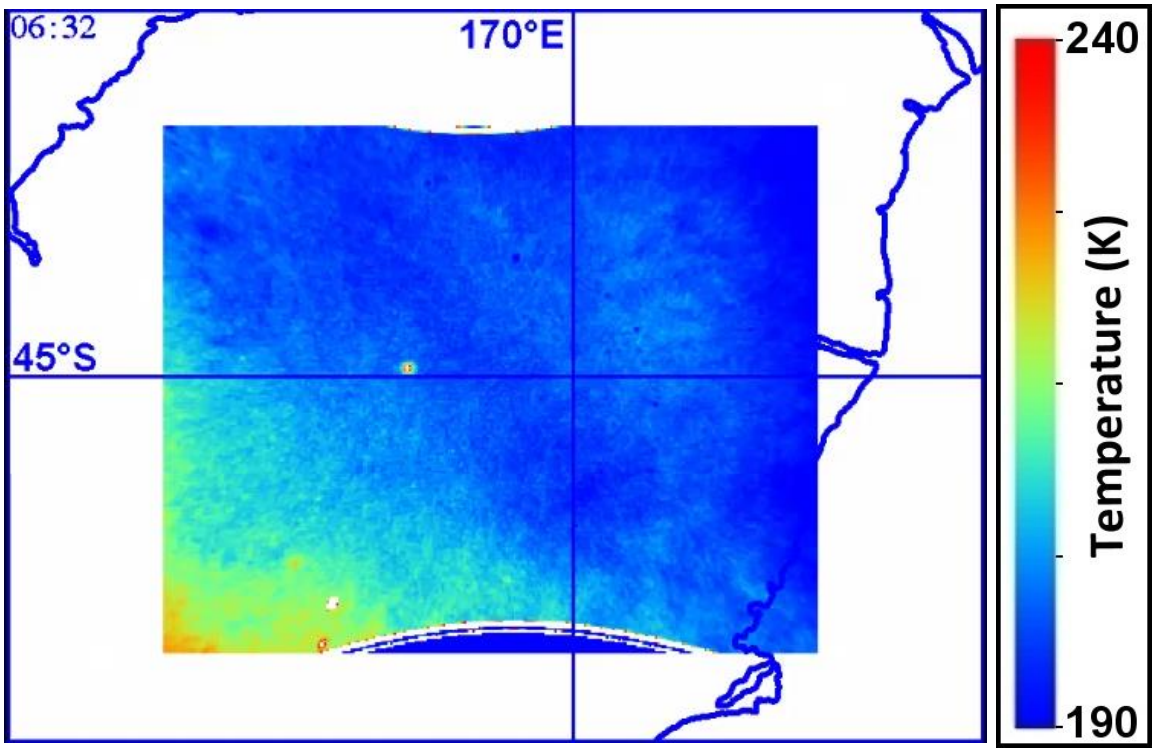
One zenith-looking mesospheric temperature mapper

- **FOV 120°**
- **1 temperature map every ~30s**

Data Processing

Same as GV AMTM:

- **Flat-fielding**
- **Combining $P_1(2)$, $P_1(4)$ and BG images to obtain temperature and intensity maps**
- **Projection on linear grid and possibly on a map**



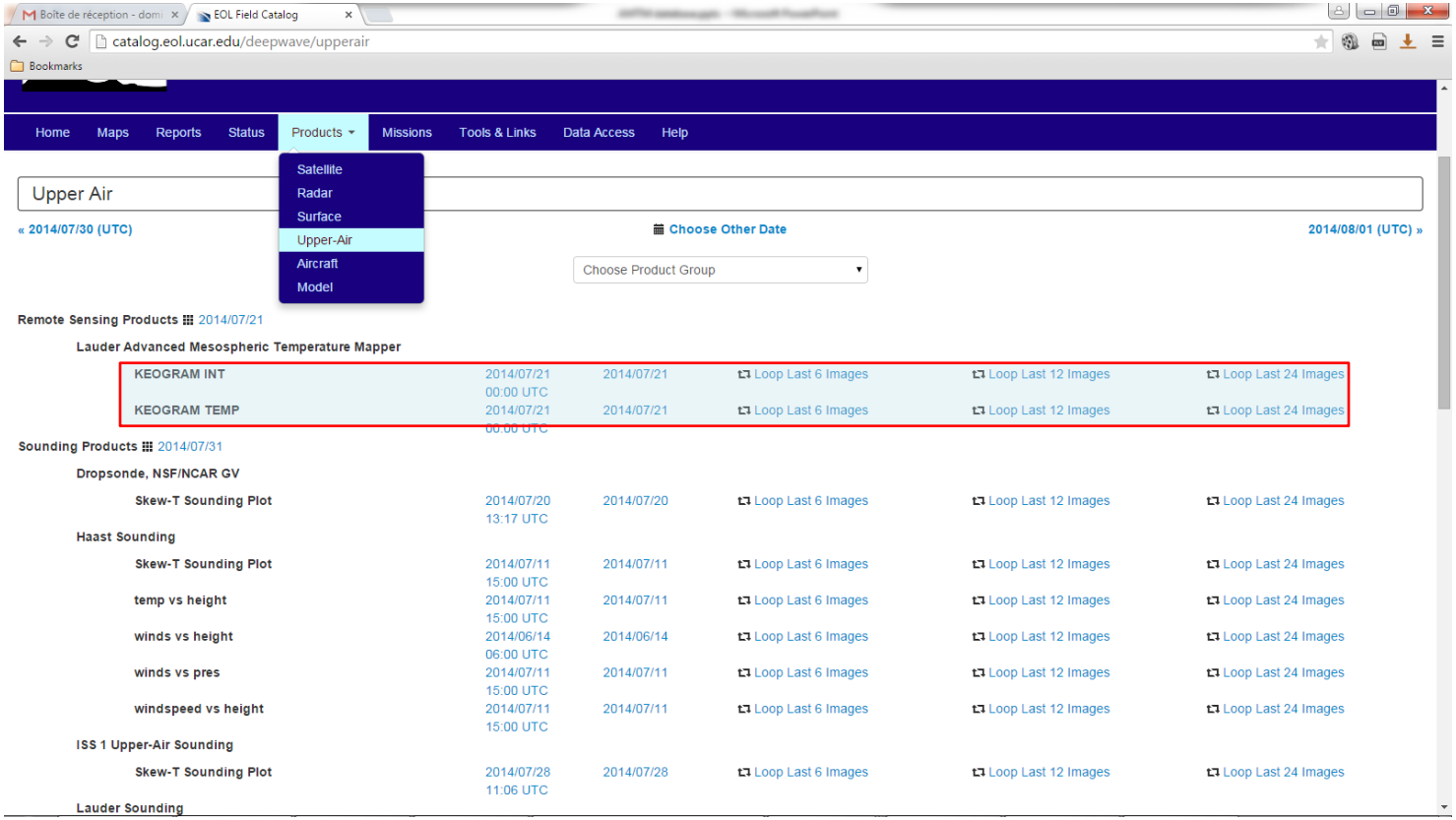
May 30-31

EOL Database (Upper-Air Products)

For each night (when the sky was not totally cloudy):

- **1 temperature keogram (NS+WE)**
- **1 intensity keogram (NS+WE)**

Movies are also available (temperature and intensity) upon request



Summary Lauder AMTM Observations

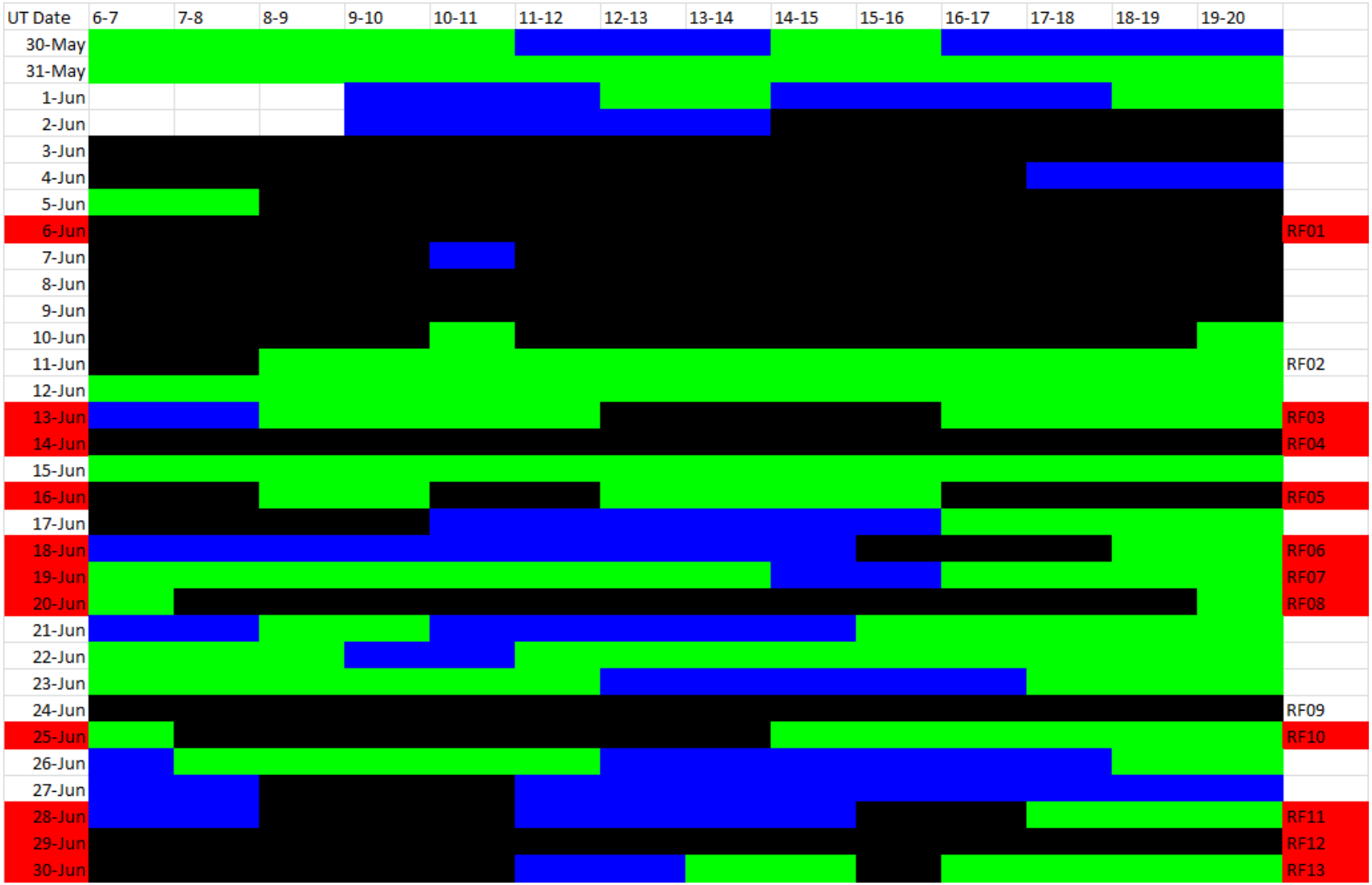
51 consecutive nights of observations from May 30th to July 21th:

- **11 nights totally cloudy**
- **25 partially cloudy nights**
- **15 clear nights**

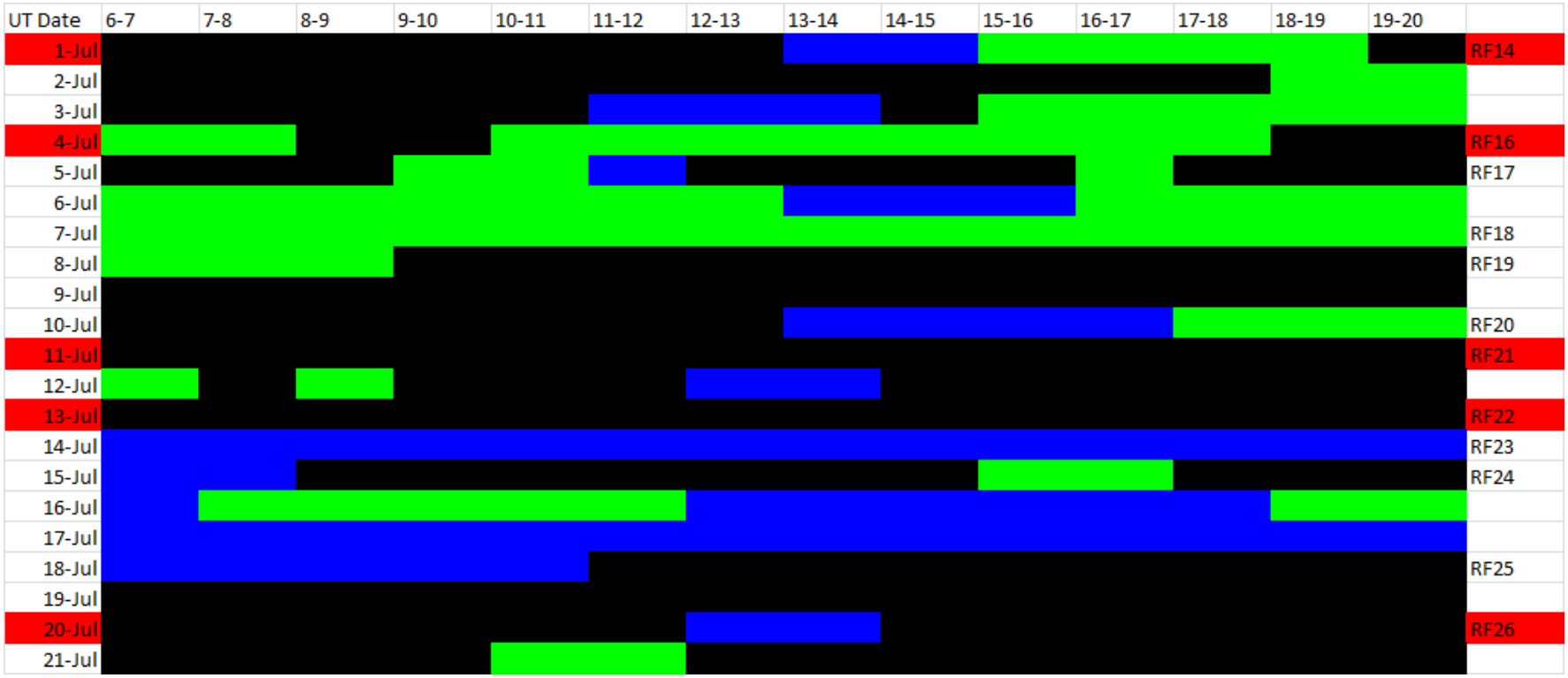
Amongst the clear/partially clear nights (40):

- **28 with standing waves (+ usually propagating GWs as well) with durations from ~1 to ~14 hours**
- **12 with only propagating GWs**

Predominant GWs over Lauder - June

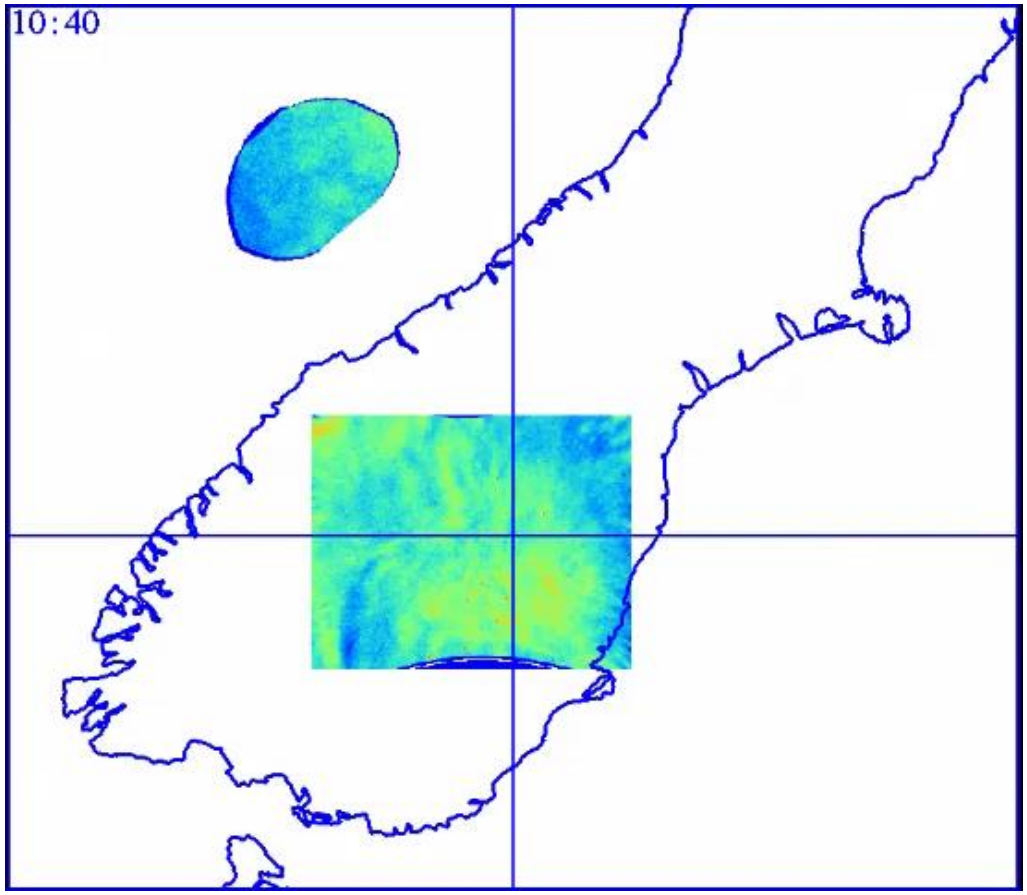


Predominant GWs over Lauder - July



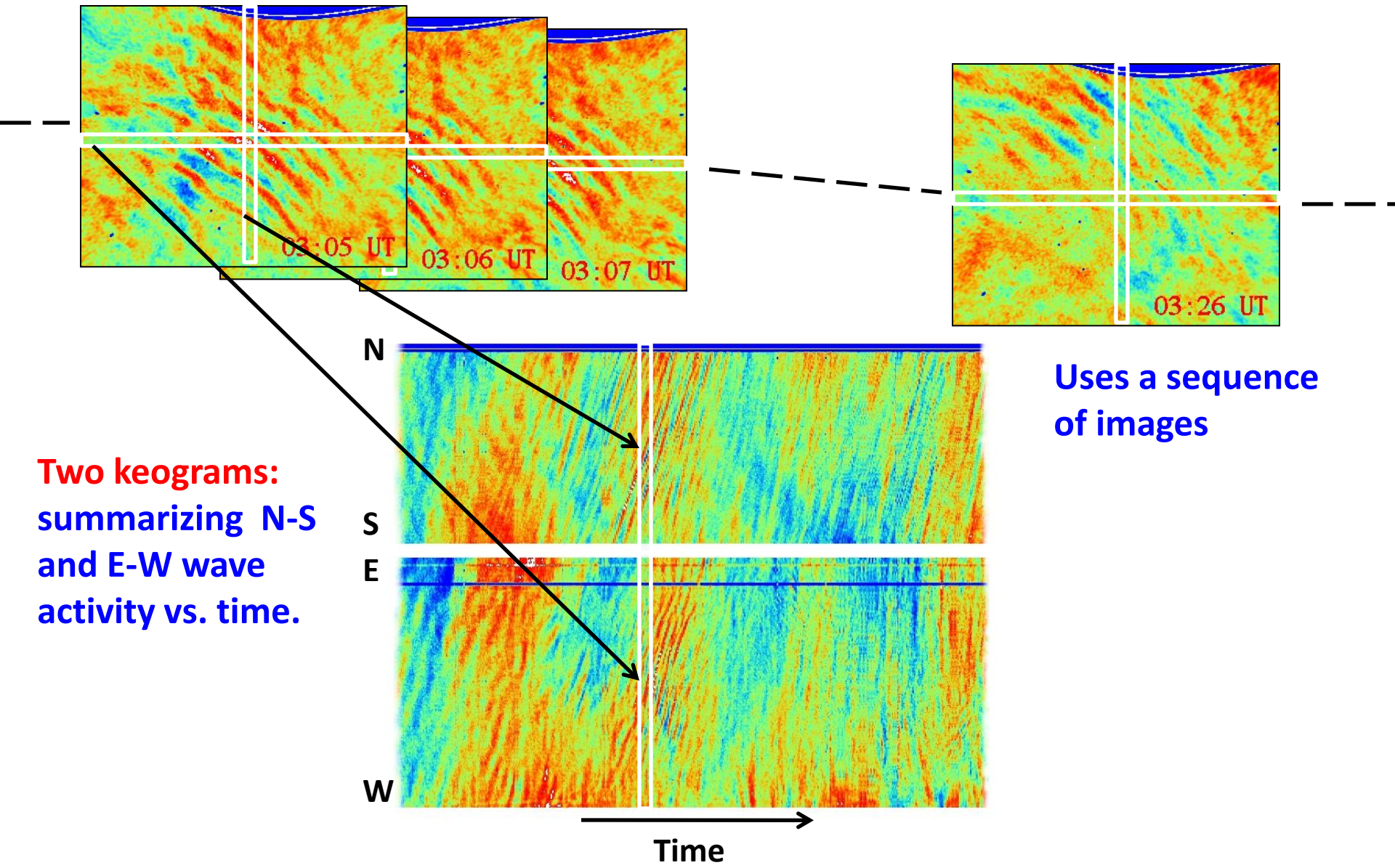
Common Data with the GV

- Mostly during one South Island flight: RF13



- Some more coincident data during RF03, 06, 07, 23

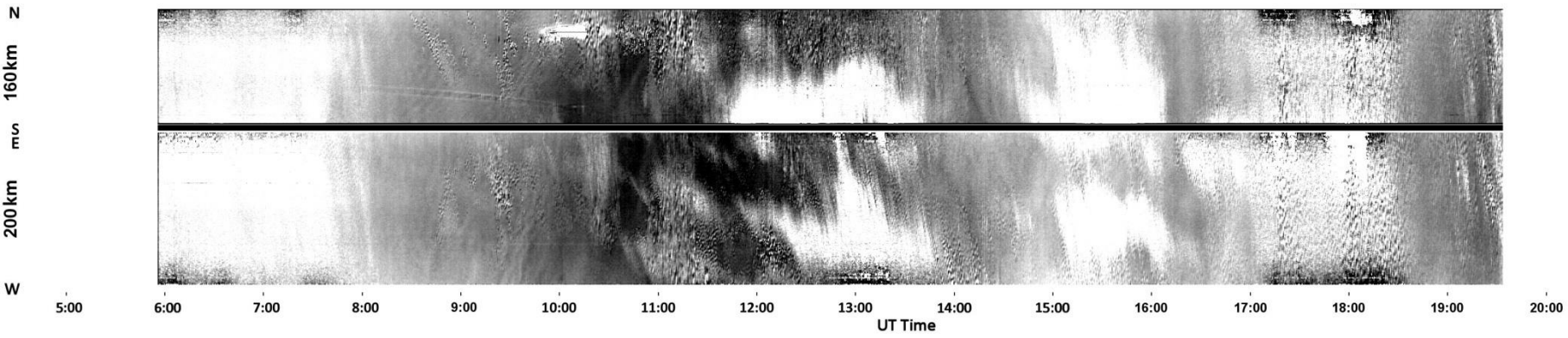
The Keogram Representation



Uses a sequence of images

Two keograms: summarizing N-S and E-W wave activity vs. time.

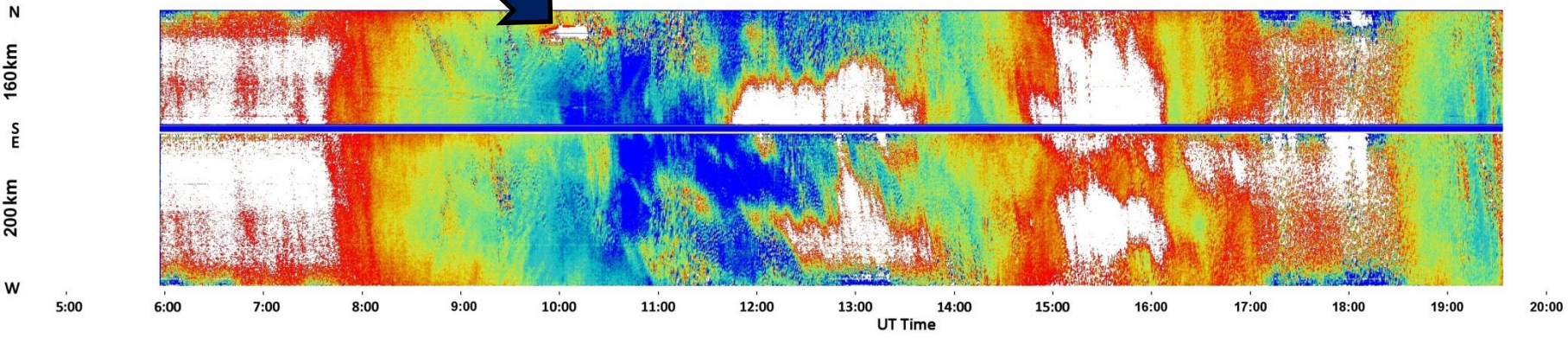
Jun 10-11 = Cloudy



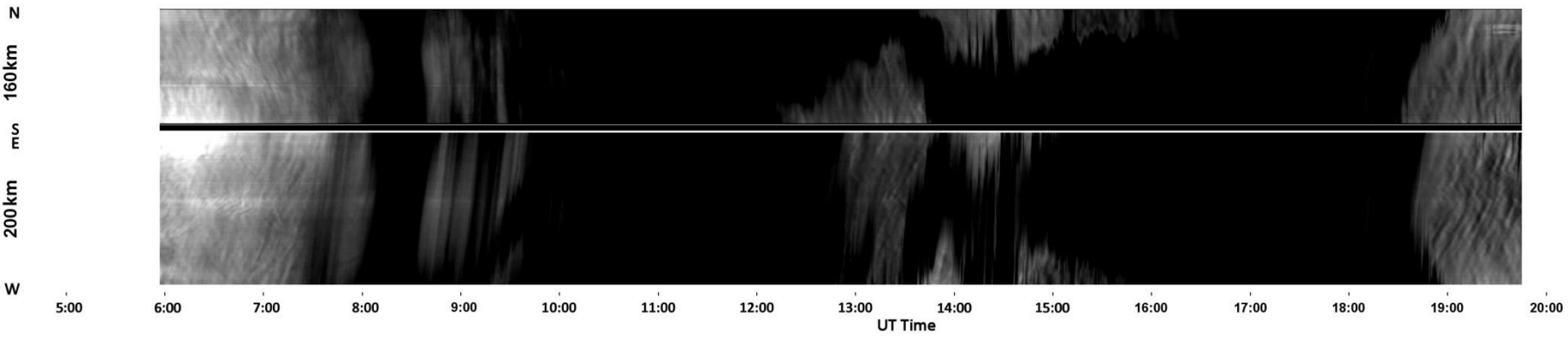
Tropospheric cloud

Moon

Tropospheric cloud

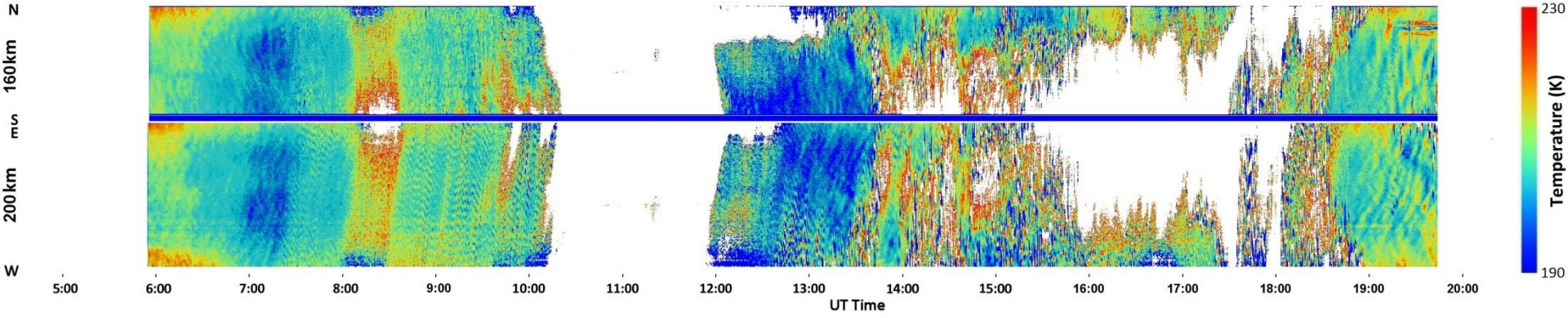


Jun 20-21 = Very Cloudy

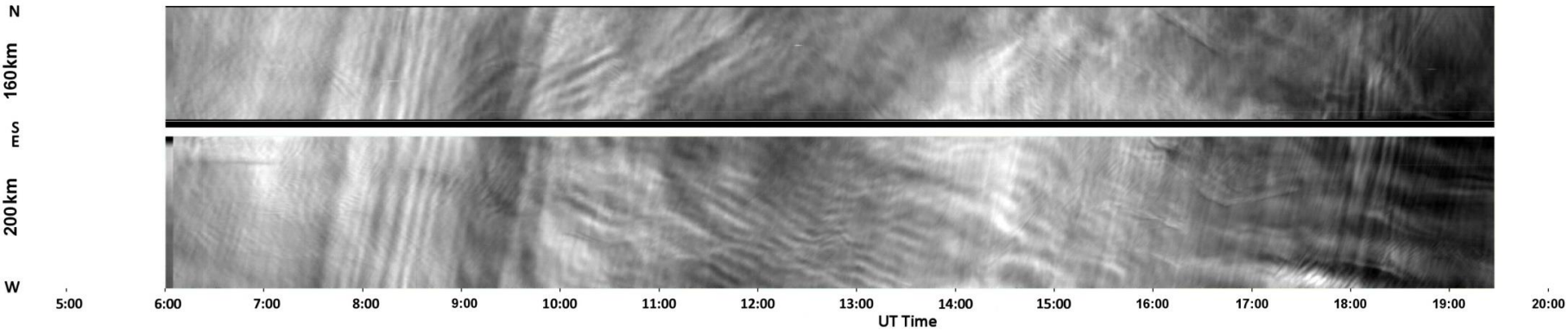


Clouds

Clouds

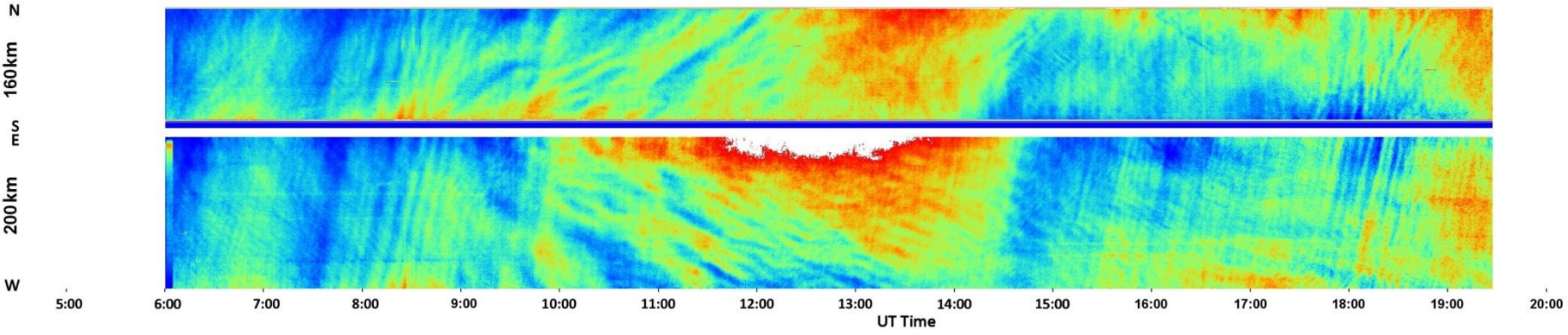


May 30-31

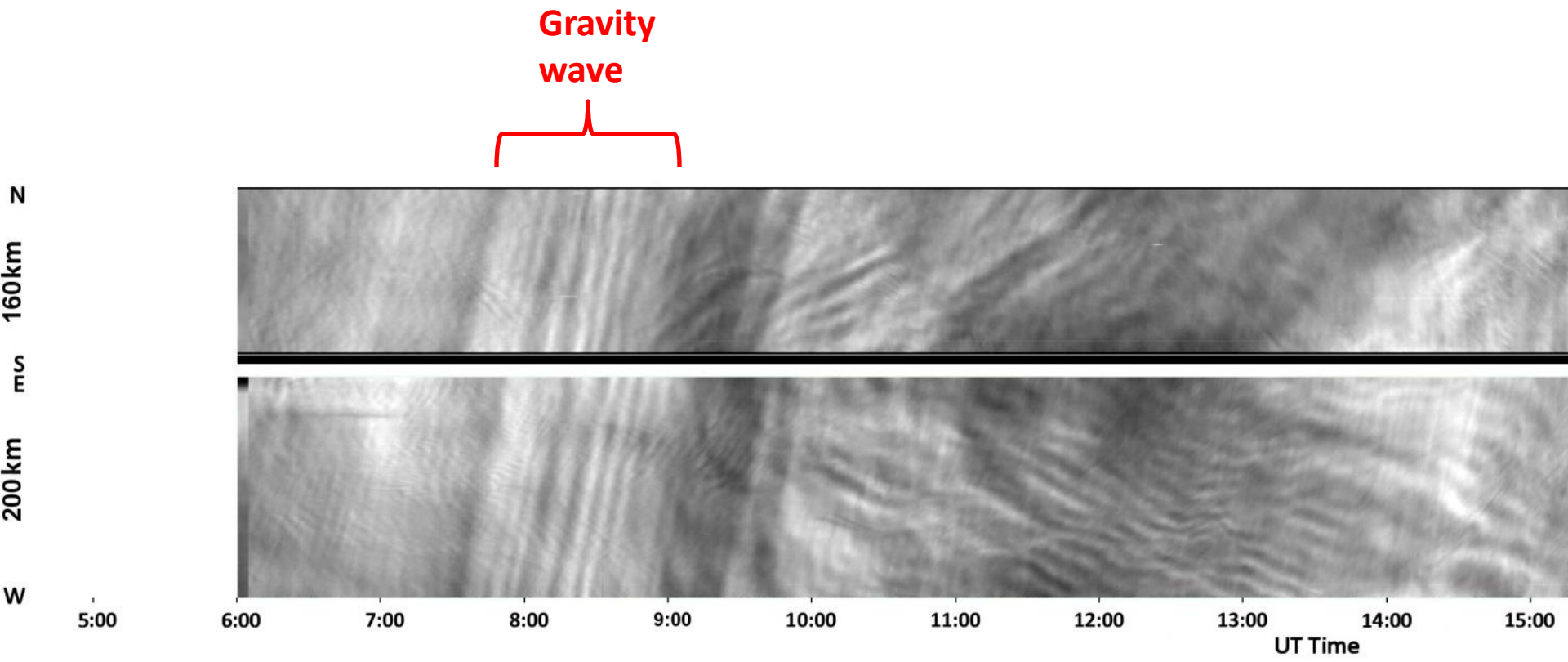


Bands

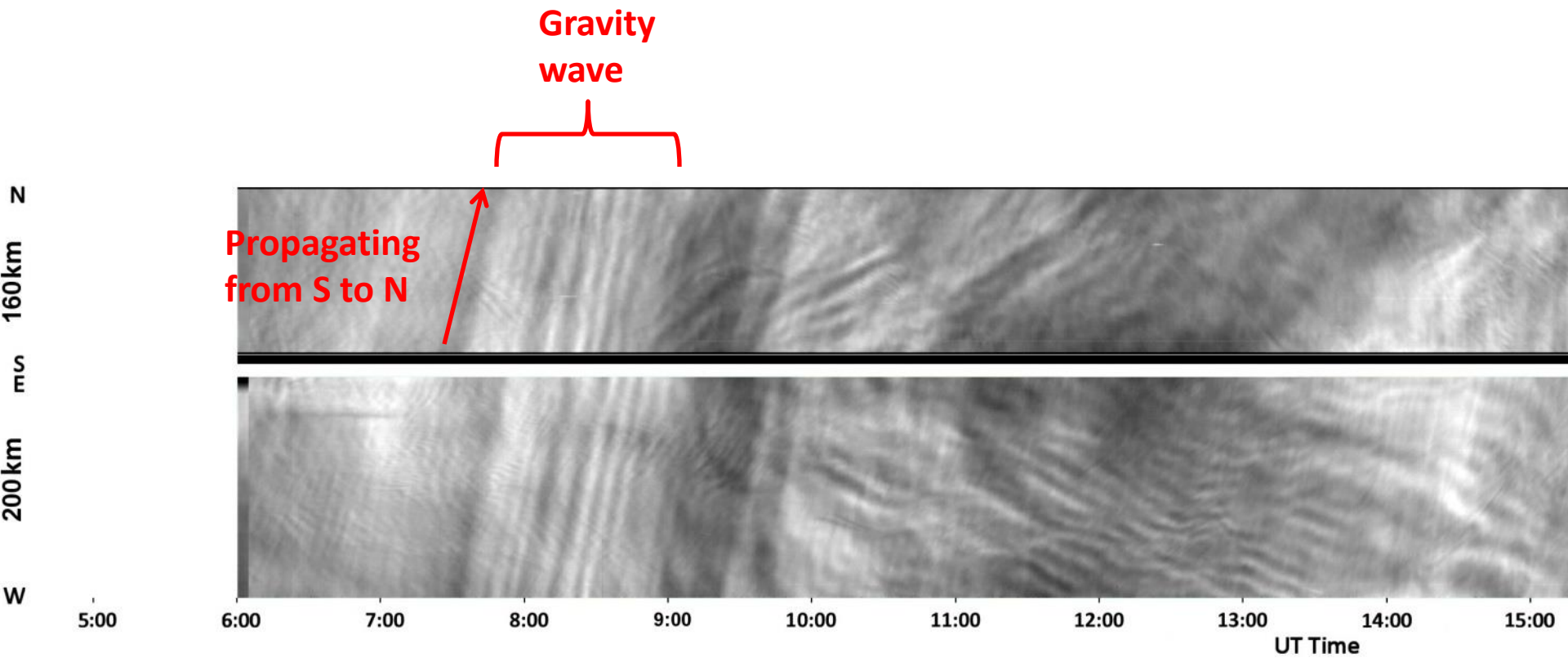
Low velocity (MWs)



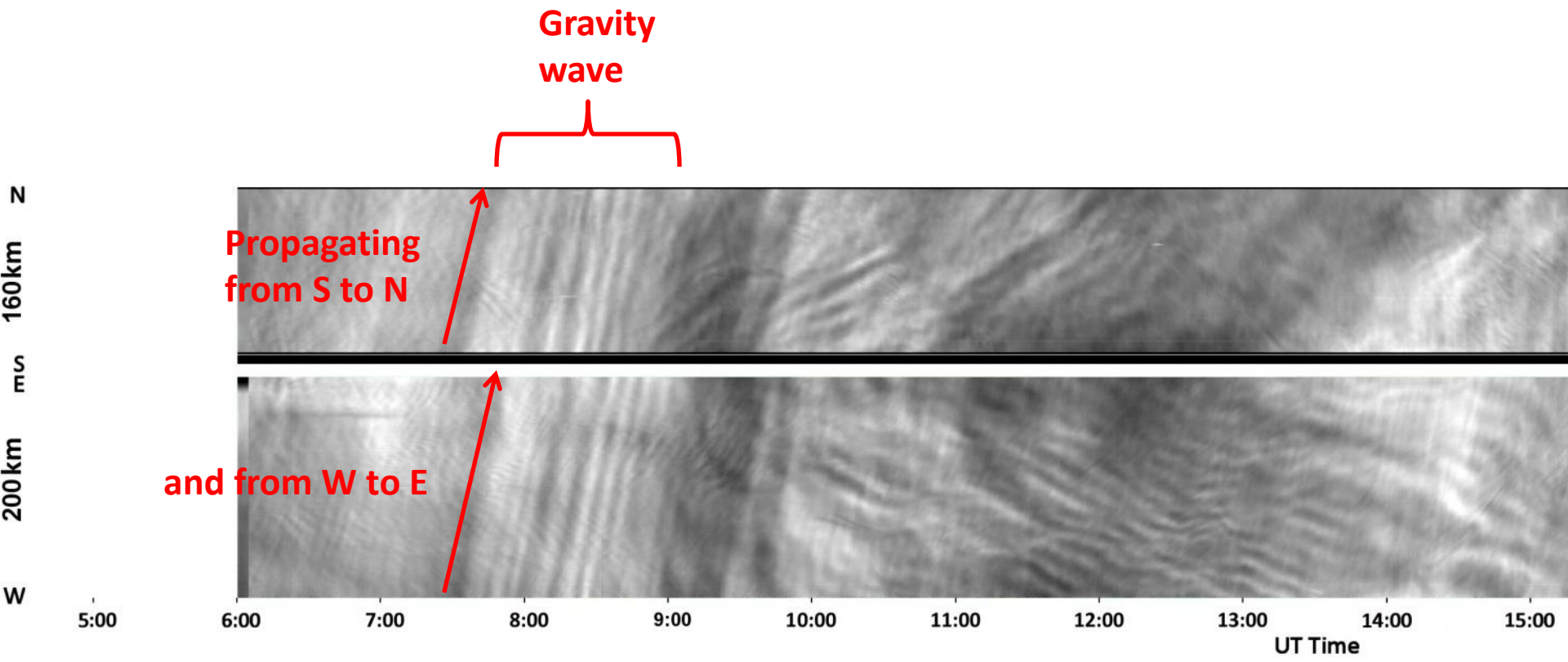
Quick Interpretation



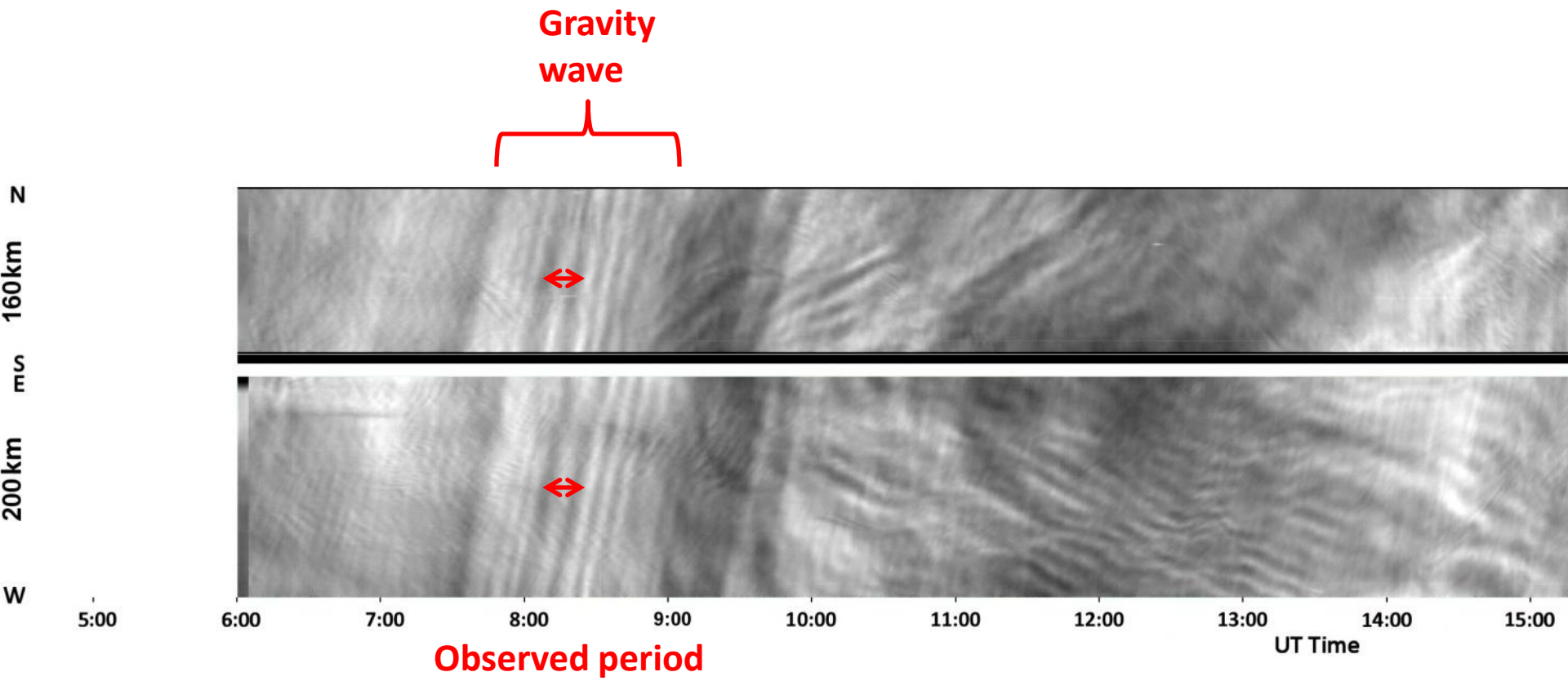
Quick Interpretation



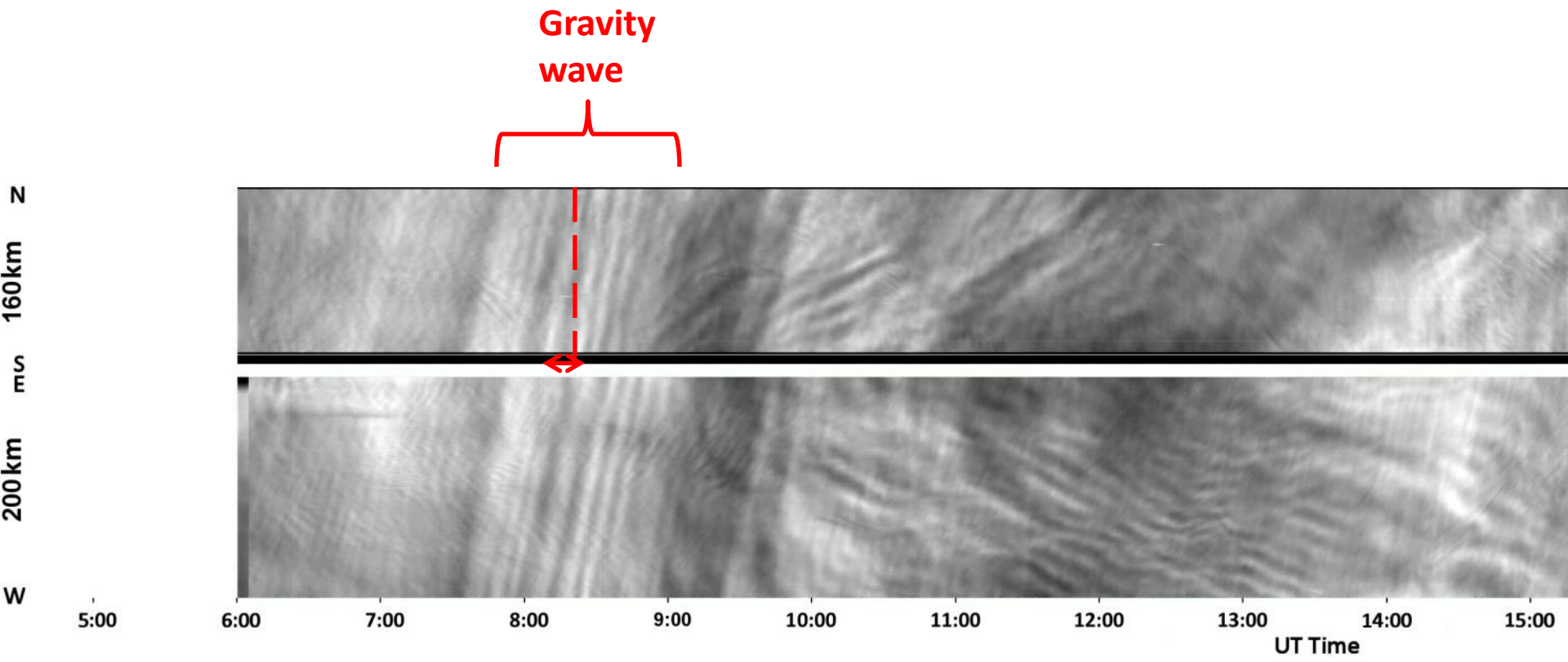
Quick Interpretation



Quick Interpretation

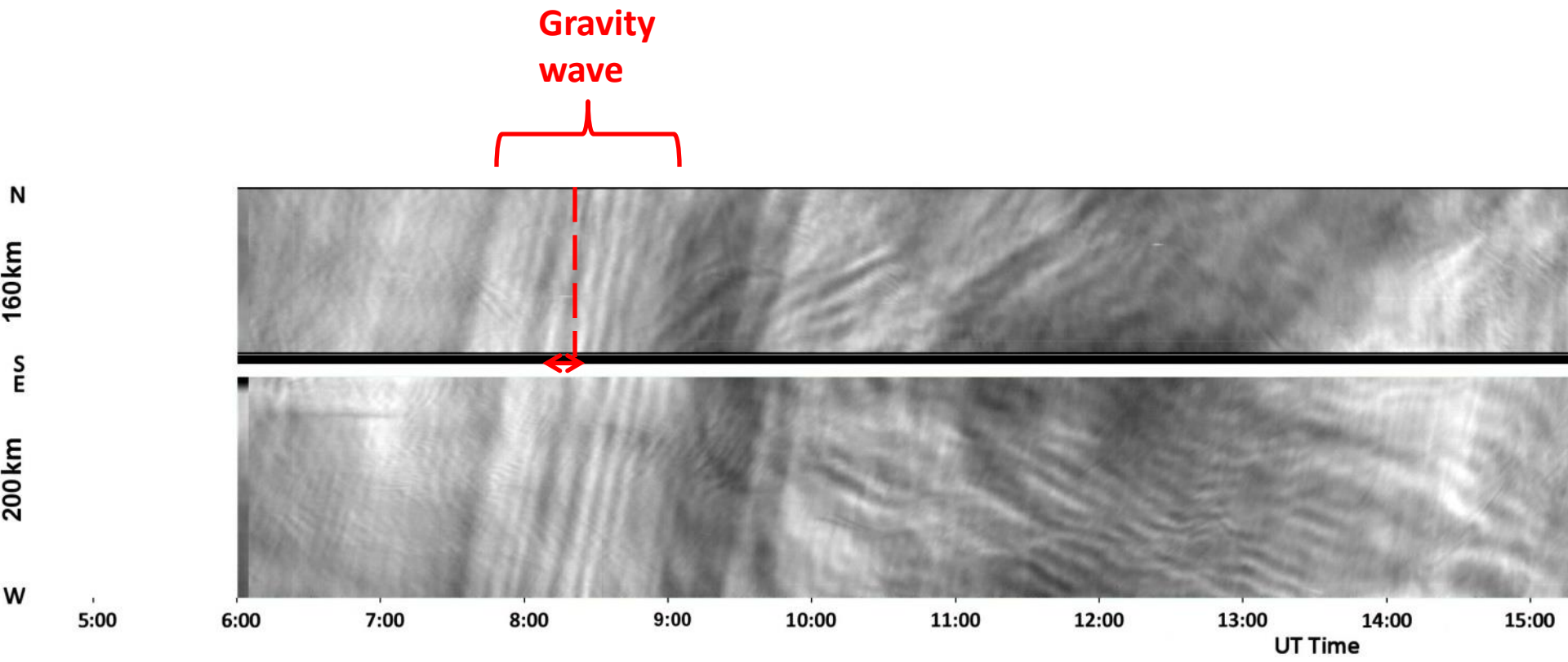


Quick Interpretation



Time to propagate 160km in the S->N direction

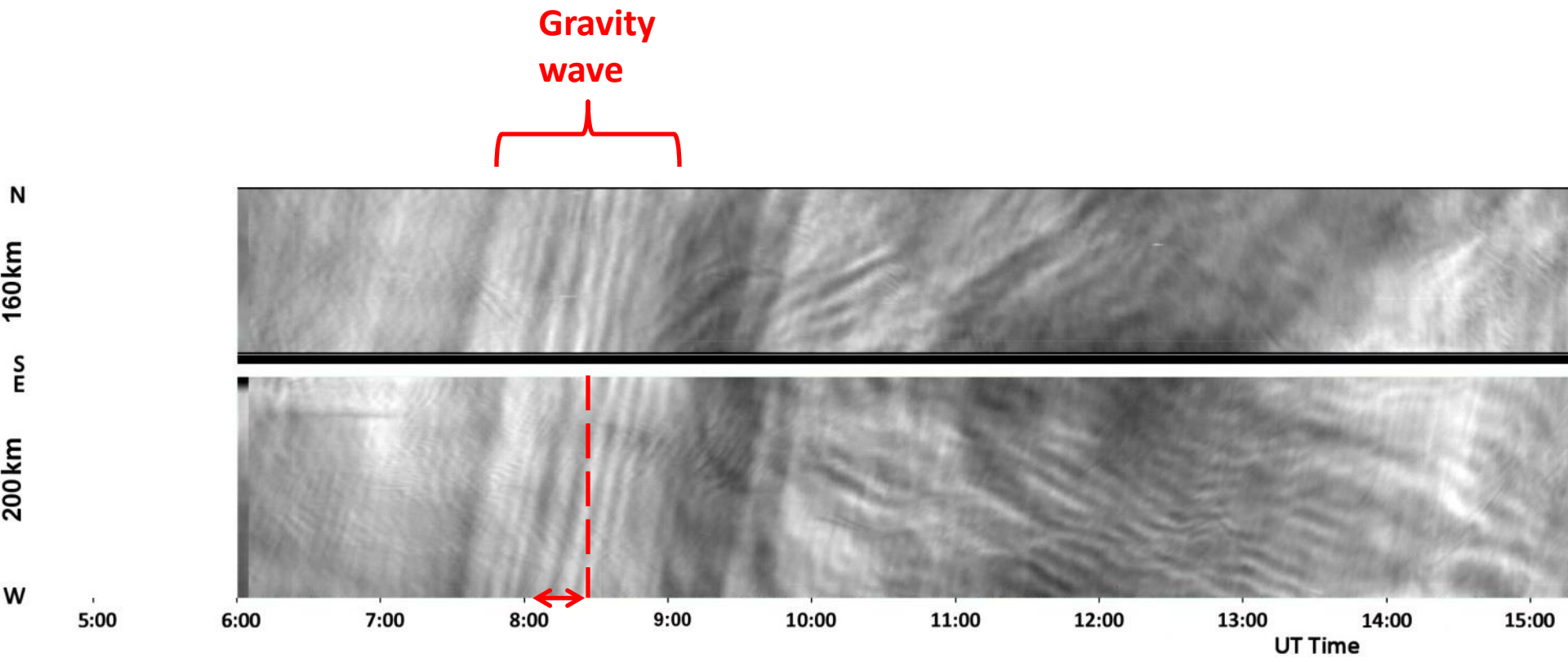
Quick Interpretation



Time to propagate 160km in the S->N direction

Meridional observed phase speed

Quick Interpretation

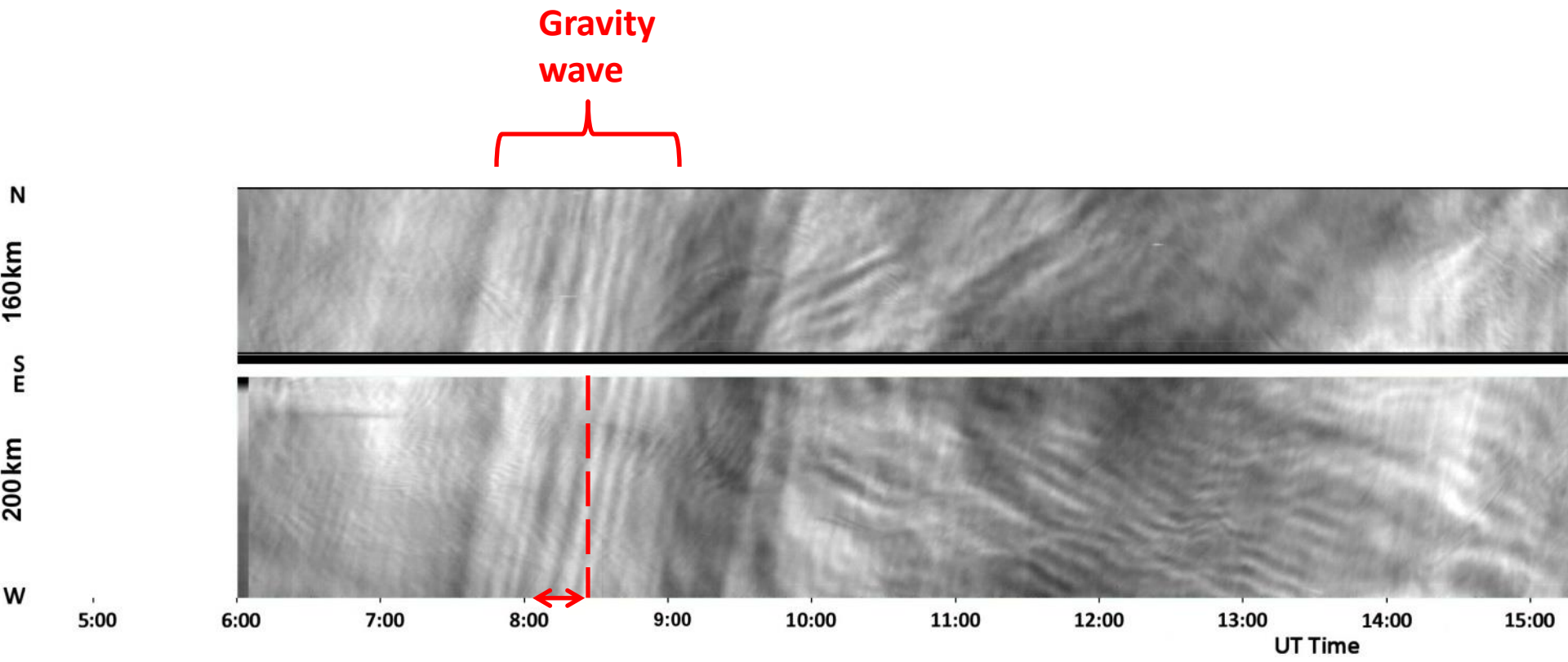


Time to propagate 160km in the S->N direction

Time to propagate 200km in the W->E direction

Meridional observed phase speed

Quick Interpretation



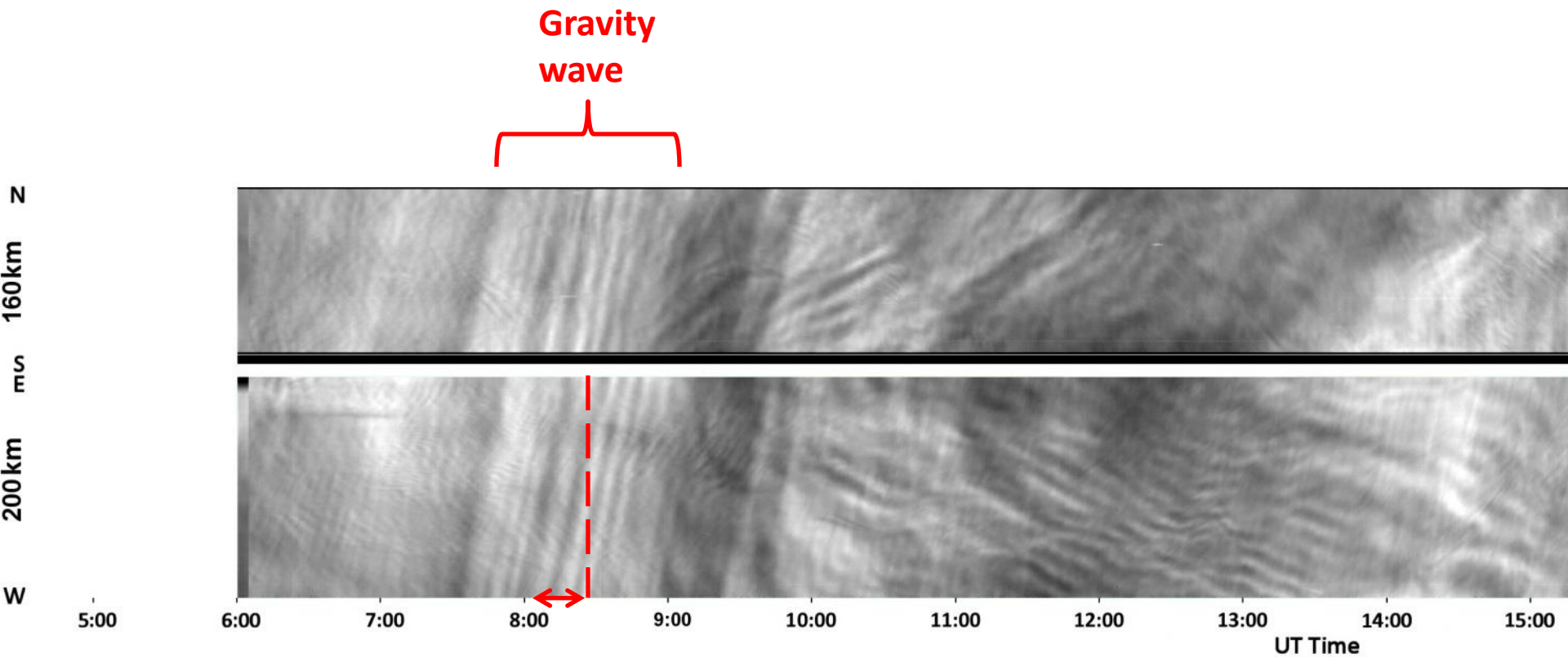
Time to propagate 160km in the S->N direction

Meridional observed phase speed

Time to propagate 200km in the W->E direction

Zonal observed phase speed

Quick Interpretation



Time to propagate 160km in the S->N direction

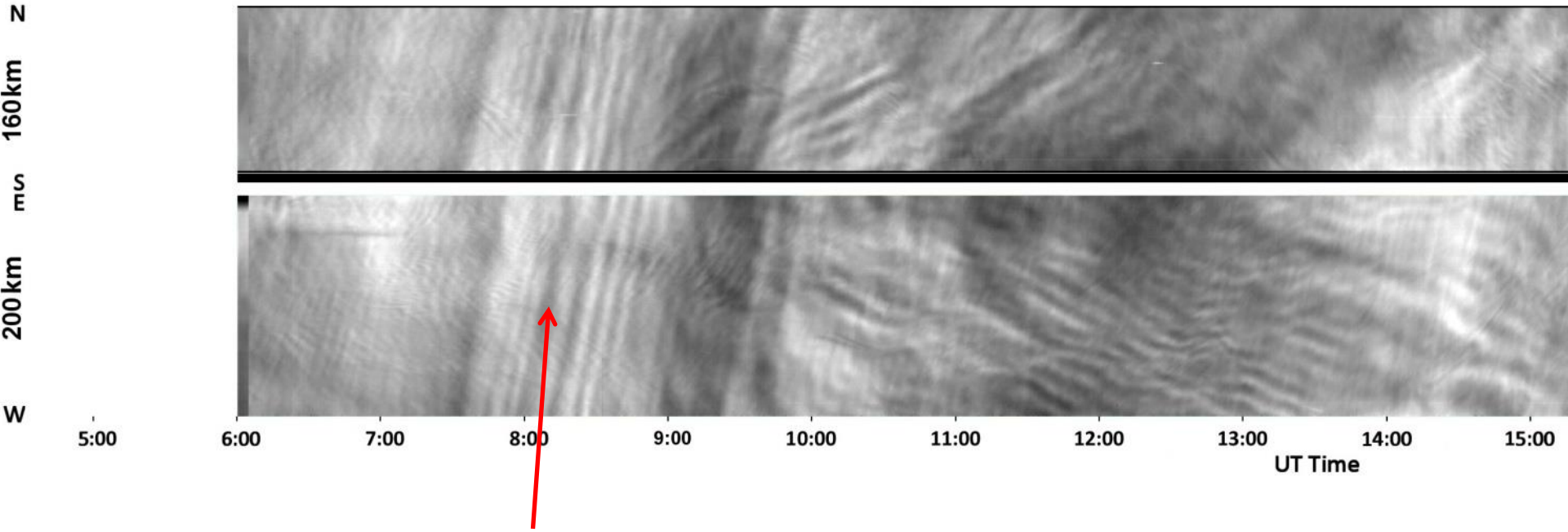
Meridional observed phase speed

Time to propagate 200km in the W->E direction

Zonal observed phase speed

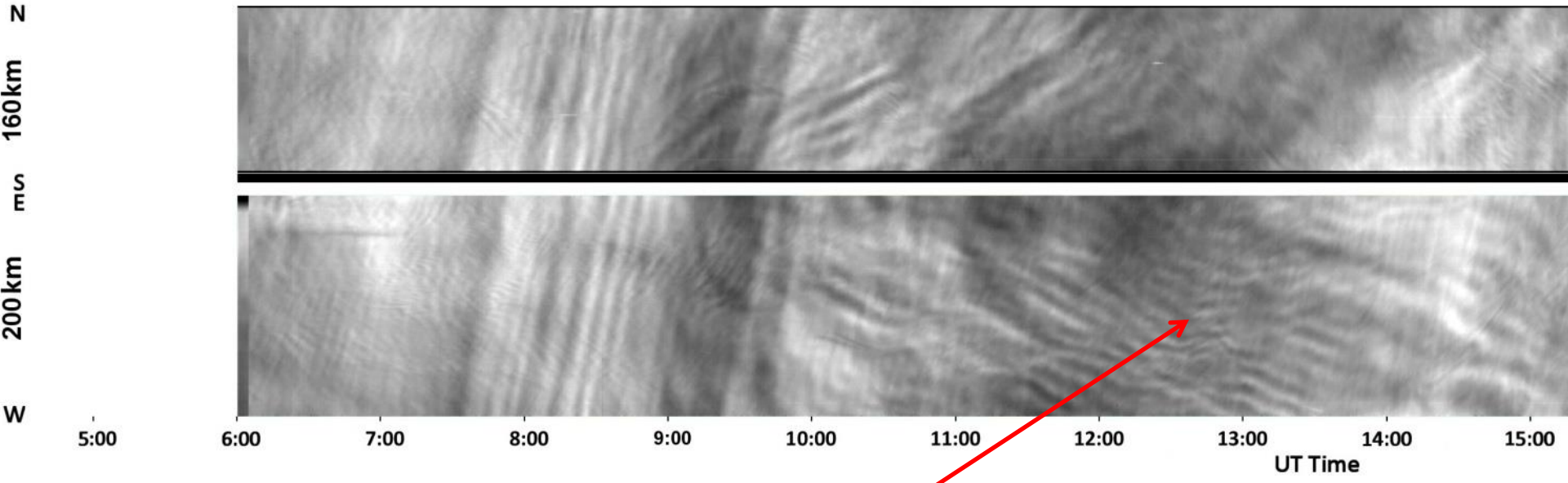
GW observed horizontal phase speed

Quick Interpretation



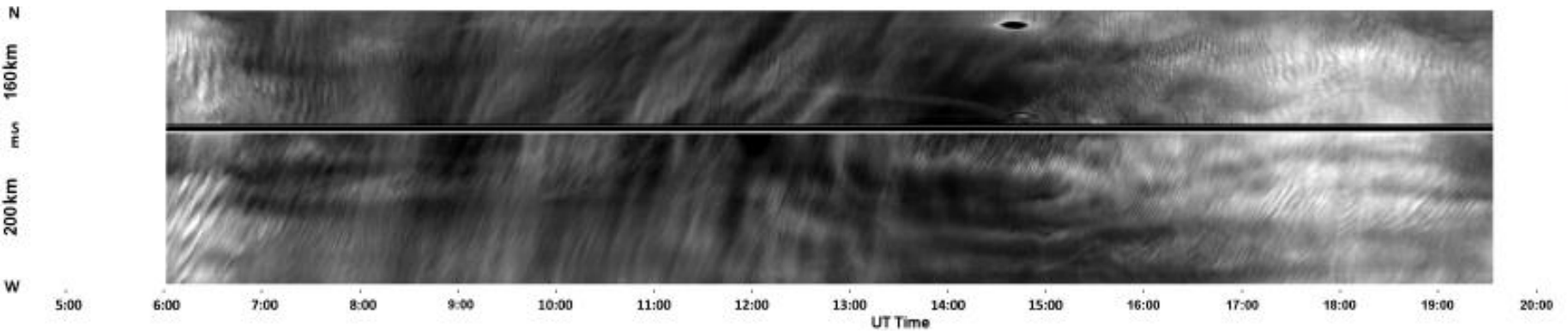
“Steep” wave = fast wave

Quick Interpretation

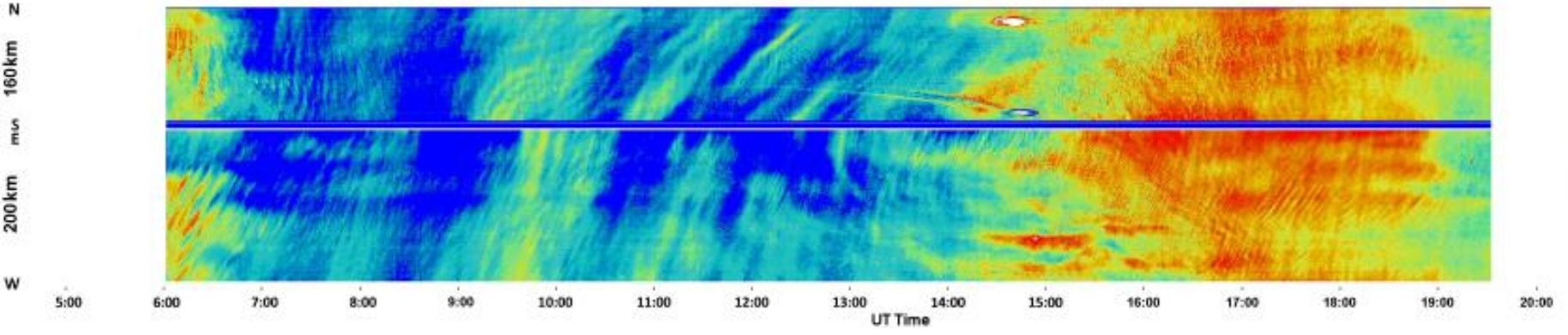


“Horizontal” wave = slow wave

Jul 14-15


N
160 km
200 km
W
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
UT Time

MWs!


N
160 km
200 km
W
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
UT Time
240
Temperature (K)
185