

# PRELIMINARY REPORT OF 070304

last update on Sun Mar 4 15:57:18 GMT 2007

Due to an ASAR test acquisition campaign, the daily analysis on WVS products will be based on IS4 instead of IS2 during the following periods:

From orbit 25621 (23-Jan-2007) to 25720 (30-Jan-2007) in HH polarization  
From orbit 26122 (27-Feb-2007) to 26221 (06-Mar-2007) in HH polarization  
From orbit 25721 (30-Jan-2007) to 25820 (06-Feb-2007) in VV polarization  
From orbit 26222 (06-Mar-2007) to 26321 (13-Mar-2007) in VV polarization

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## 1 - Introduction

This report is based on the analysis of wave mode level-1 cross spectra (ASA\_WVS\_1P), global monitoring products (ASA\_GM1\_1P), which are the available few hours after the acquisition, on the browse (BP) products and on the Module Stepping (MS) product.

## 2 - Summary

### 2.1 - Instrument Unavailability

No unavailabilities during the reported period.

## 2.2 - Auxiliary files

Summary of the auxiliary files used from 2007-03-03 00:00:00 to 2007-03-04 15:57:18

| PDHS-K  |     |     |     |     |     |
|---|-----|-----|-----|-----|-----|
| AUXILIARY FILE  | WVS | GM1 | IMM | APM | WSM |
| ASA_CON_AXVIEC20070222_190441_20070204_165113_20071231_000000 | 29  | 48  | 9   | 5   | 31  |
| ASA_INS_AXVIEC20070227_105626_20070228_060000_20071231_000000 | 29  | 48  | 9   | 5   | 31  |
| ASA_XCA_AXVIEC20070222_185842_20070204_165113_20071231_000000 | 29  | 48  | 9   | 5   | 31  |
| ASA_XCH_AXVIEC20051219_162547_20020301_000000_20081231_000000 | 29  | 48  | 9   | 5   | 31  |

| PDHS-E  |     |     |     |     |     |
|---|-----|-----|-----|-----|-----|
| AUXILIARY FILE  | WVS | GM1 | IMM | APM | WSM |
| ASA_CON_AXVIEC20070222_190441_20070204_165113_20071231_000000 | 48  | 63  | 27  | 13  | 56  |
| ASA_INS_AXVIEC20070227_105626_20070228_060000_20071231_000000 | 48  | 63  | 27  | 13  | 56  |
| ASA_XCA_AXVIEC20070222_185842_20070204_165113_20071231_000000 | 48  | 63  | 27  | 13  | 56  |
| ASA_XCH_AXVIEC20051219_162547_20020301_000000_20081231_000000 | 48  | 63  | 27  | 13  | 56  |

## 2.3 - Browse Visual Inspection

## 2.4 - Data Analysis

- Stable wave internal calibration pulses gain and phase.
- Stable raw data statistics.
- Nominal Doppler behavior.

## 3 - Module Stepping Mode

No anomalies observed on available MS products:

| Polarisation | Start Time      |
|--------------|-----------------|
| V            | 20070304 095342 |
| H            | 20070303 145426 |

### MSM in V/V polarisation

|                      |                              |
|----------------------|------------------------------|
| Pre-launch Reference | DDS-B (2003-06-12) reference |
|----------------------|------------------------------|

|   |  |
|---|--|
| ⊗ |  |
| ⊗ |  |
| ⊗ |  |
| ⊗ |  |

### MSM in H/H polarisation

| Pre-launch Reference | DDS-B (2003-06-12) reference |
|----------------------|------------------------------|
| ⊗                    |                              |
| ⊗                    |                              |
| ⊗                    |                              |
| ⊗                    |                              |

## 4 - Internal calibration Results

No anomalies observed.

### 4.1 - Daily statistics

#### 4.1.1 - Evolution for WVS

##### Evolution of cal pulses for WVS

|   |
|---|
| ⊗ |
| ⊗ |

#### 4.1.2 - Evolution for GM1

##### Evolution of cal pulses for GM1

|   |
|---|
| ⊗ |
| ⊗ |

### 4.2 - Cyclic statistics

#### 4.2.1 - Evolution for WVS

##### Evolution of cal pulses for WVS

#### P1a Cyclic statistics

| row | pulse | mean (dB)  | stdev (dB) | slope(dB/cycle) |
|-----|-------|------------|------------|-----------------|
| 3   | P1a   | -11.009822 | 0.369476   | 0.237991        |
| 7   | P1a   | -10.108479 | 0.231925   | 0.252468        |
| 11  | P1a   | -10.751050 | 0.131345   | 0.092713        |
| 15  | P1a   | -11.705752 | 1.551821   | 1.406045        |
| 19  | P1a   | -15.070950 | 1.077821   | -1.196865       |
| 22  | P1a   | -19.517242 | 7.478768   | -2.782800       |
| 26  | P1a   | -15.567484 | 0.490036   | 0.491911        |
| 30  | P1a   | -20.107191 | 6.975197   | 2.837379        |

#### P1t Cyclic statistics

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
|-----|-------|-----------|------------|-----------------|
| 3   | P1    | -6.998802 | 3.155589   | -3.470019       |
| 7   | P1    | -2.584037 | 0.053162   | 0.135666        |
| 11  | P1    | -3.238239 | 0.148749   | 0.373573        |
| 15  | P1    | -4.612424 | 1.329672   | 1.289999        |
| 19  | P1    | -3.421841 | 0.093725   | -0.351263       |
| 22  | P1    | -5.348465 | 0.146202   | 0.423975        |
| 26  | P1    | -5.399594 | 0.700265   | -0.988068       |
| 30  | P1    | -5.439956 | 0.067008   | 0.203170        |

#### P2 Cyclic statistics

| row | pulse | mean (dB)  | stdev (dB) | slope(dB/cycle) |
|-----|-------|------------|------------|-----------------|
| 3   | P2    | -17.389032 | 0.834824   | -1.567729       |
| 7   | P2    | -21.893831 | 0.136587   | -0.147120       |
| 11  | P2    | -10.806930 | 0.134899   | -0.302579       |
| 15  | P2    | -5.101732  | 0.085934   | -0.042195       |
| 19  | P2    | -7.232727  | 0.080959   | -0.020031       |
| 22  | P2    | -8.361107  | 0.080087   | 0.095805        |

|    |    |            |          |           |
|----|----|------------|----------|-----------|
| 26 | P2 | -24.163174 | 0.130479 | -0.293953 |
| 30 | P2 | -21.670170 | 0.069707 | 0.067587  |

### P3 Cyclic statistics

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
|-----|-------|-----------|------------|-----------------|
| 3   | P3    | -8.220867 | 0.007841   | -0.016870       |
| 7   | P3    | -8.220867 | 0.007841   | -0.016870       |
| 11  | P3    | -8.220867 | 0.007841   | -0.016870       |
| 15  | P3    | -8.220867 | 0.007841   | -0.016870       |
| 19  | P3    | -8.220867 | 0.007841   | -0.016870       |
| 22  | P3    | -8.220867 | 0.007841   | -0.016870       |
| 26  | P3    | -8.220867 | 0.007841   | -0.016870       |
| 30  | P3    | -8.220867 | 0.007841   | -0.016870       |

### 4.2.2 - Evolution for GM1

| Evolution of cal pulses for GM1 |
|---------------------------------|
| <input type="checkbox"/>        |

### P1a Cyclic statistics

| row | pulse | mean (dB)  | stdev (dB) | slope(dB/cycle) |
|-----|-------|------------|------------|-----------------|
| 3   | P1a   | -11.148023 | 0.092728   | 0.478830        |
| 7   | P1a   | -10.039371 | 0.132371   | -0.021943       |
| 11  | P1a   | -10.620931 | 0.068039   | -0.127124       |
| 15  | P1a   | -10.889276 | 0.134522   | -0.153972       |
| 19  | P1a   | -15.729279 | 0.066524   | 0.099673        |
| 22  | P1a   | -20.831312 | 1.190431   | -0.071056       |
| 26  | P1a   | -15.361351 | 0.263061   | 0.263475        |
| 30  | P1a   | -18.373283 | 0.348821   | -0.124433       |

### P1t Cyclic statistics

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
|-----|-------|-----------|------------|-----------------|
| 3   | P1    | -7.916376 | 1.465762   | -2.717951       |
| 7   | P1    | -2.428629 | 0.022264   | 0.038318        |

|    |    |           |          |           |
|----|----|-----------|----------|-----------|
| 11 | P1 | -2.900157 | 0.019937 | -0.065837 |
| 15 | P1 | -3.820057 | 0.040154 | -0.068499 |
| 19 | P1 | -3.552588 | 0.011811 | 0.003243  |
| 22 | P1 | -5.033238 | 0.023069 | -0.042185 |
| 26 | P1 | -5.979832 | 0.024846 | 0.062386  |
| 30 | P1 | -5.280914 | 0.021817 | 0.028053  |

### P2 Cyclic statistics

| row | pulse | mean (dB)  | stdev (dB) | slope(dB/cycle) |
|-----|-------|------------|------------|-----------------|
| 3   | P2    | -17.868221 | 0.384342   | -1.331774       |
| 7   | P2    | -21.975124 | 0.053823   | 0.108459        |
| 11  | P2    | -10.661951 | 0.030457   | 0.061434        |
| 15  | P2    | -4.819881  | 0.026891   | 0.026763        |
| 19  | P2    | -6.816463  | 0.028089   | 0.038925        |
| 22  | P2    | -8.113410  | 0.033777   | 0.092498        |
| 26  | P2    | -24.261124 | 0.034485   | -0.047291       |
| 30  | P2    | -21.756399 | 0.036761   | 0.083176        |

### P3 Cyclic statistics

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
|-----|-------|-----------|------------|-----------------|
| 3   | P3    | -8.045773 | 0.003429   | -0.003091       |
| 7   | P3    | -8.045787 | 0.003442   | -0.002866       |
| 11  | P3    | -8.045843 | 0.003436   | -0.003550       |
| 15  | P3    | -8.045789 | 0.003445   | -0.003574       |
| 19  | P3    | -8.045849 | 0.003434   | -0.003578       |
| 22  | P3    | -8.045853 | 0.003434   | -0.003314       |
| 26  | P3    | -8.045756 | 0.003435   | -0.003466       |
| 30  | P3    | -8.045820 | 0.003443   | -0.003434       |

## 4.3 - cal pulses monitoring (all rows)

### 4.3.1 - Evolution for WVS



### 4.3.2 - Evolution for GM1



## 5 - RAW data statistics

No anomalies observed.

### 5.1 - Input mean I/Q

| channel | stat  | DSS-B       |
|---------|-------|-------------|
| MEAN I  | mean  | 0.000624398 |
|         | stdev | 2.33676e-07 |
| MEAN Q  | mean  | 0.000393734 |
|         | stdev | 2.53334e-07 |



### 5.2 - Input stdev I/Q

| channel | stat  | DSS-B      |
|---------|-------|------------|
| STDEV I | mean  | 0.109404   |
|         | stdev | 0.00252470 |
| STDEV Q | mean  | 0.109449   |
|         | stdev | 0.00257825 |



### 5.3 - Gain imbalance I/Q



## 6 - Telemetry analysis

Summary of analysis for the last 3 days 2007030[234]

The assumption is taken that the SQADS num\_gaps and num\_missing\_lines fields are reliable indicators of telemetry problems

| Filename   | num_gaps | num_missing_lines |
|--|----------|-------------------|
| ASA_GM1_1PNPDK20070303_153003_000002712056_00068_26174_5060.N1 | 0        | 51                |
| ASA_WSM_1PNPDE20070302_003405_000002632056_00045_26151_7324.N1 | 0        | 32                |

|  |   |    |
|--|---|----|
| ASA_WSM_1PNPDE20070302_145414_000000852056_00054_26160_8003.N1 | 0 | 31 |
| ASA_WSM_1PNPDE20070302_181712_000000852056_00056_26162_8077.N1 | 0 | 27 |
| ASA_WSM_1PNPDE20070303_142340_000000852056_00068_26174_9241.N1 | 0 | 16 |



## 7 - Doppler Analysis

Preliminary report. The data is not yet controlled

### 7.1 - Unbiased Doppler Error for WVS

|  |
|--|
| <b>Evolution of unbiased Doppler error (Real - Expected)</b> |
| <input type="checkbox"/>                                     |
| Acsending  |
| <input type="checkbox"/>                                     |
| Descending   |

### 7.2 - Absolute Doppler for WVS

|                                      |
|--------------------------------------|
| <b>Evolution of Absolute Doppler</b> |
| <input type="checkbox"/>             |
| Acsending                            |
| <input type="checkbox"/>             |
| Descending                           |

### 7.3 - Doppler evolution versus ANX for WVS

|   |
|---|
| <b>Evolution Doppler error versus ANX</b> |
| <input type="checkbox"/>                  |



### 7.4 - Unbiased Doppler Error for GM1

| Evolution of unbiased Doppler error (Real - Expected) |            |
|---|------------|
| <input type="checkbox"/>                              |            |
|   | Ascending  |
| <input type="checkbox"/>                              |            |
|   | Descending |

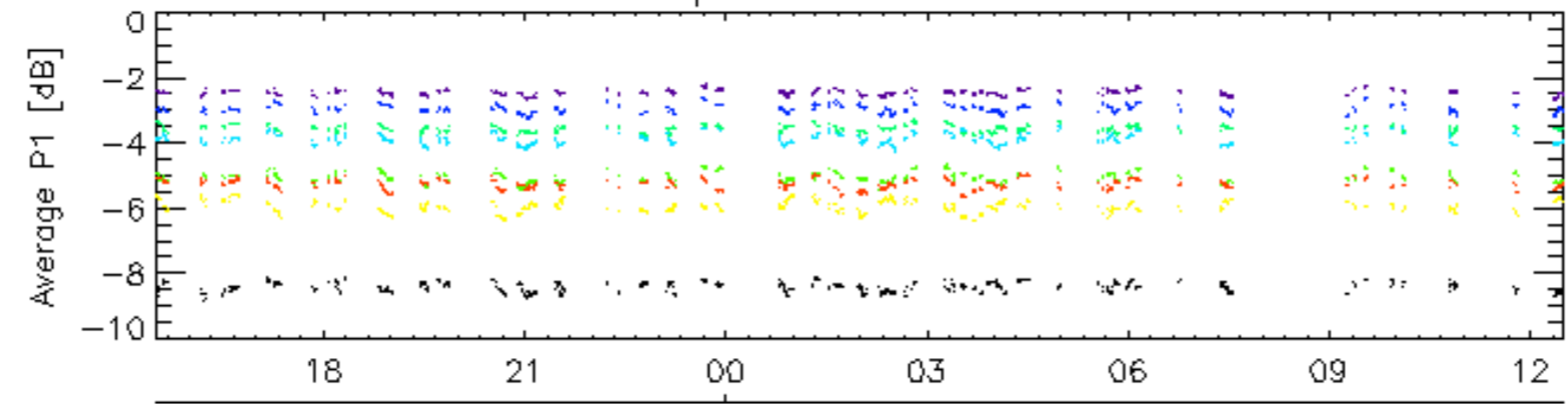
### 7.5 - Absolute Doppler for GM1

| Evolution of Absolute Doppler |            |
|-------------------------------|------------|
| <input type="checkbox"/>      |            |
|                               | Ascending  |
| <input type="checkbox"/>      |            |
|                               | Descending |

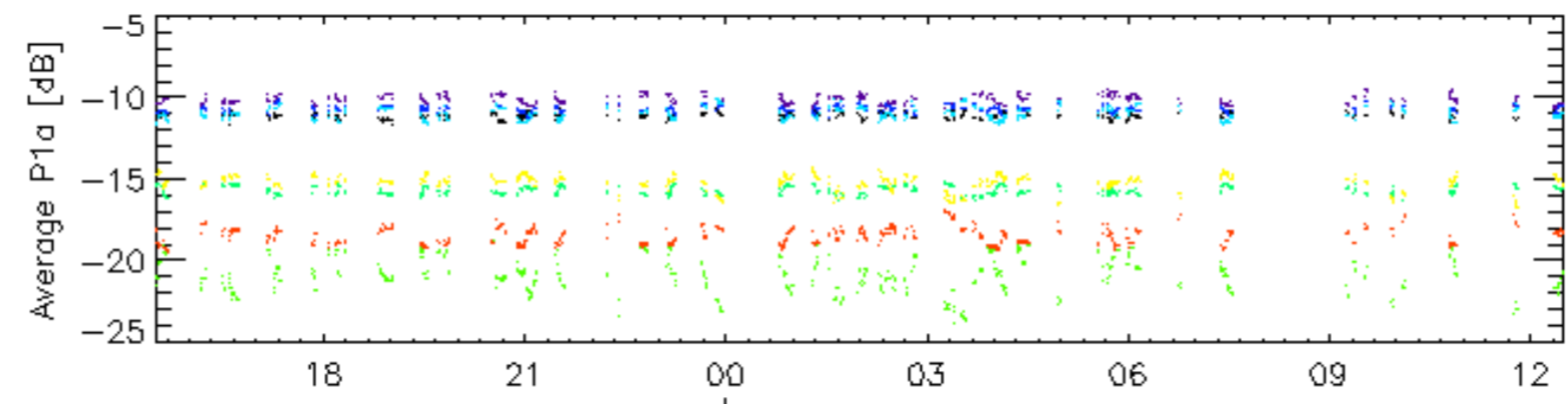
### 7.6 - Doppler evolution versus ANX for GM1

| Evolution Doppler error versus ANX |  |
|------------------------------------|--|
| <input type="checkbox"/>           |  |

Cal pulses for GM1 SS3

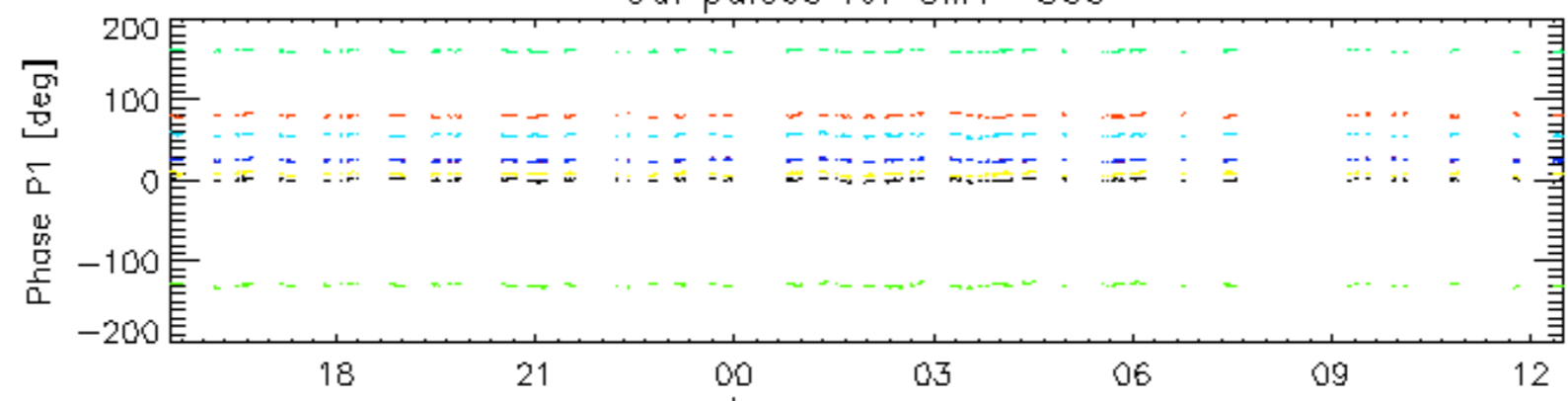


04-Mar

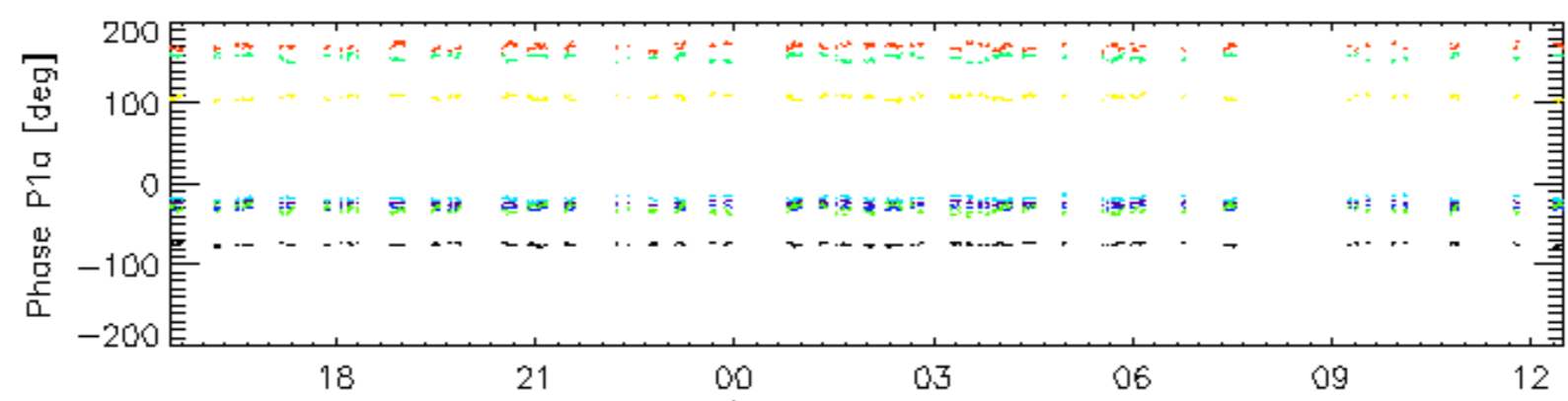


04-Mar

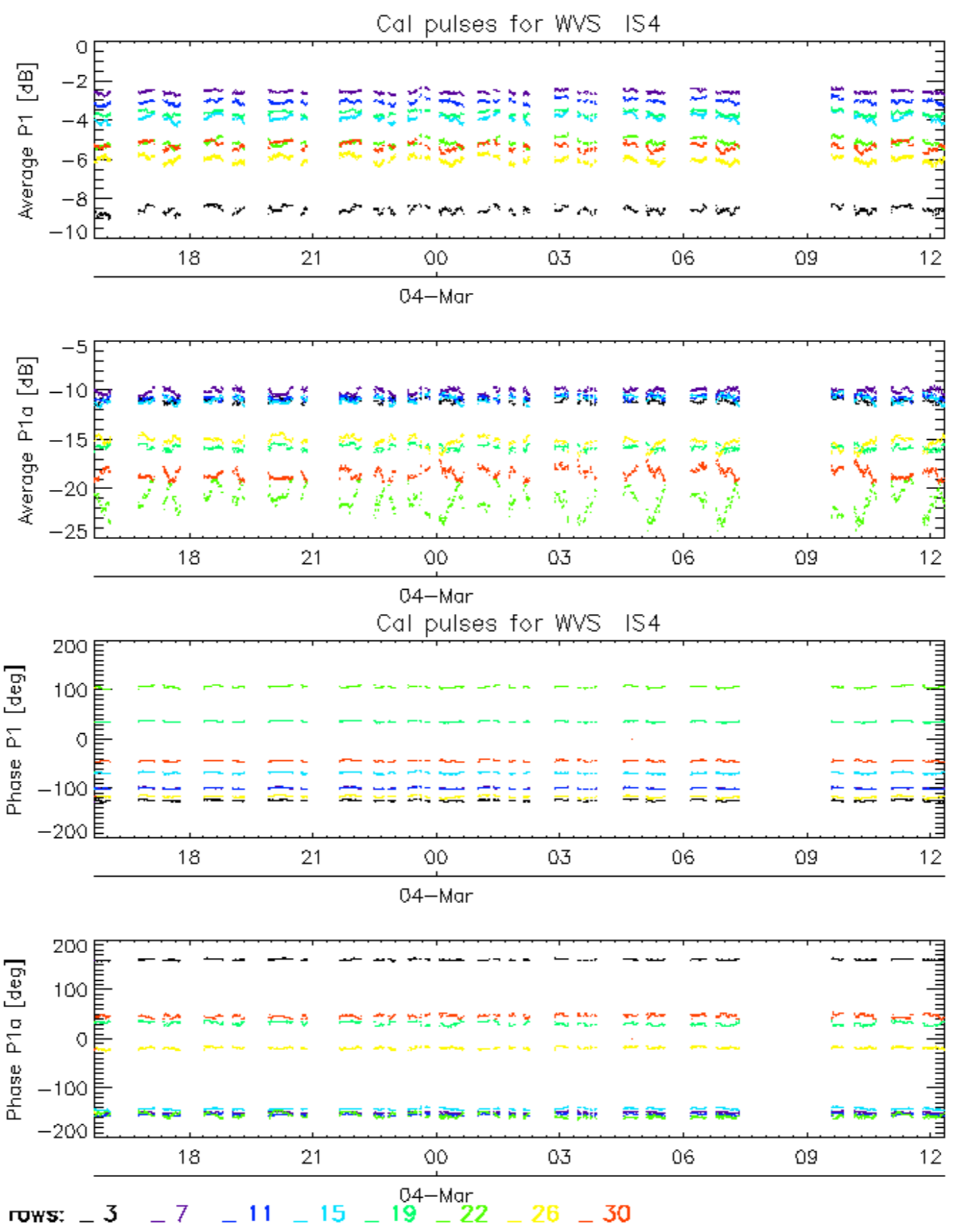
Cal pulses for GM1 SS3



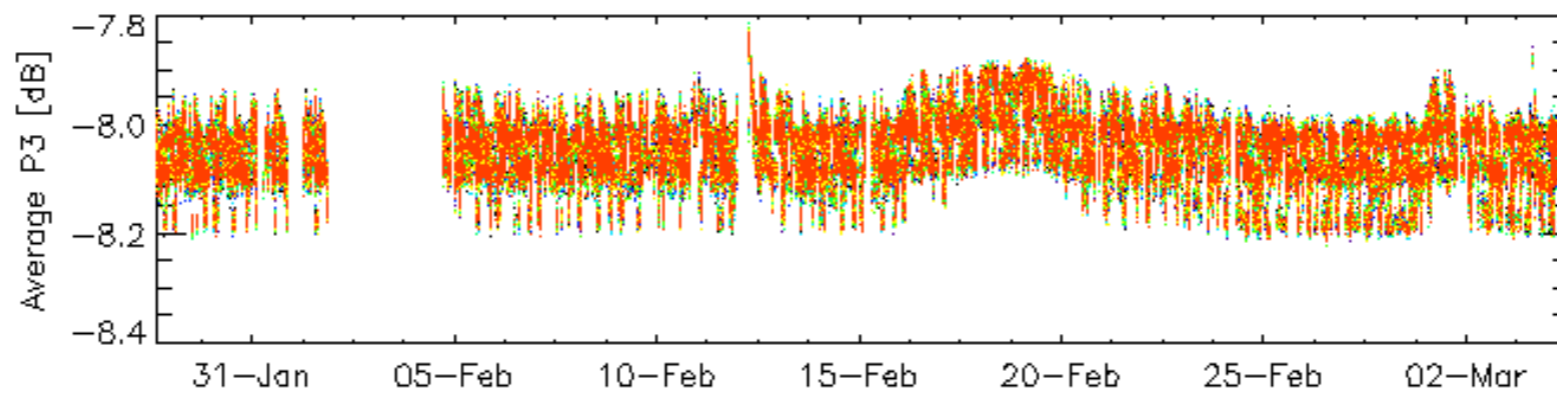
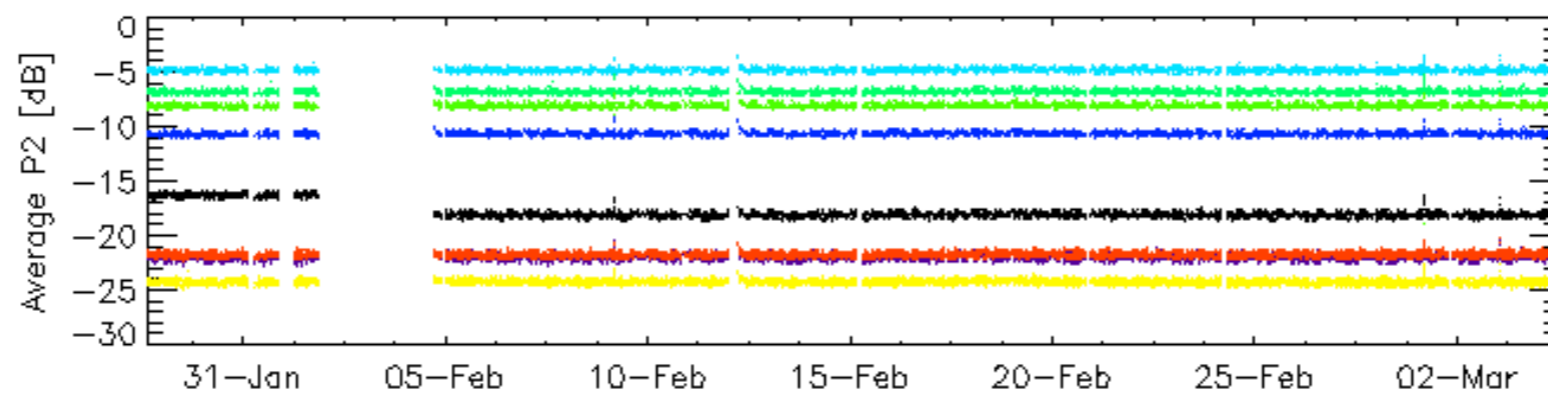
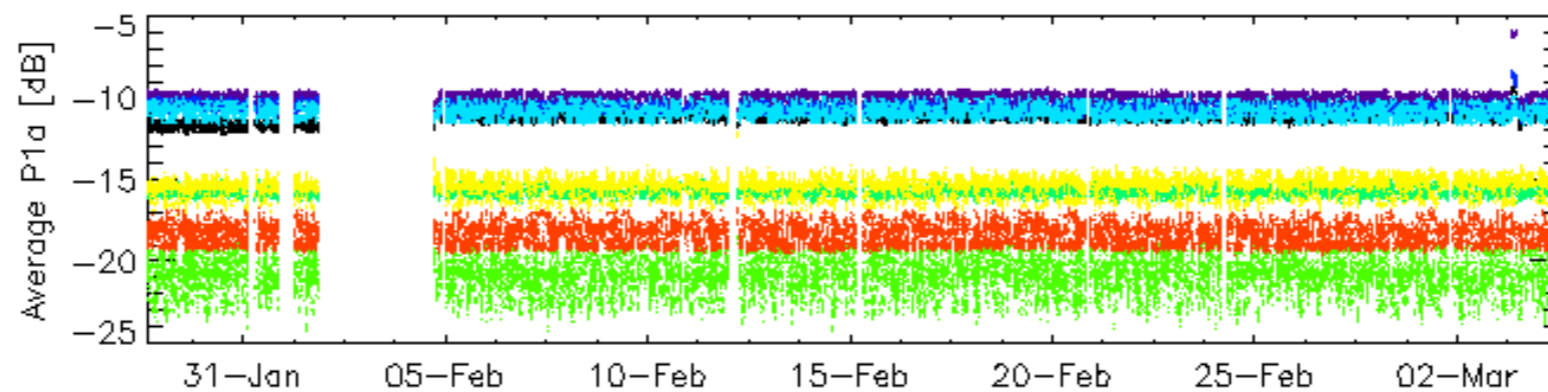
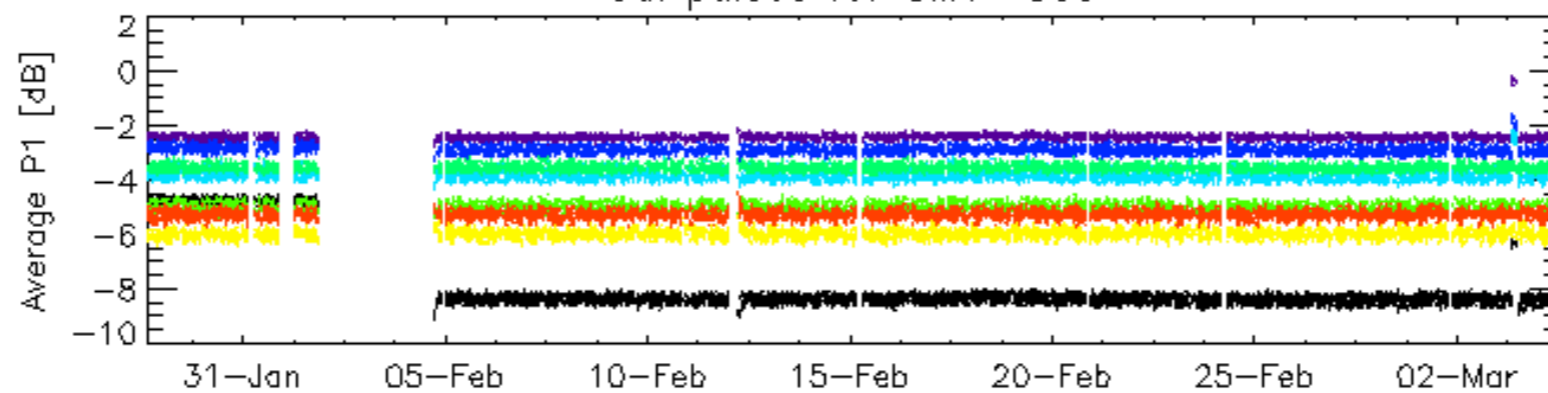
04-Mar



rows: \_ 3 \_ 7 \_ 11 \_ 15 \_ 19 \_ 22 \_ 26 \_ 30

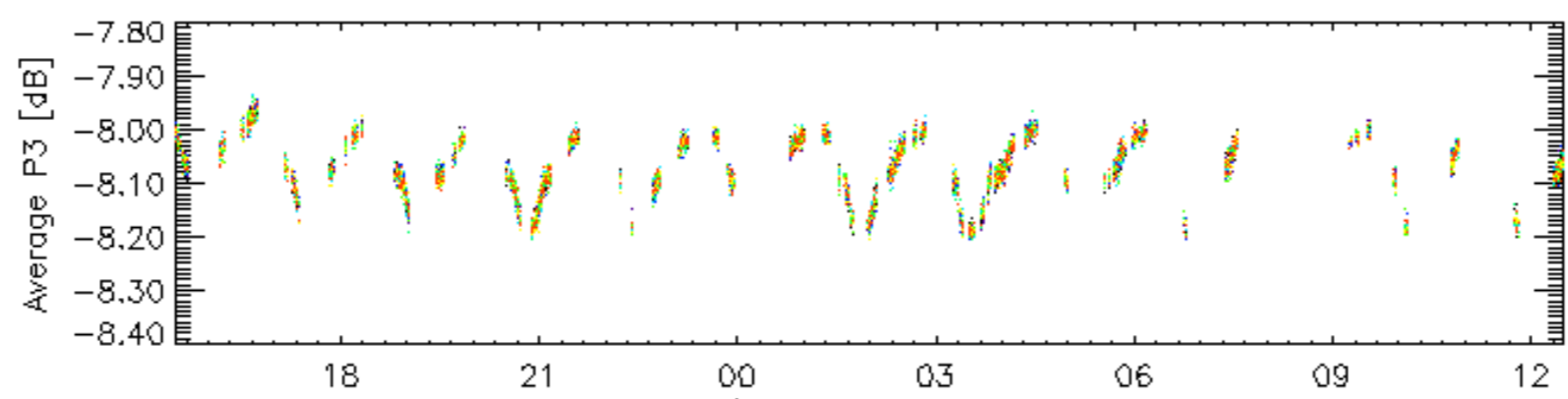
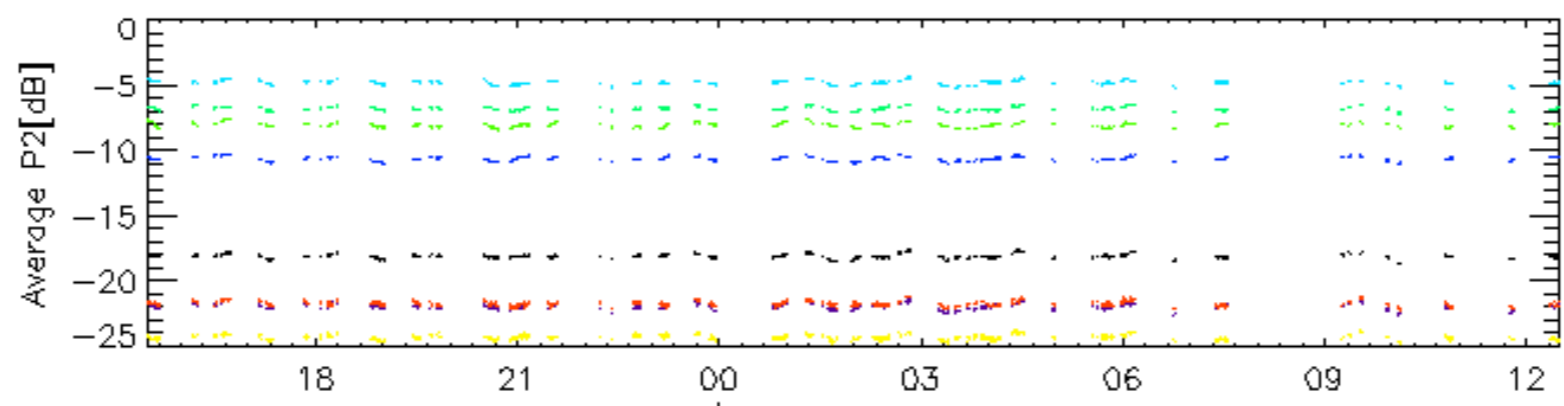
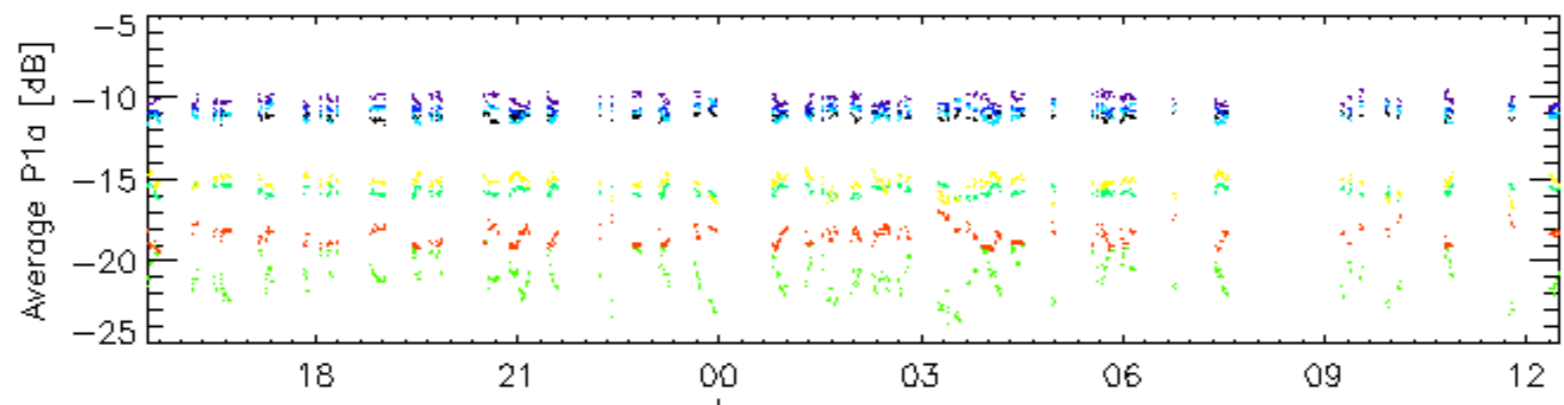
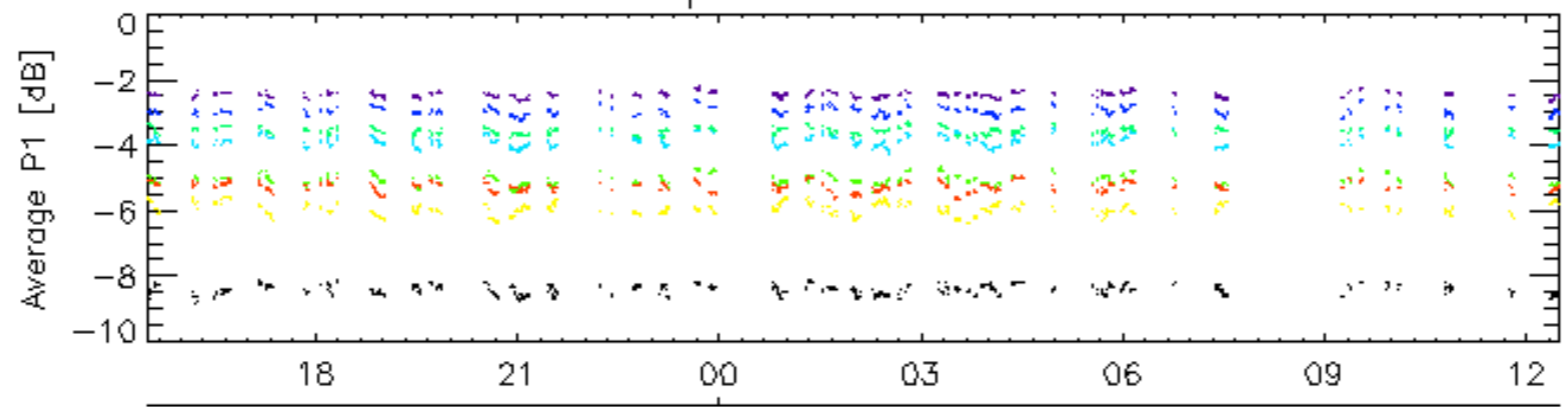


### Cal pulses for GM1 SS3



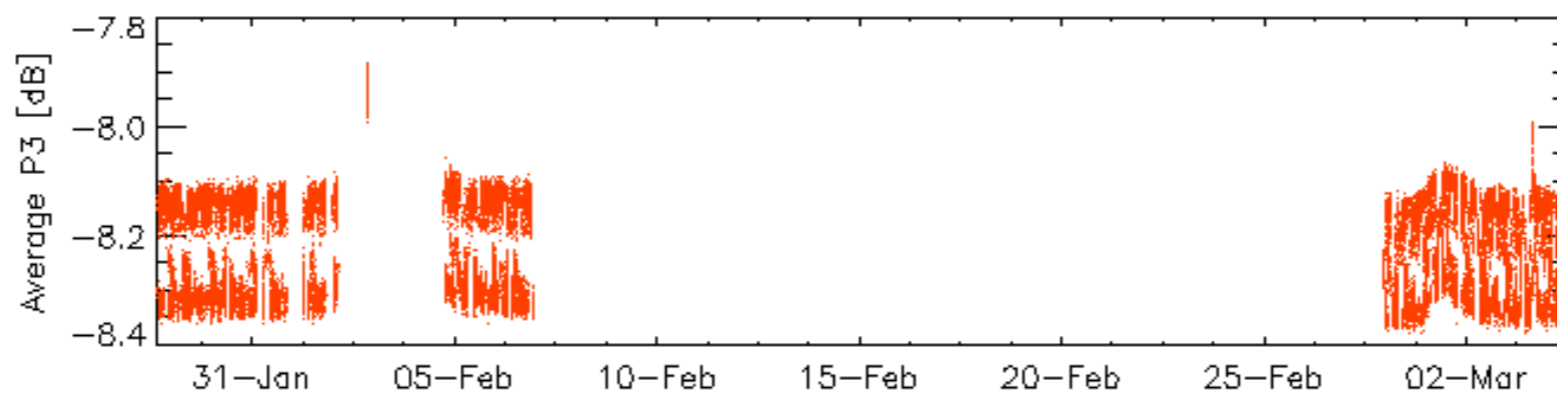
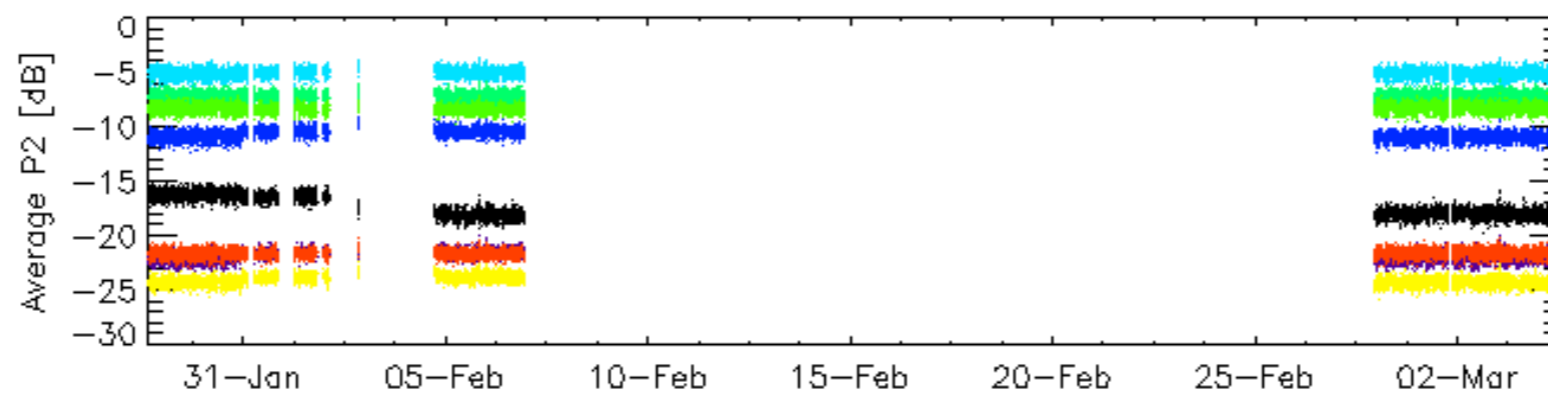
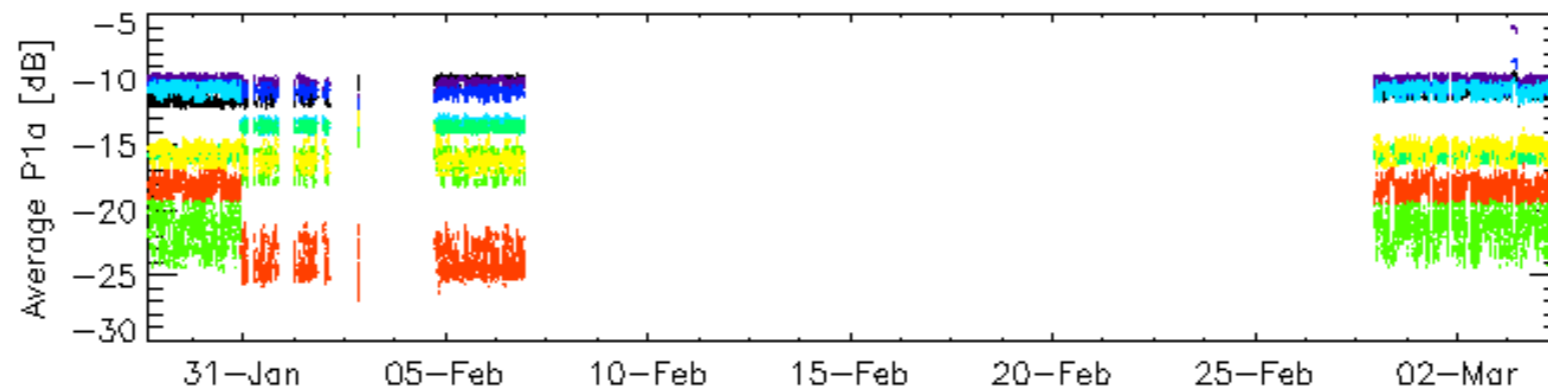
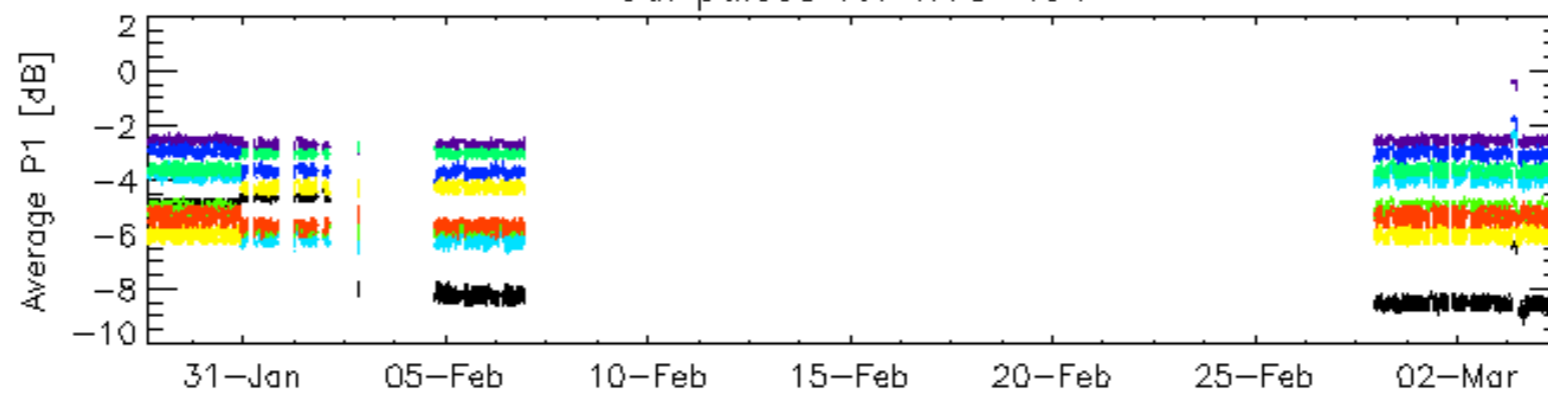
rows: \_ 3 \_ 7 \_ 11 \_ 15 \_ 19 \_ 22 \_ 26 \_ 30

### Cal pulses for GM1 SS3



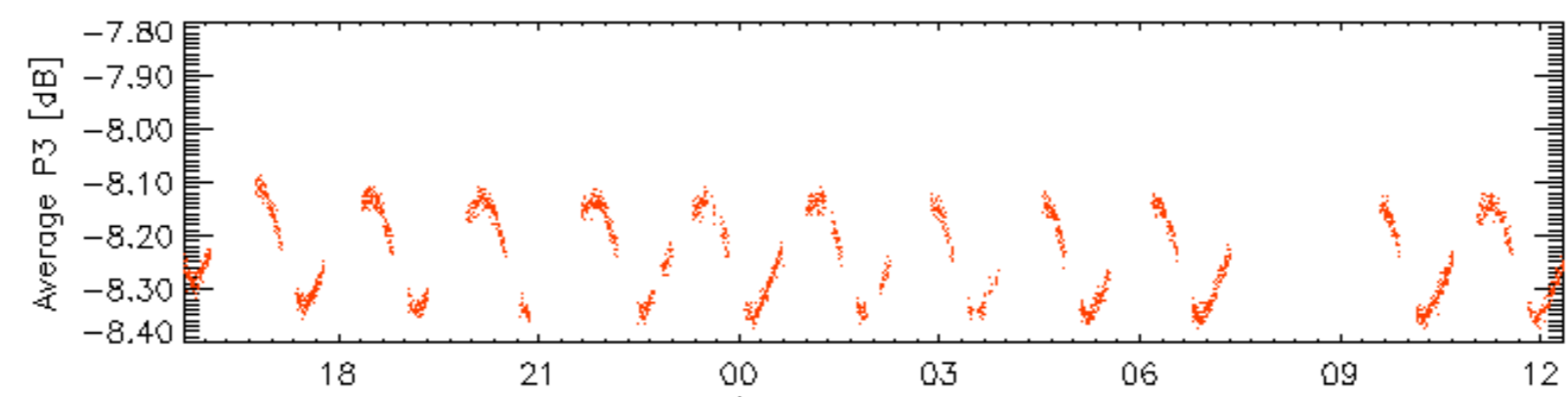
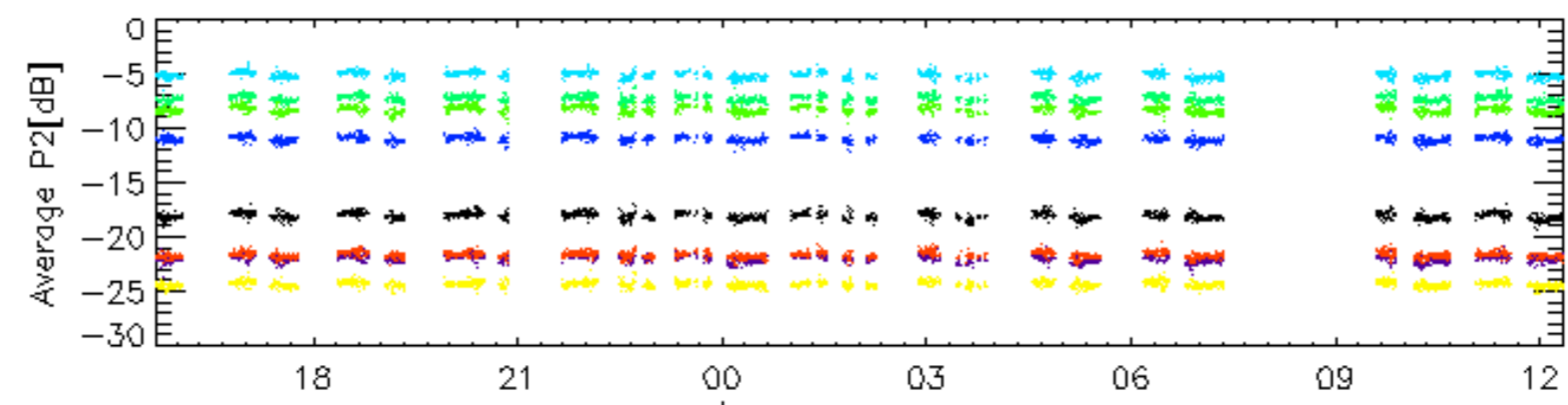
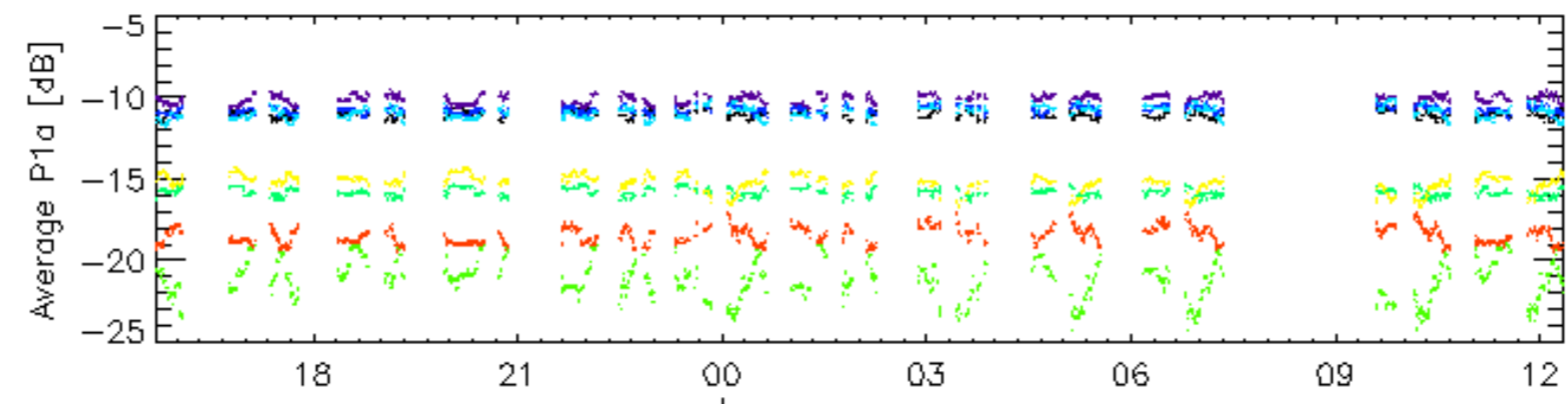
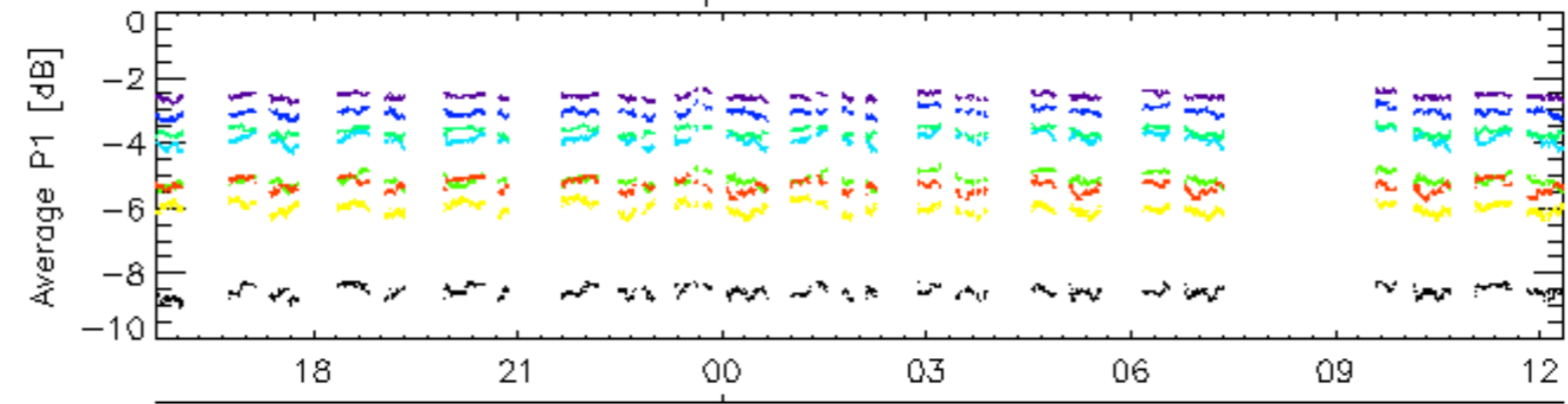
rows: 3 7 11 15 19 22 26 30

Cal pulses for WVS IS4



rows: [3](#) [7](#) [11](#) [15](#) [19](#) [22](#) [26](#) [30](#)

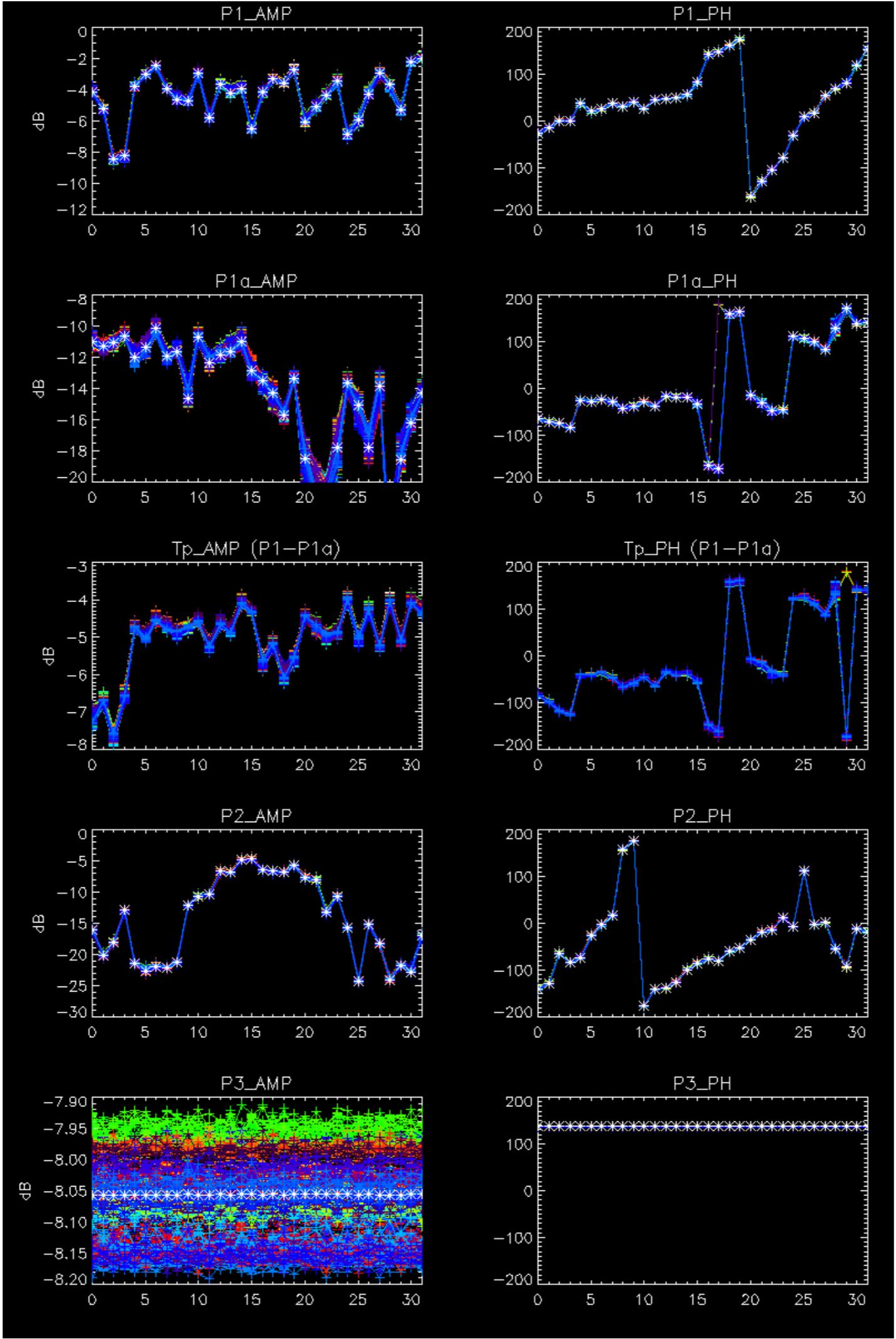
Cal pulses for WVS IS4

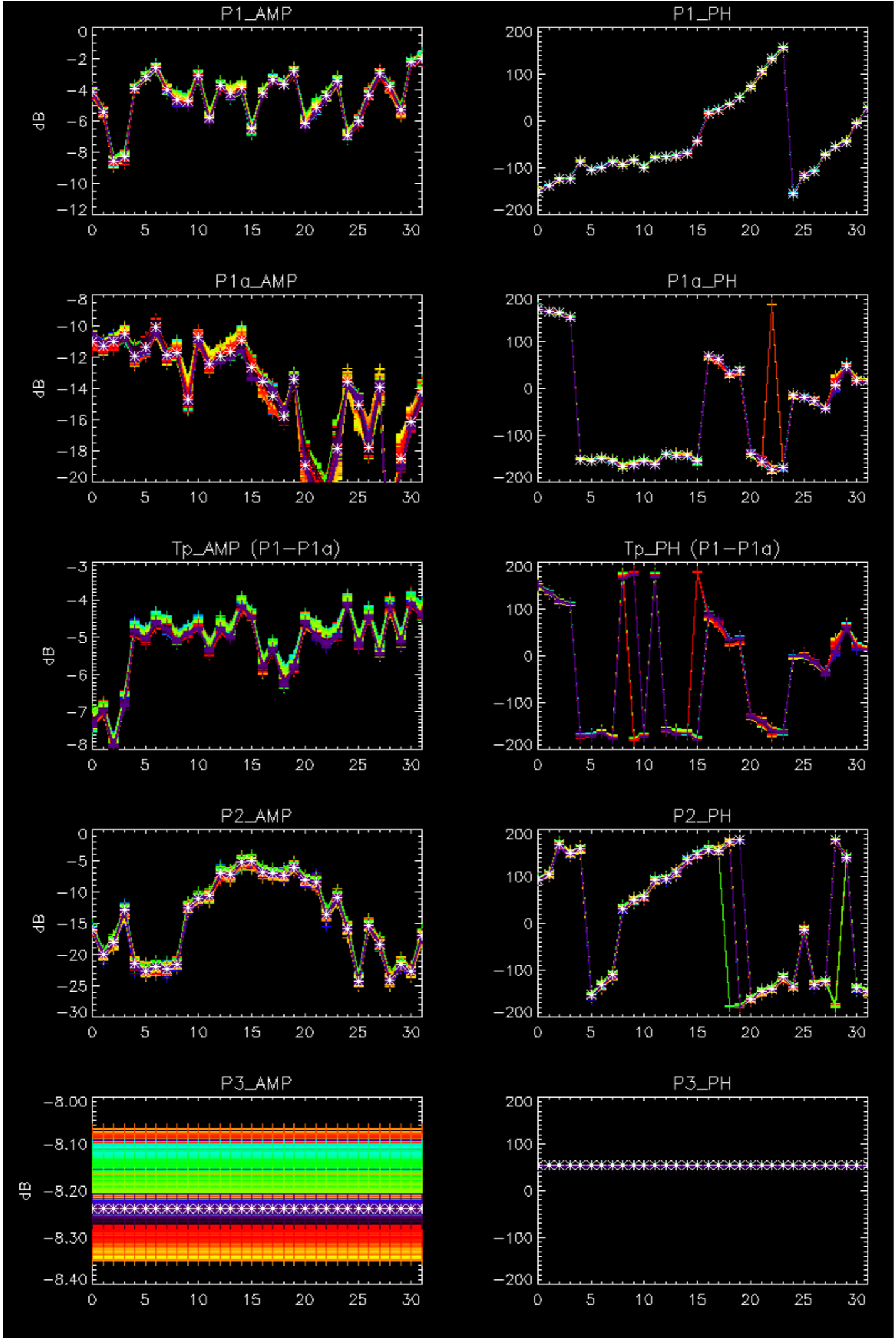


rows: \_ 3 \_ 7 \_ 11 \_ 15 \_ 19 \_ 22 \_ 26 \_ 30

No anomalies observed.



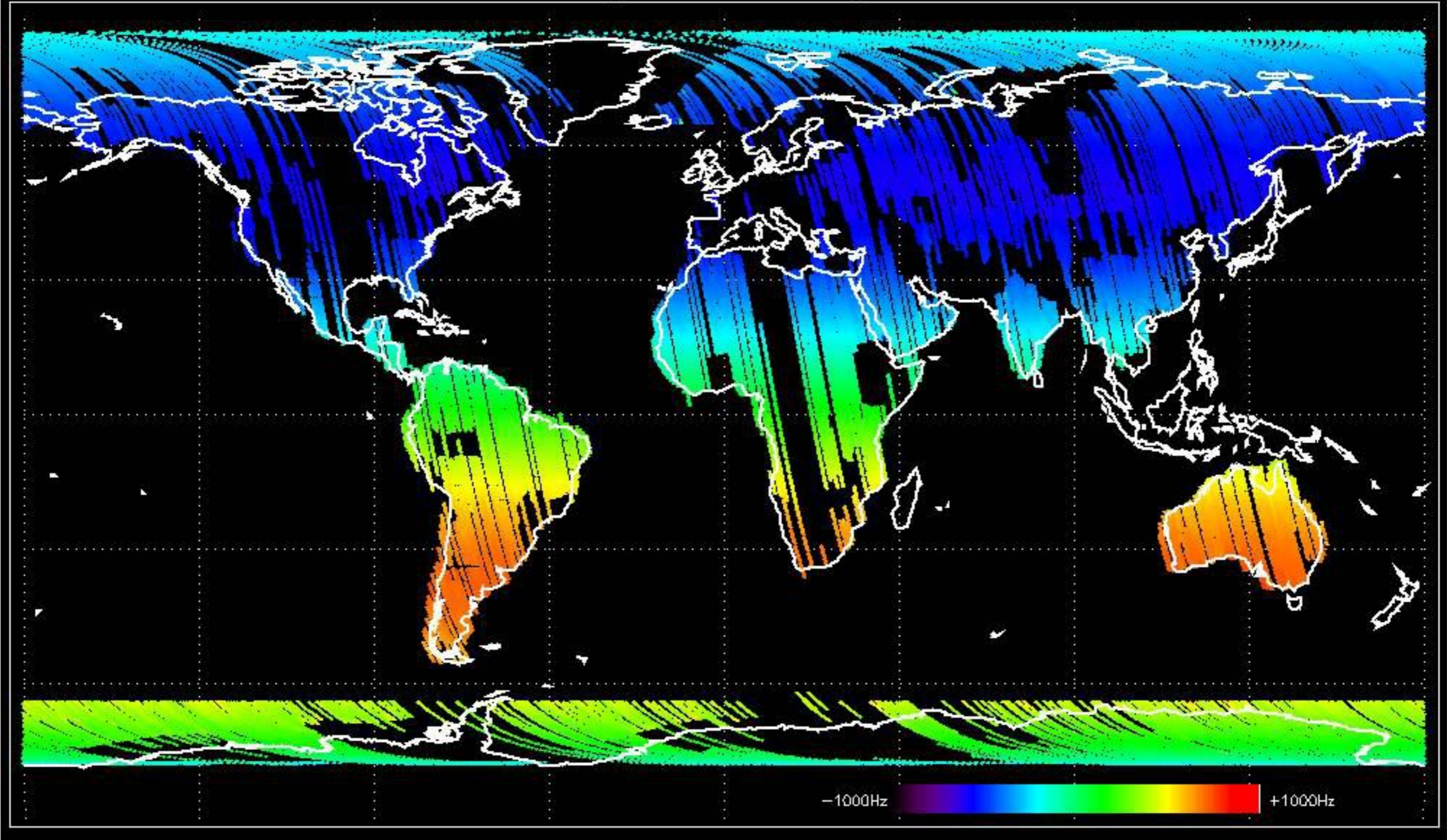




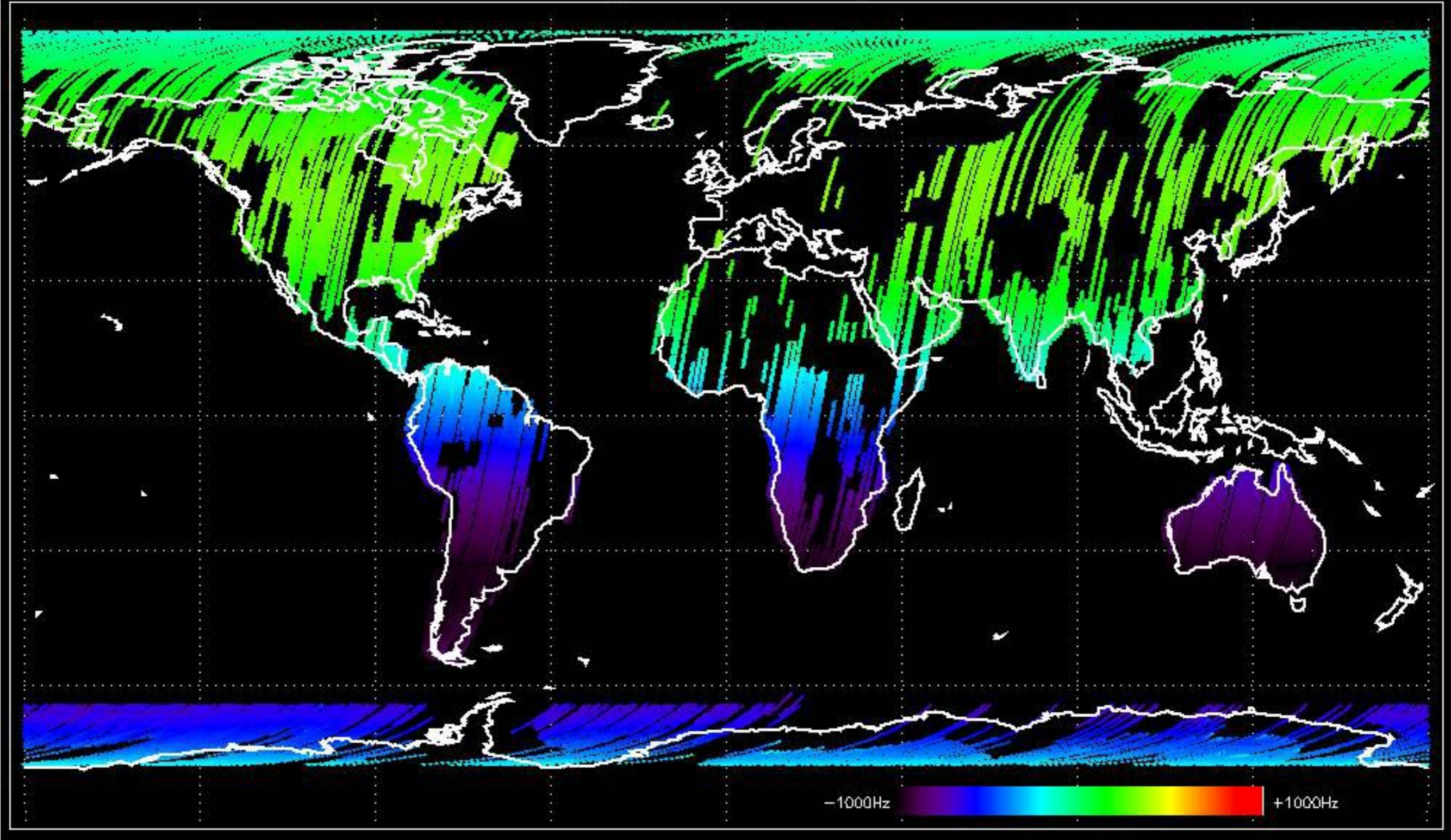
- Stable wave internal calibration pulses gain and phase.
- Stable raw data statistics.
- Nominal Doppler behavior.



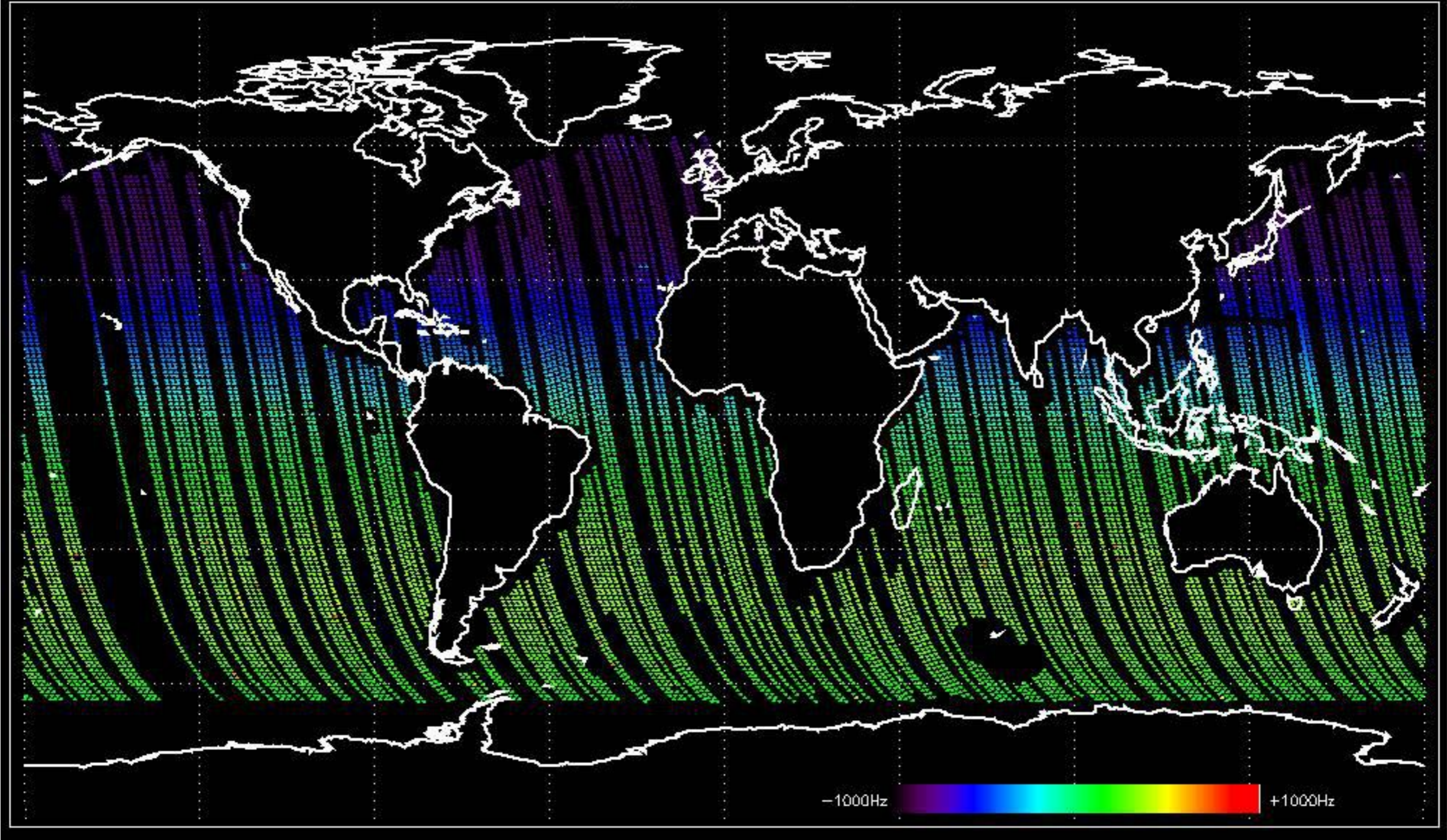
Doppler 'GM1' 'SS1' ascending



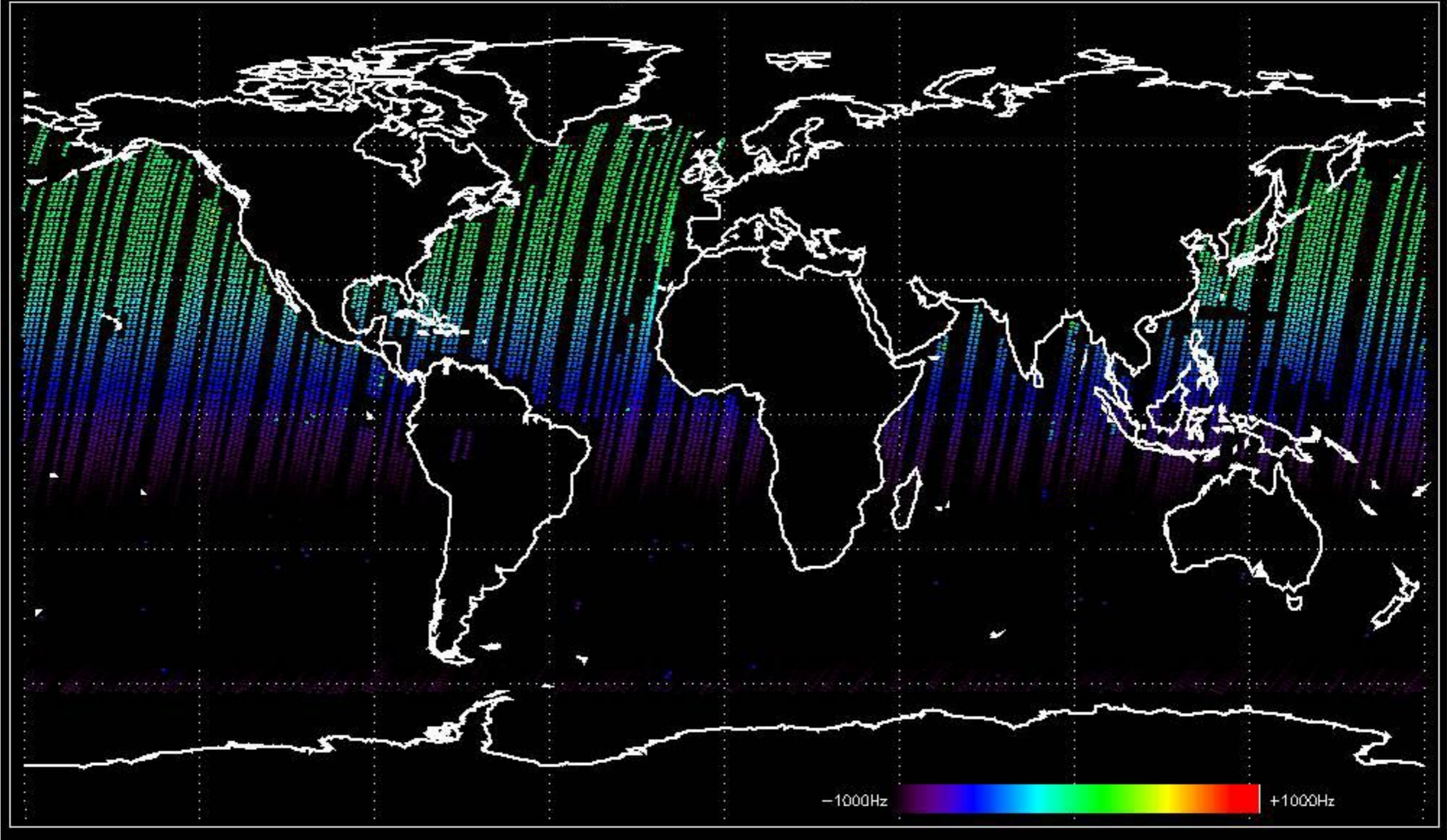
Doppler 'GM1' 'SS1' descending



Doppler 'WVS' 'IS4' ascending

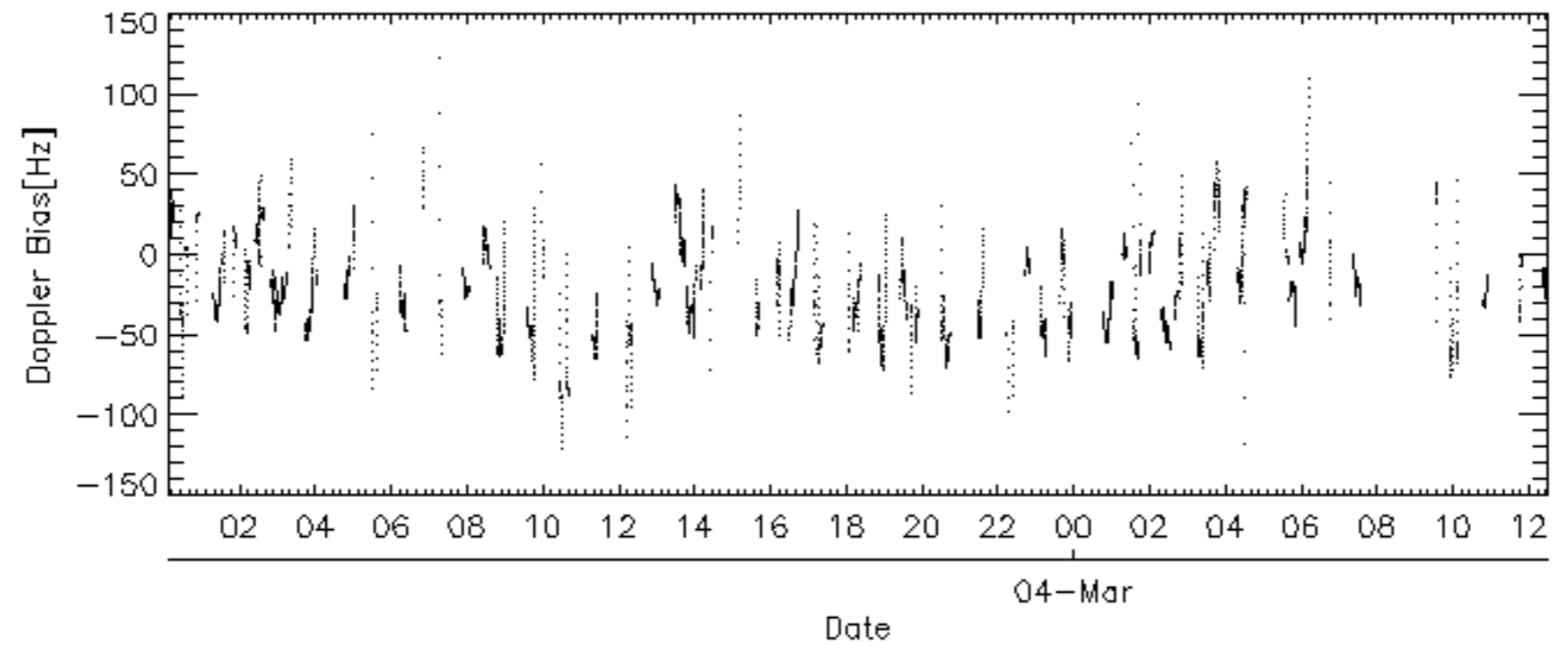
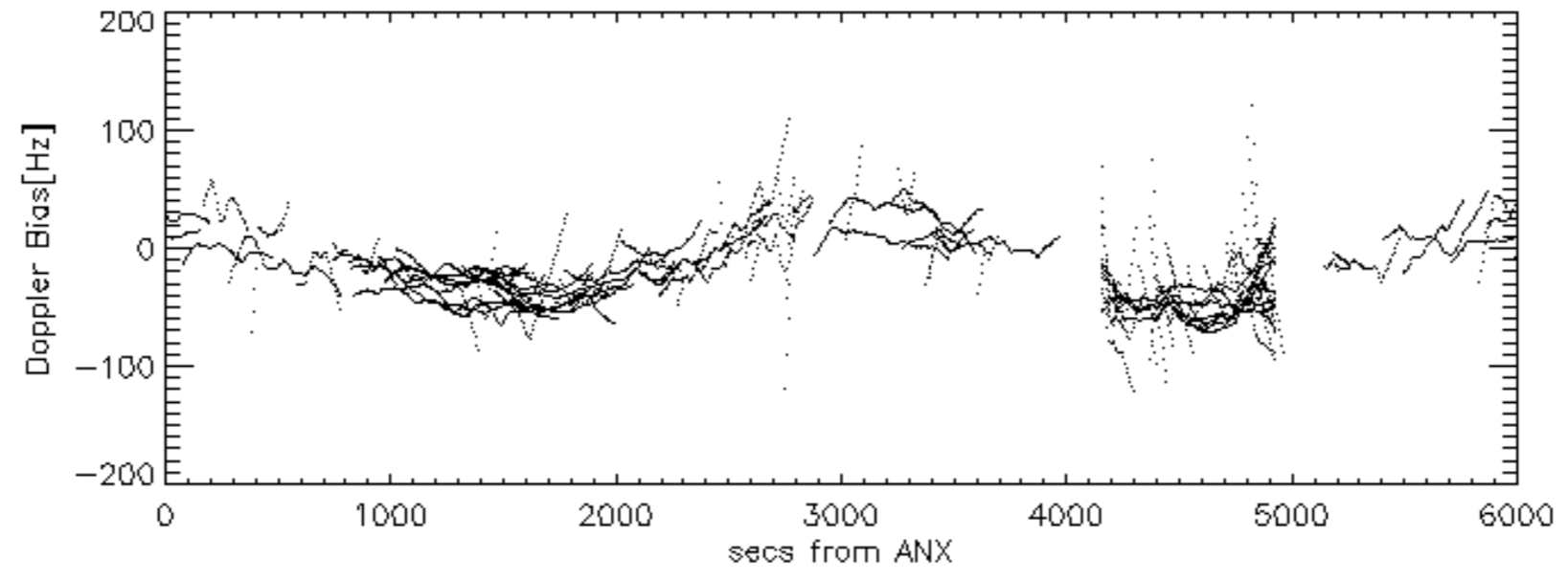
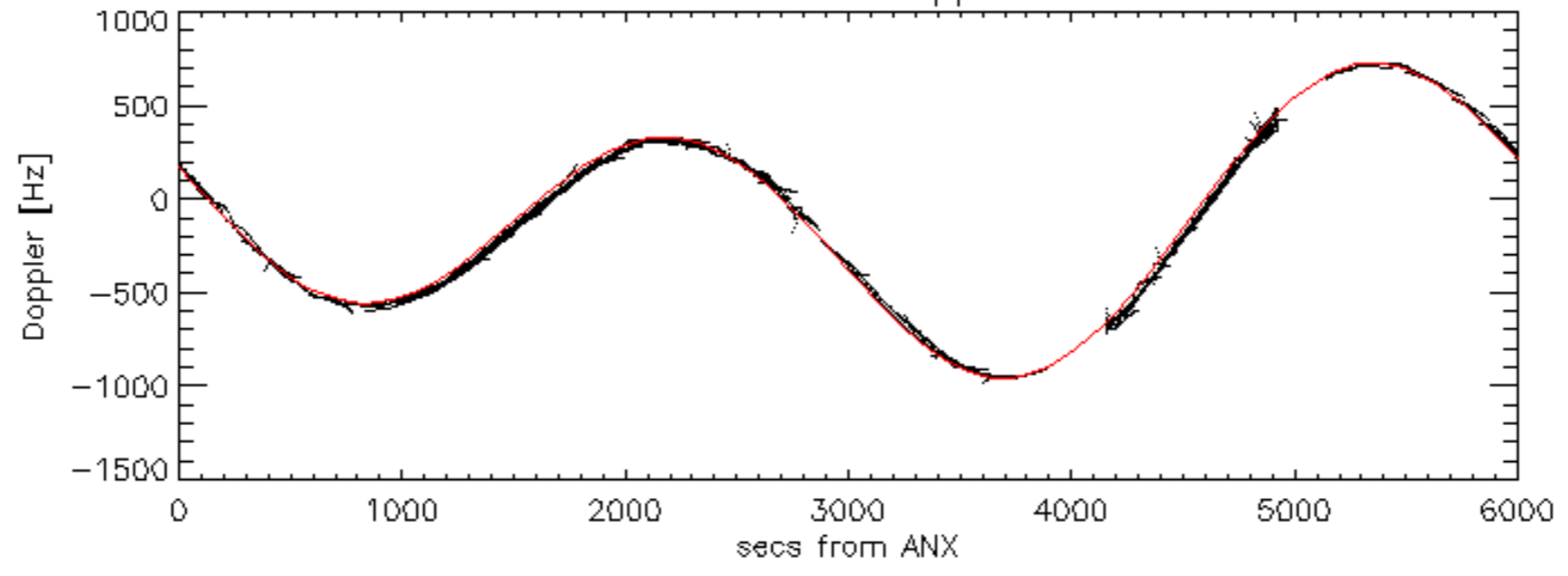


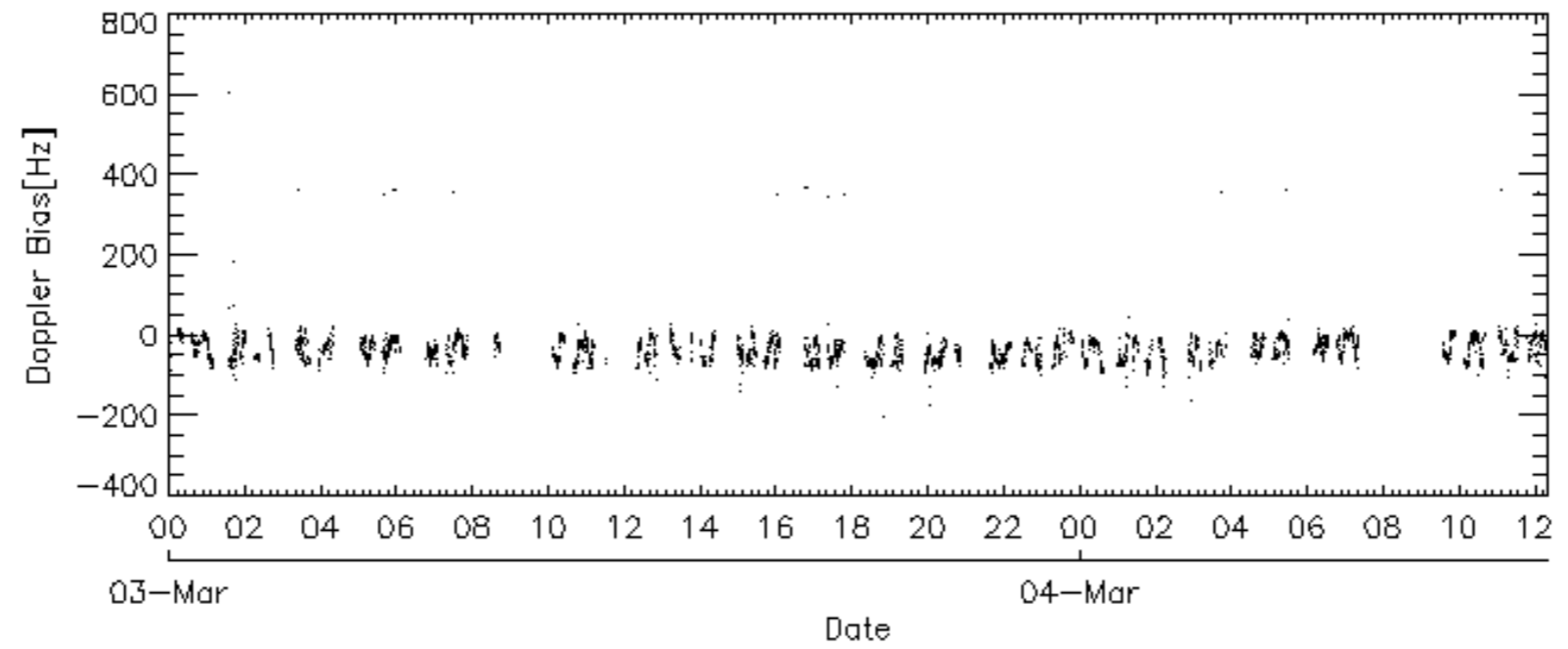
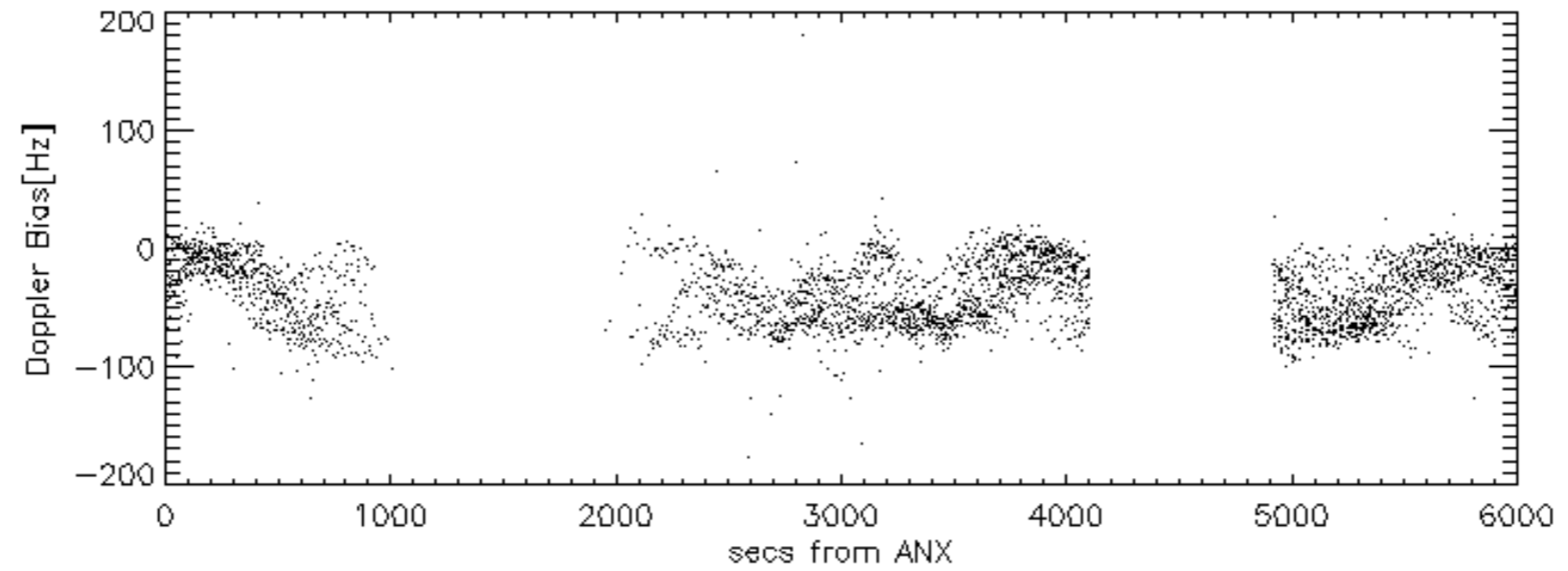
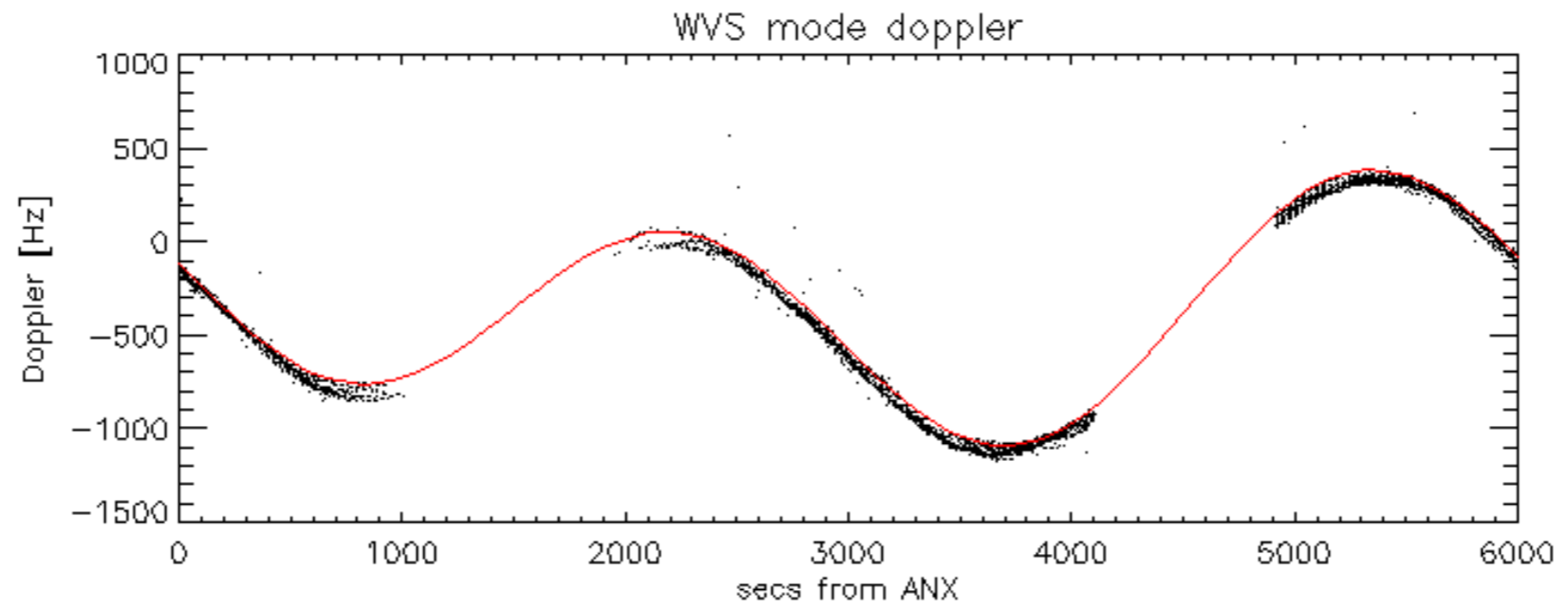
Doppler 'WVS' 'IS4' descending



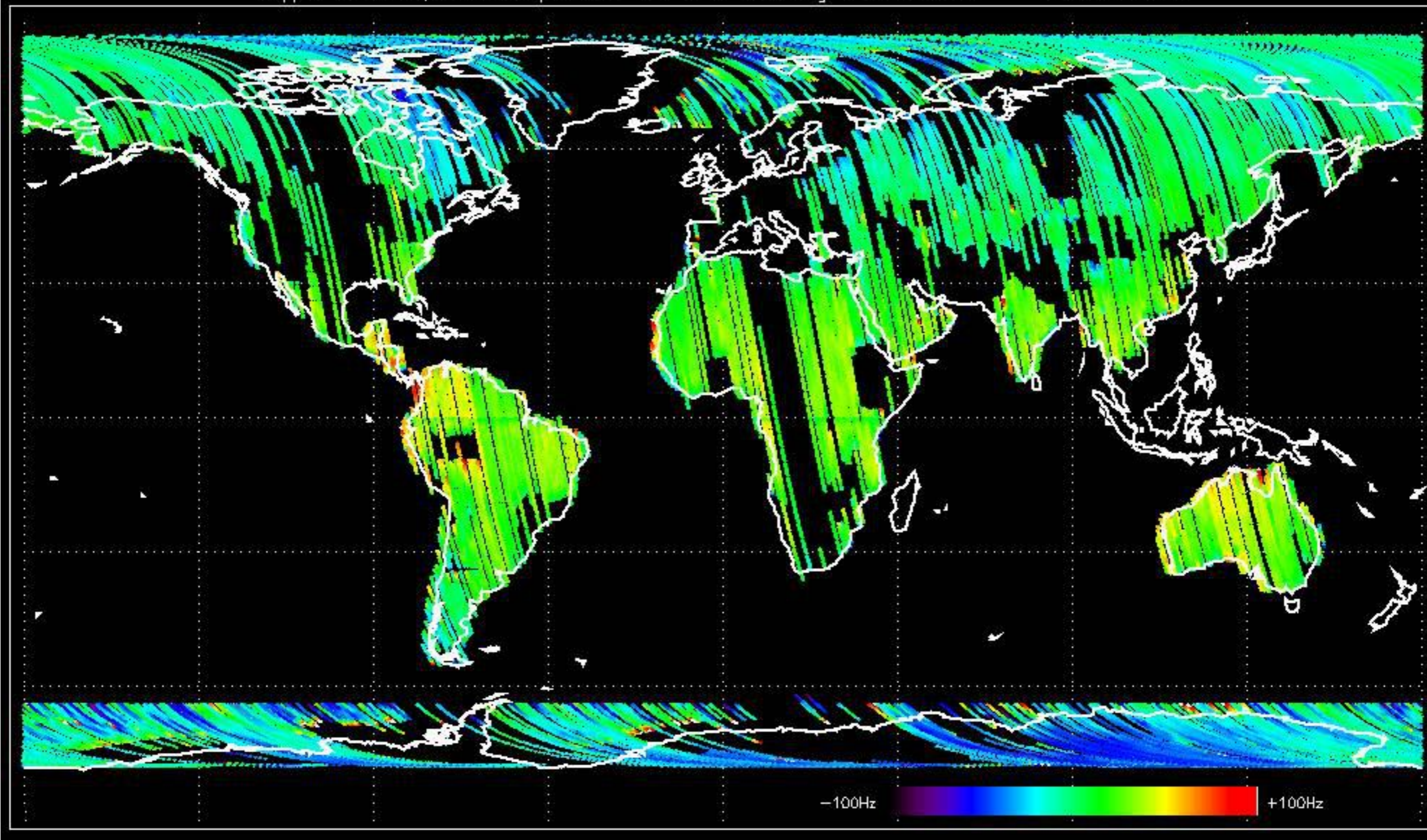


GM1 mode doppler

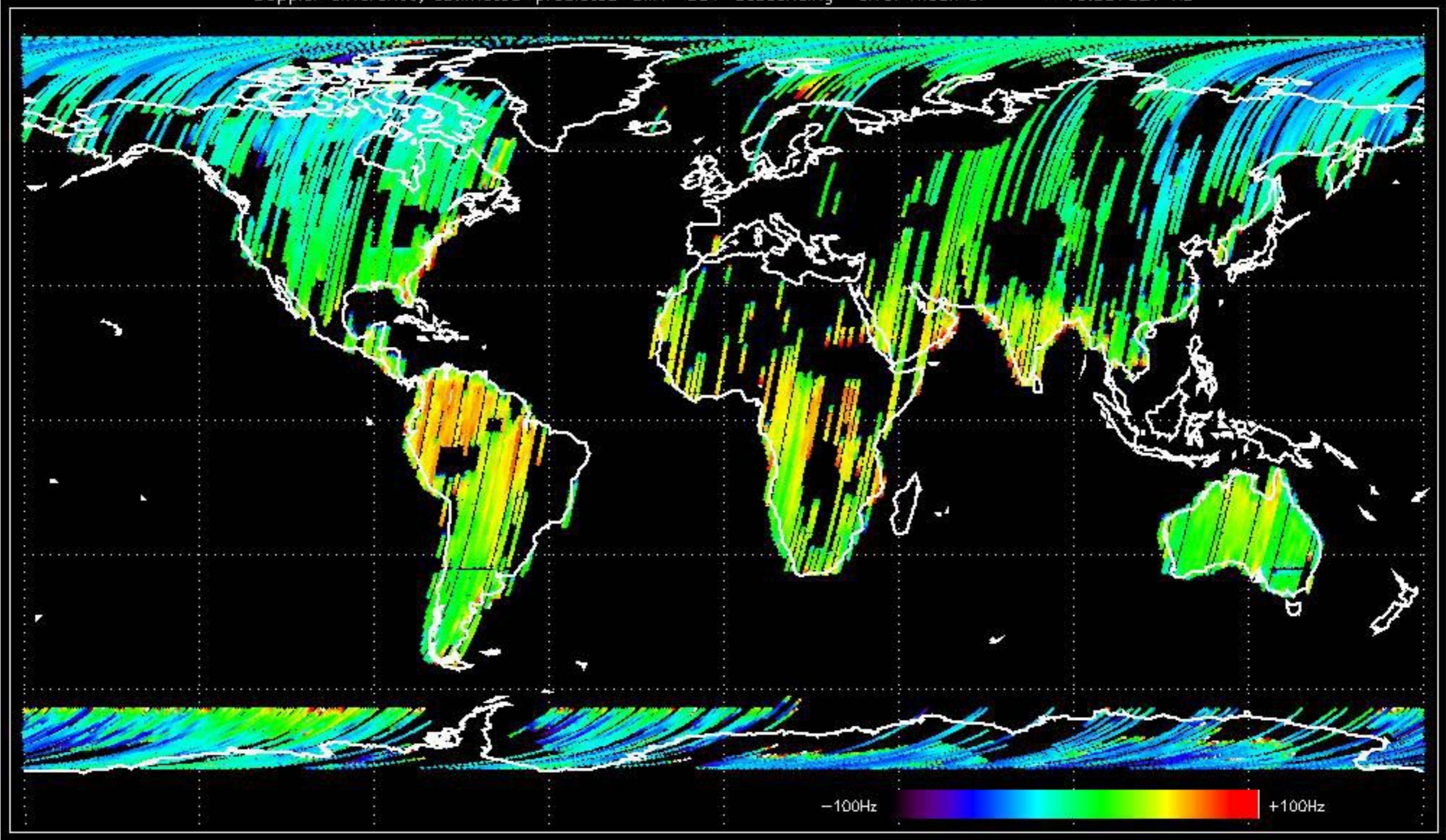




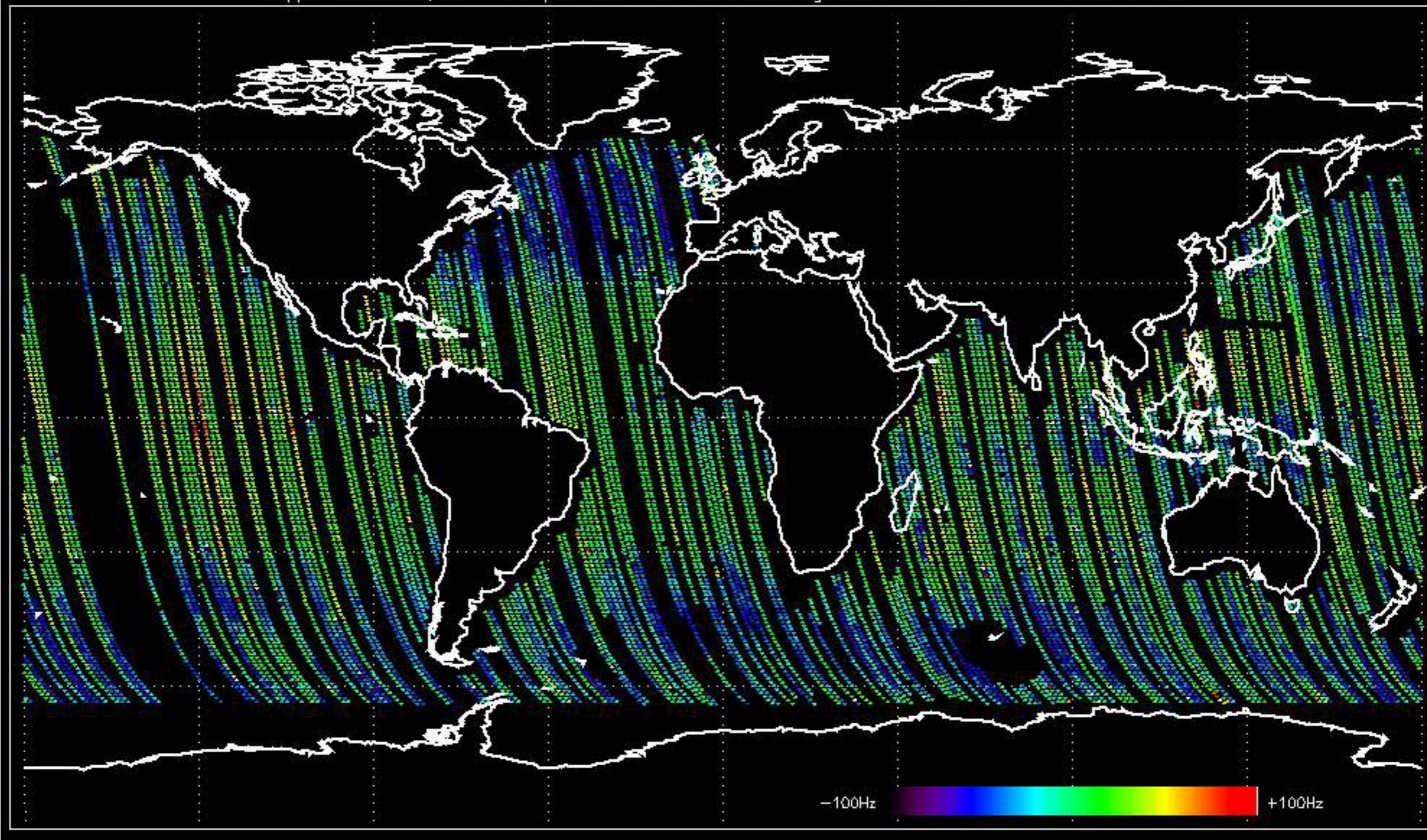
Doppler difference, estimated-predicted 'GM1' 'SS1' ascending -error mean of -18.828881 Hz



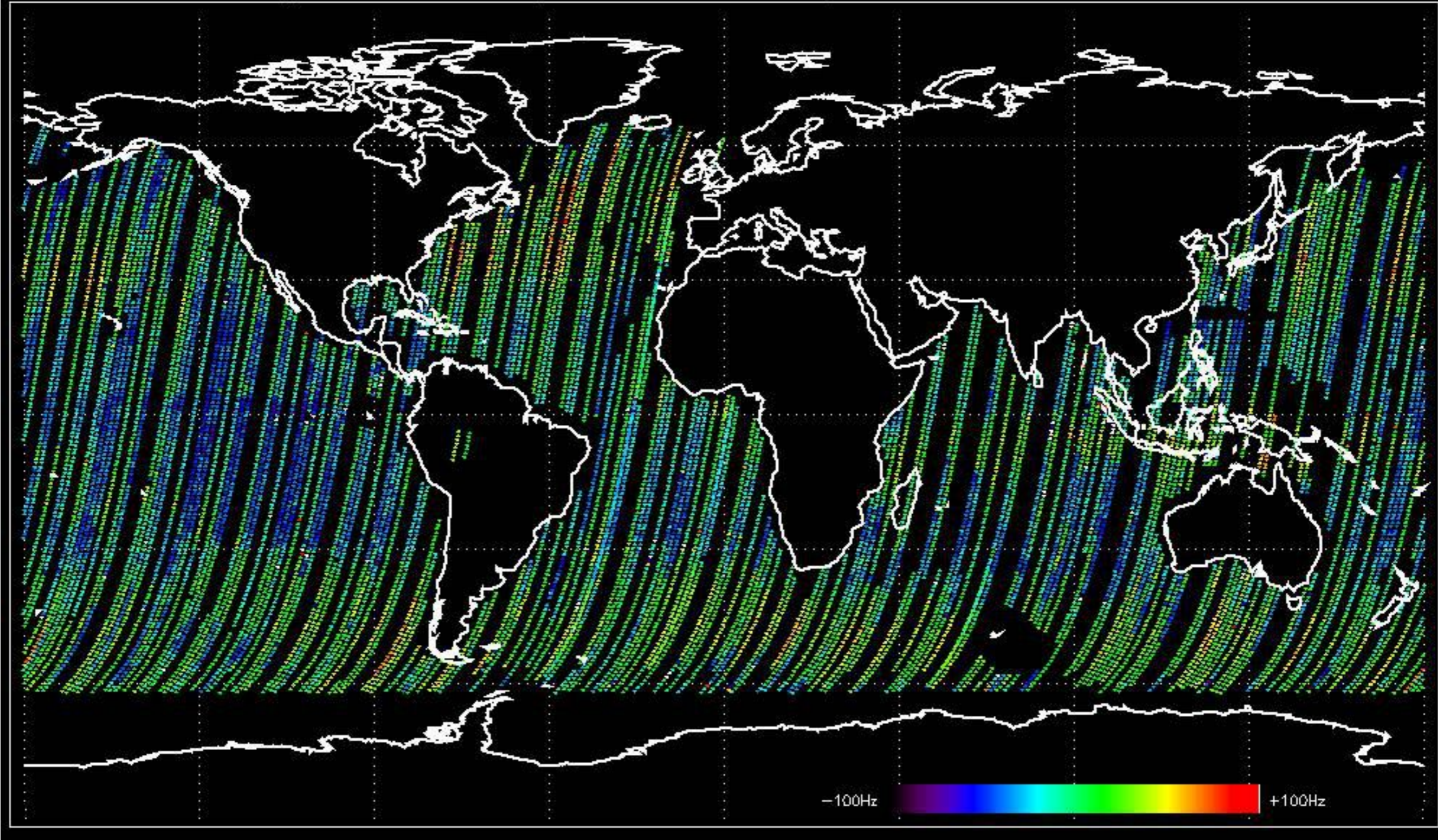
Doppler difference, estimated-predicted 'GM1' 'SS1' descending -error mean of -16.537021 Hz



Doppler difference, estimated-predicted 'WVS' 'IS4' ascending -error mean of -24.260426 Hz



Doppler difference, estimated-predicted 'WVS' 'IS4' descending -error mean of -29.246785 Hz



No anomalies observed on available MS products:

No anomalies observed.



















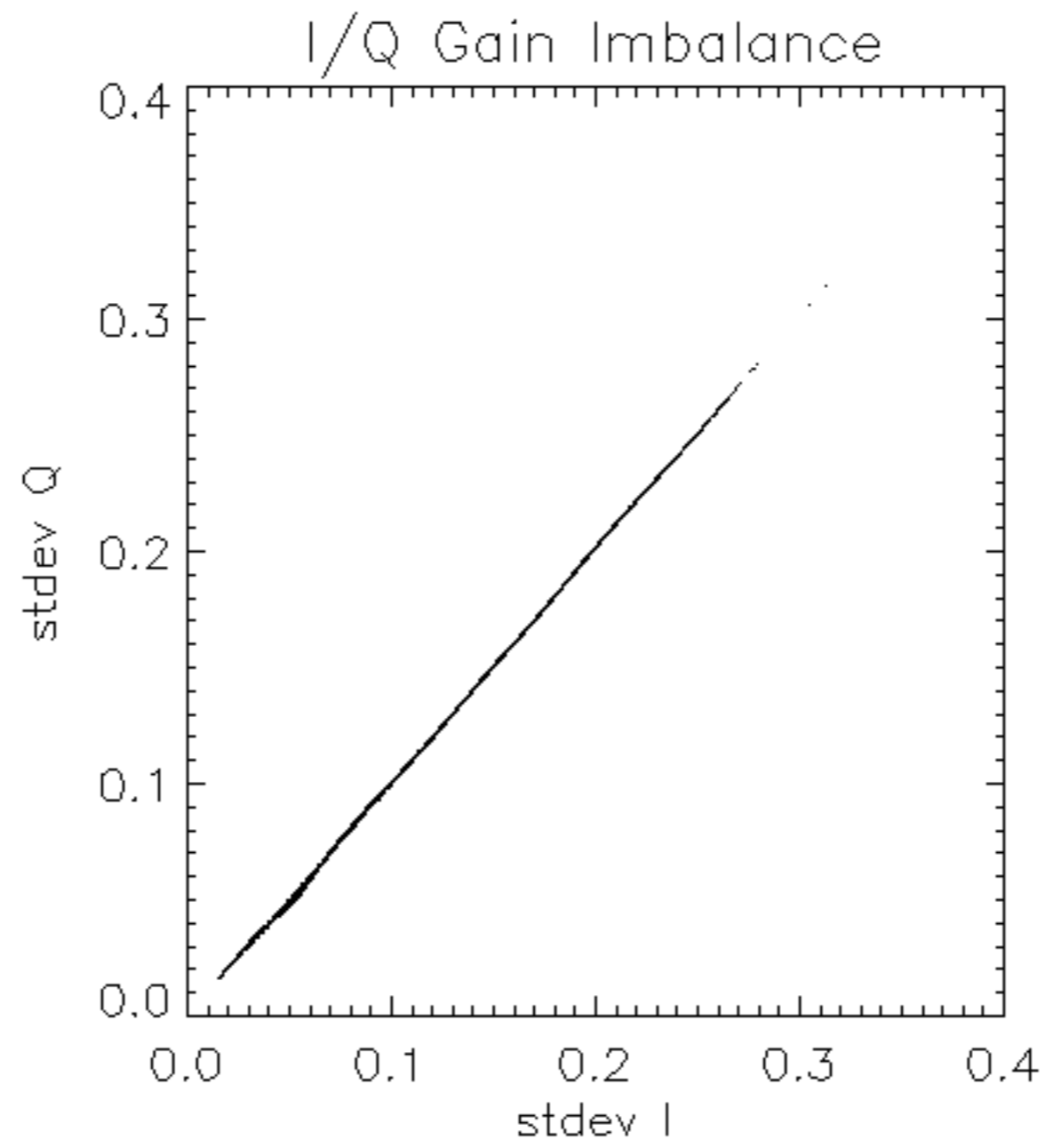


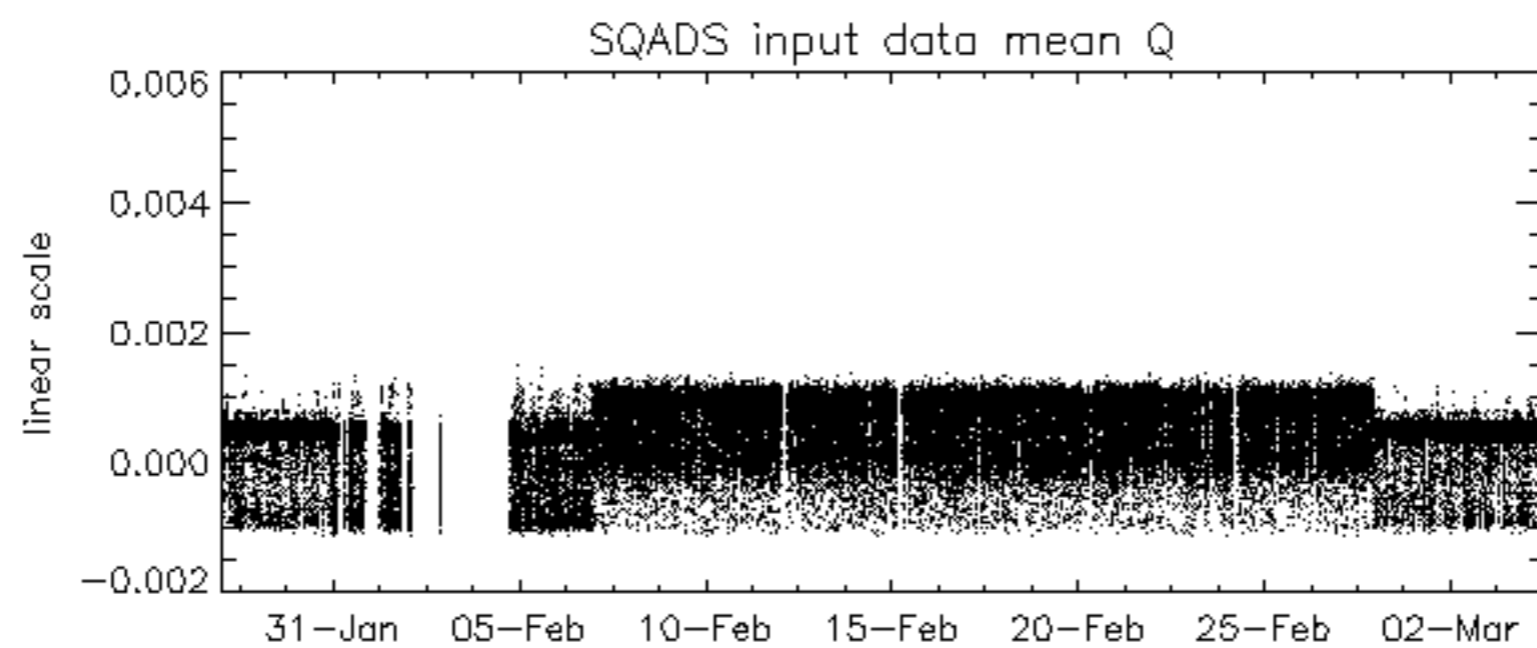
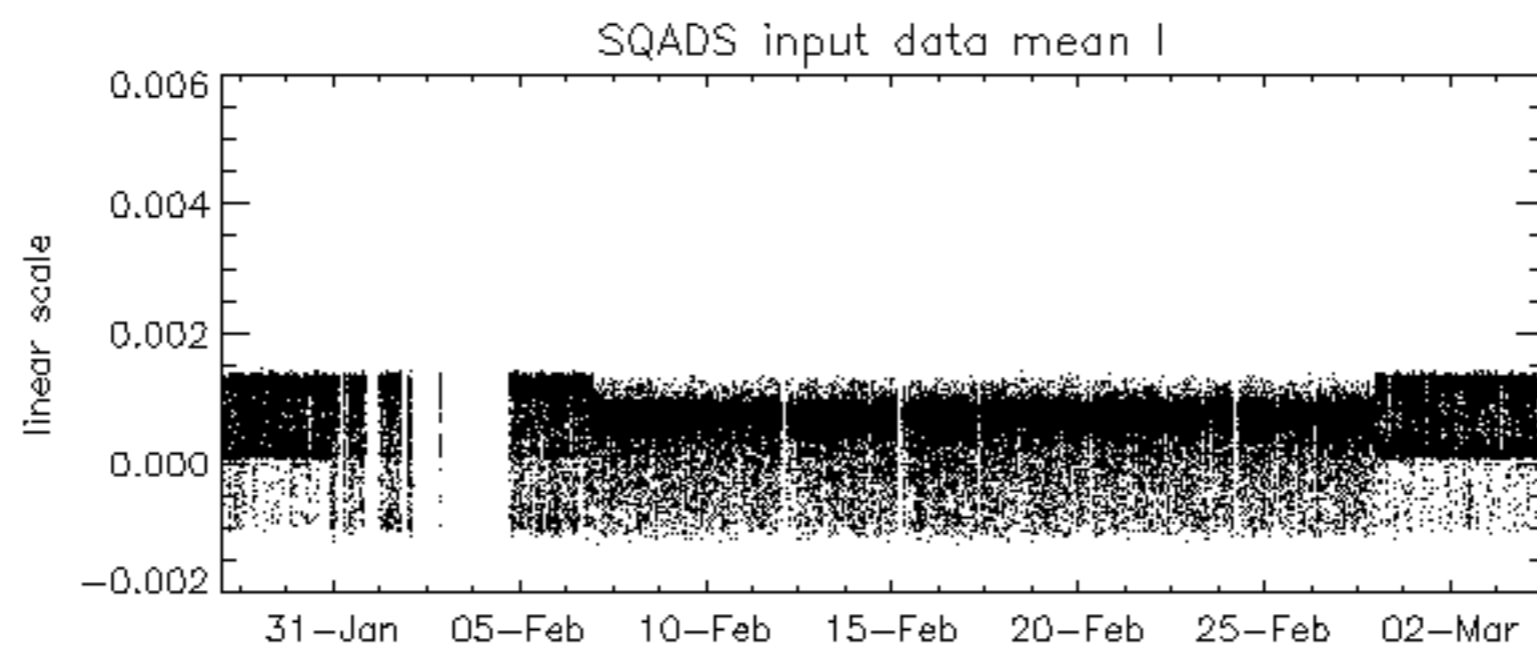
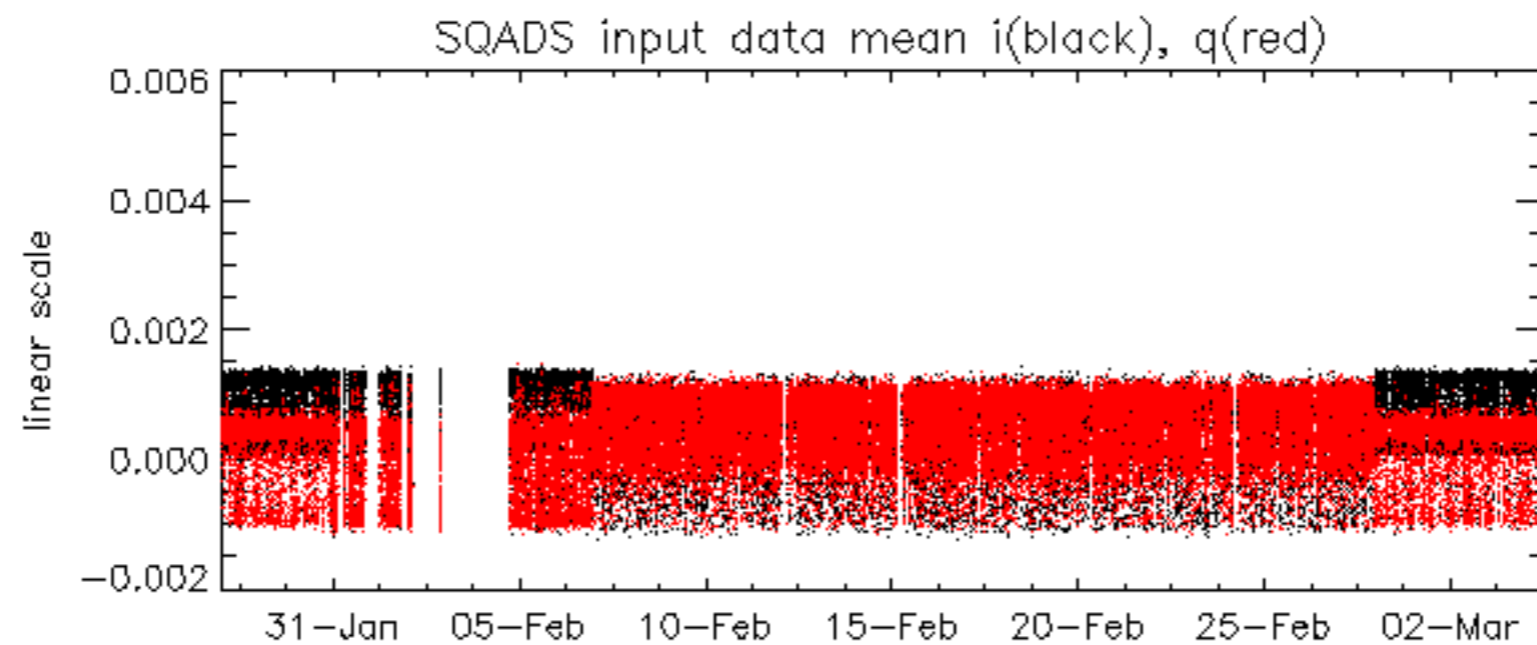


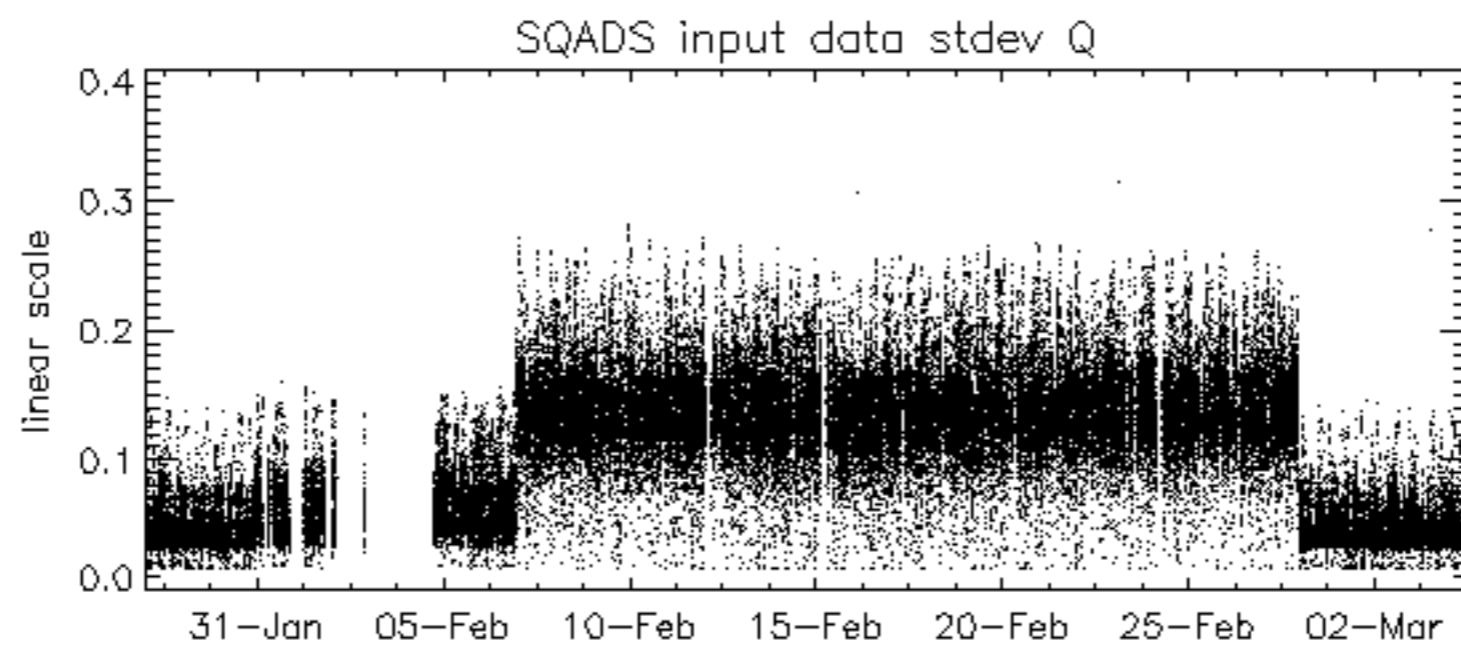
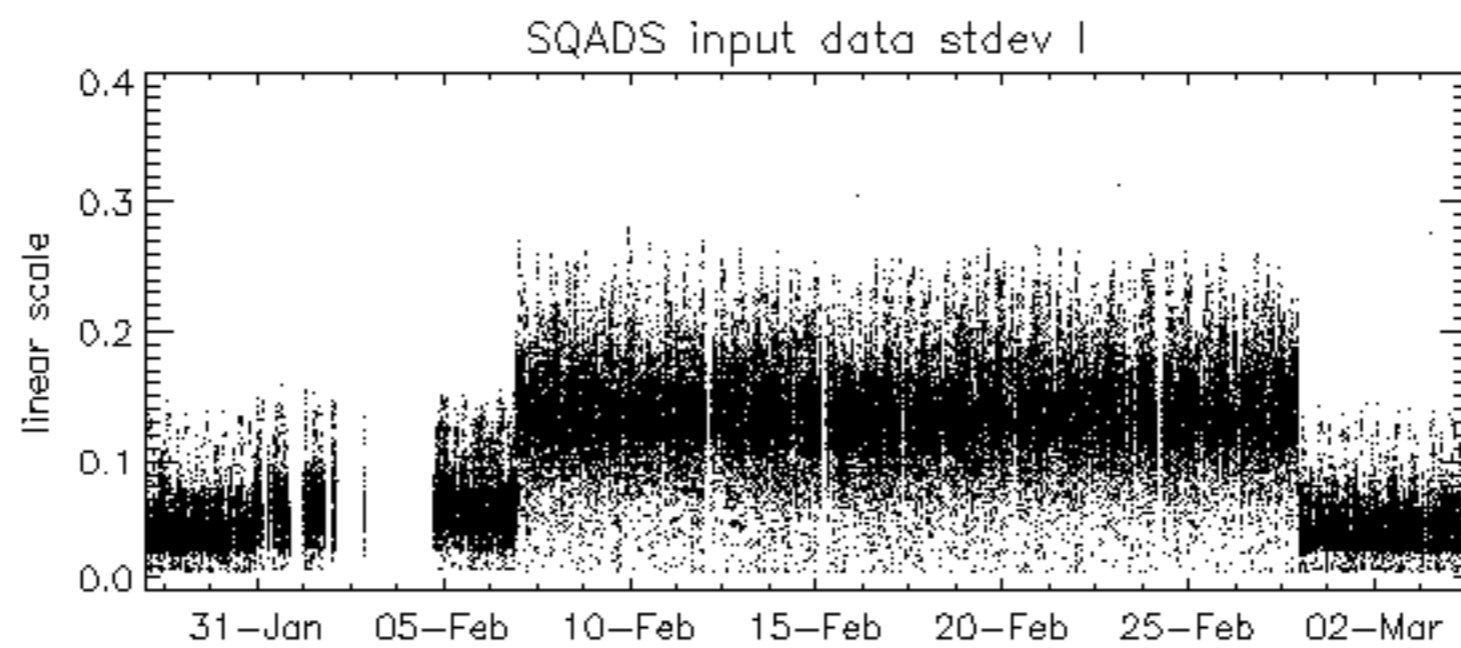
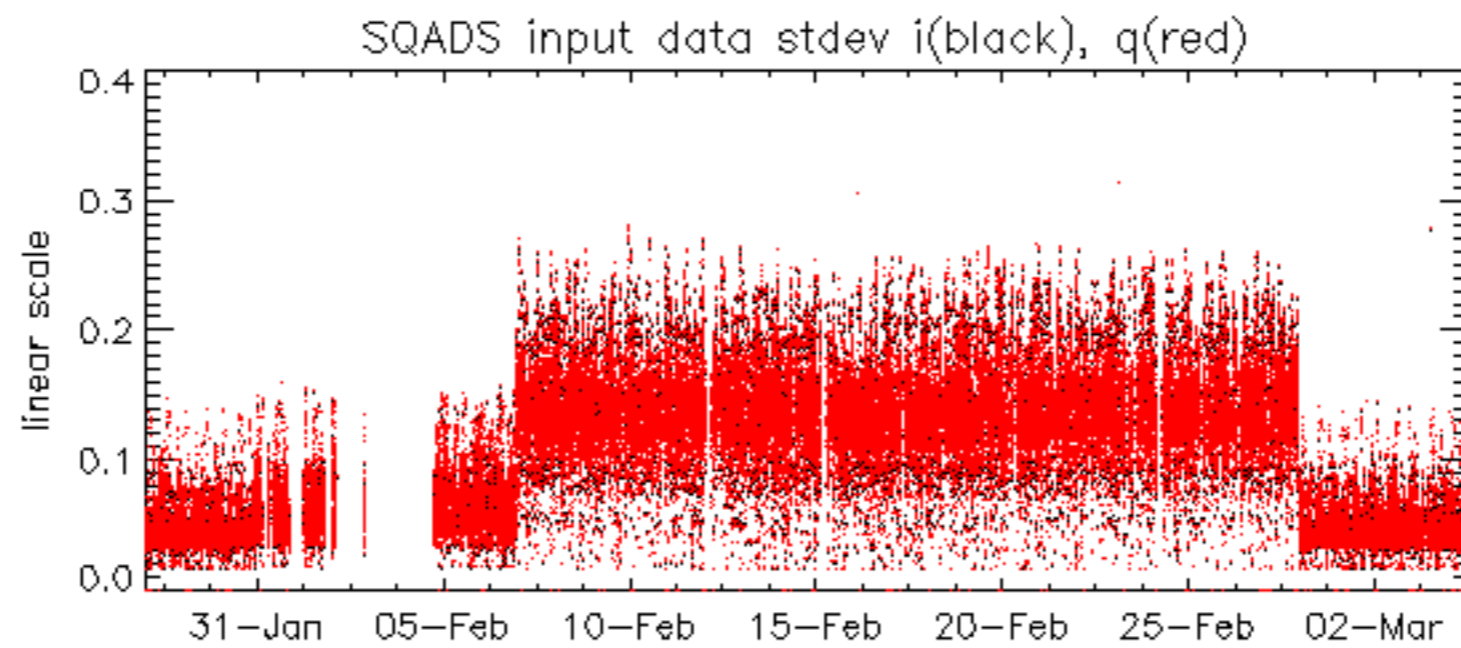






















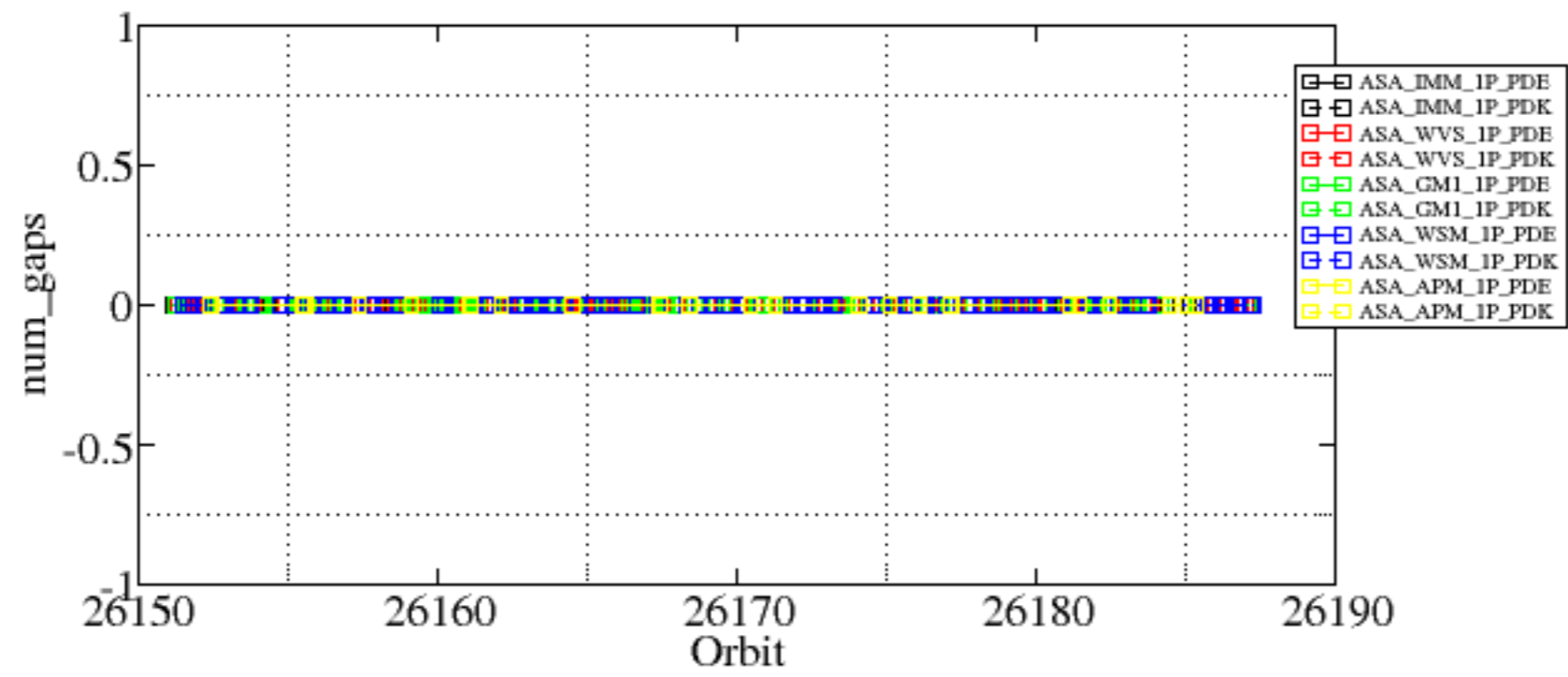




Summary of analysis for the last 3 days 2007030[234]

The assumption is taken that the SQUADS num\_gaps and num\_missing\_lines fields are reliable indicators of telemetry problems

| Filename   | num_gaps | num_missing_lines |
|--|----------|-------------------|
| ASA_GM1_1PNPDK20070303_153003_000002712056_00068_26174_5060.N1 | 0        | 51                |
| ASA_WSM_1PNPDE20070302_003405_000002632056_00045_26151_7324.N1 | 0        | 32                |
| ASA_WSM_1PNPDE20070302_145414_000000852056_00054_26160_8003.N1 | 0        | 31                |
| ASA_WSM_1PNPDE20070302_181712_000000852056_00056_26162_8077.N1 | 0        | 27                |
| ASA_WSM_1PNPDE20070303_142340_000000852056_00068_26174_9241.N1 | 0        | 16                |

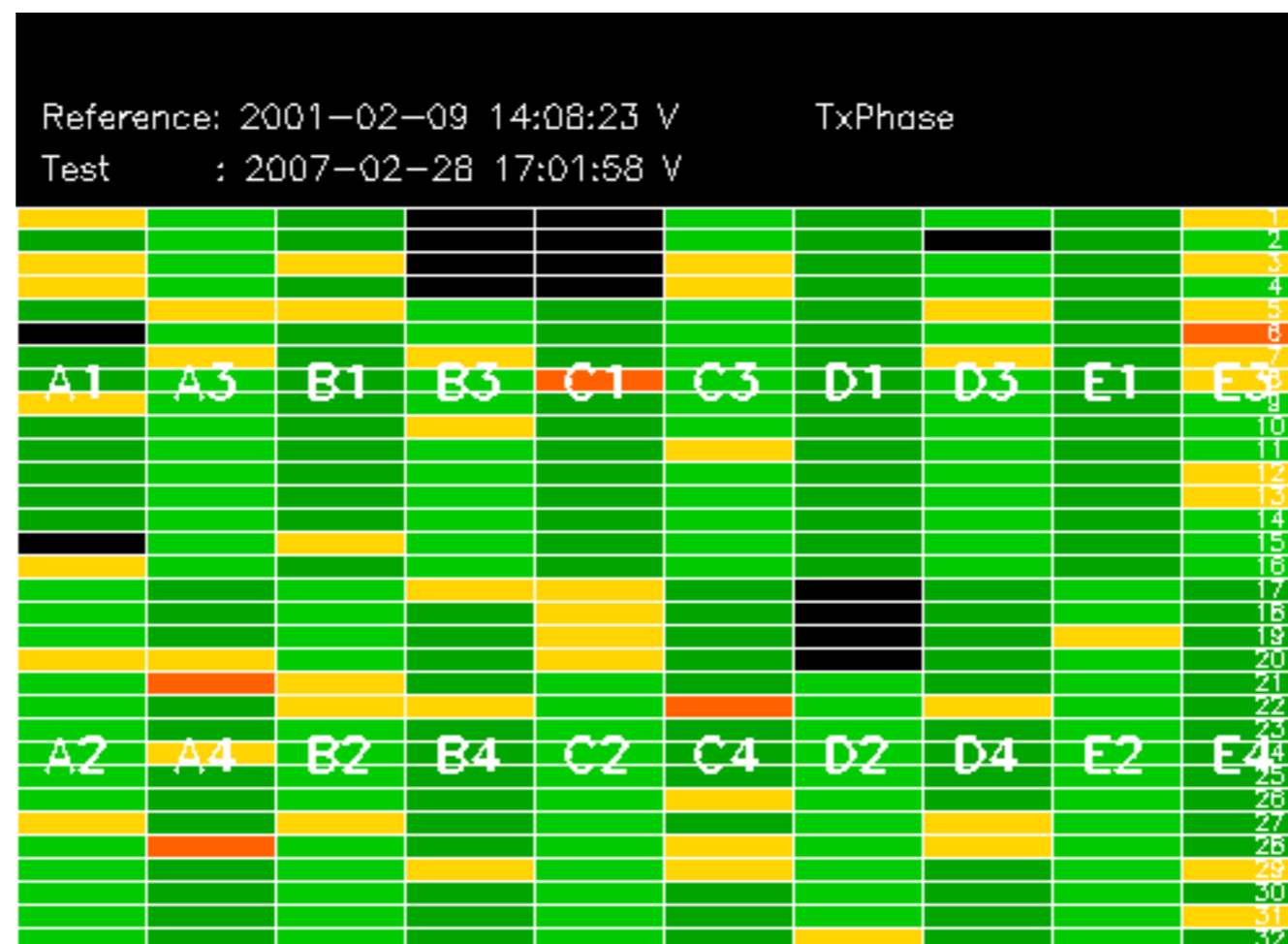










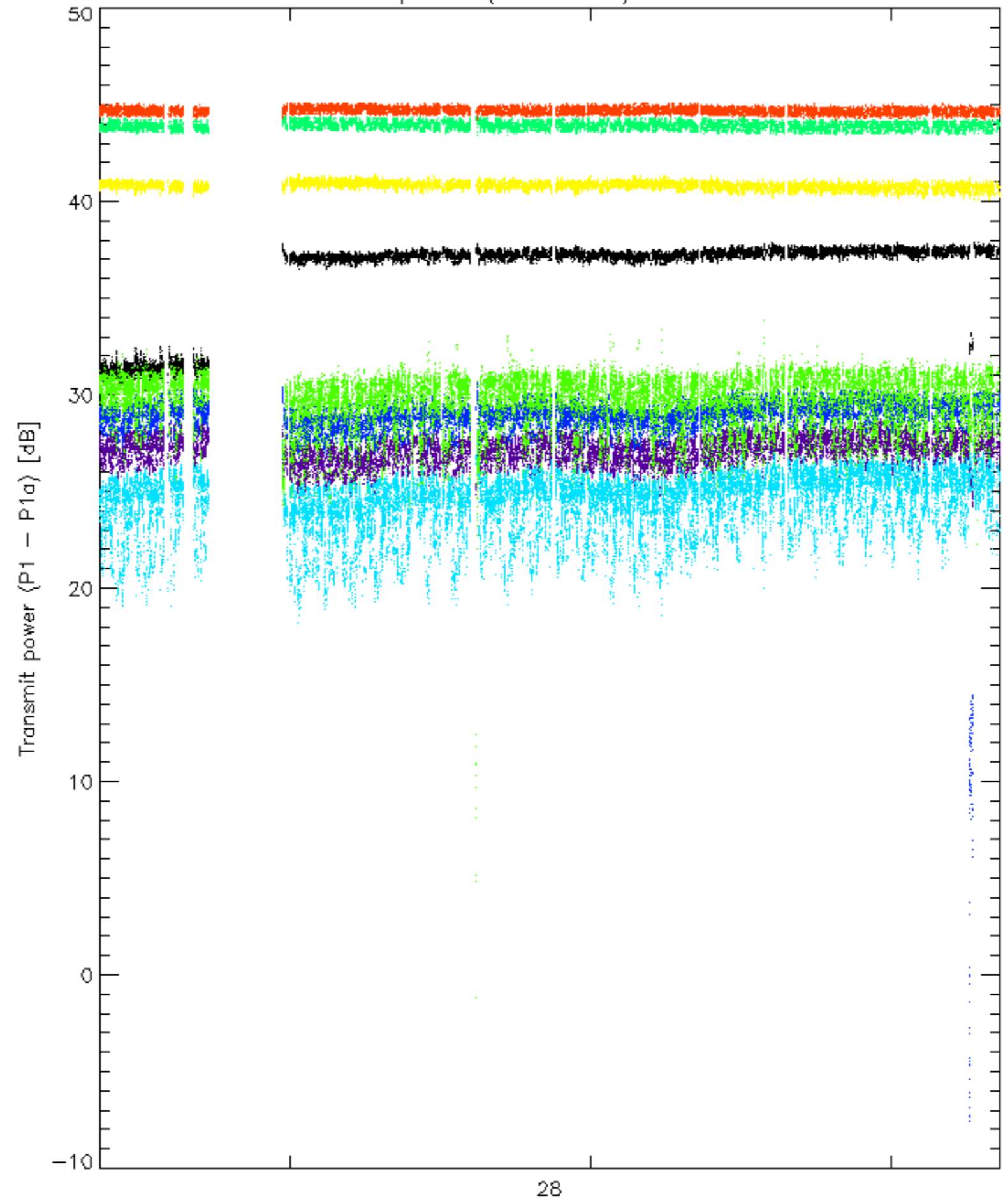




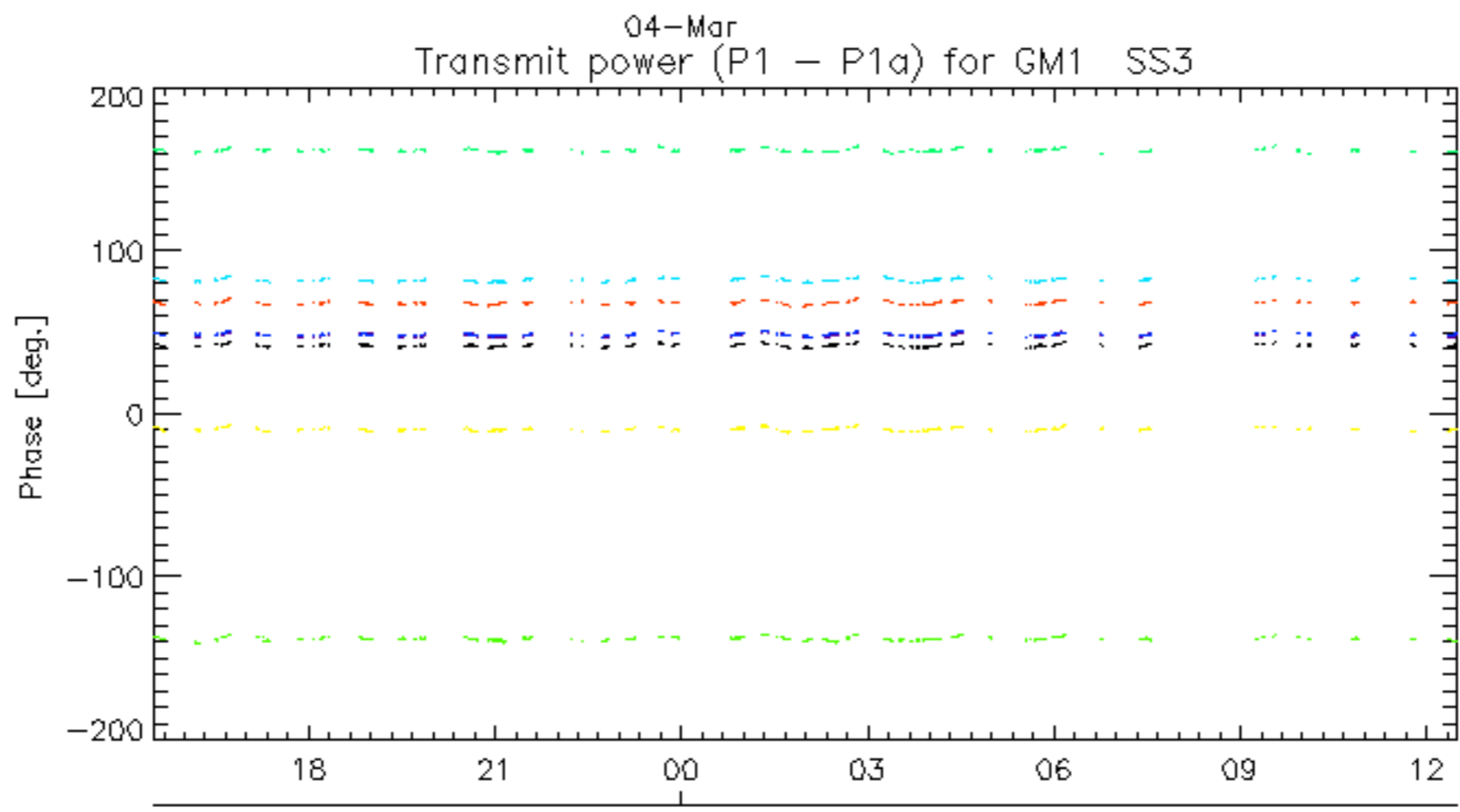
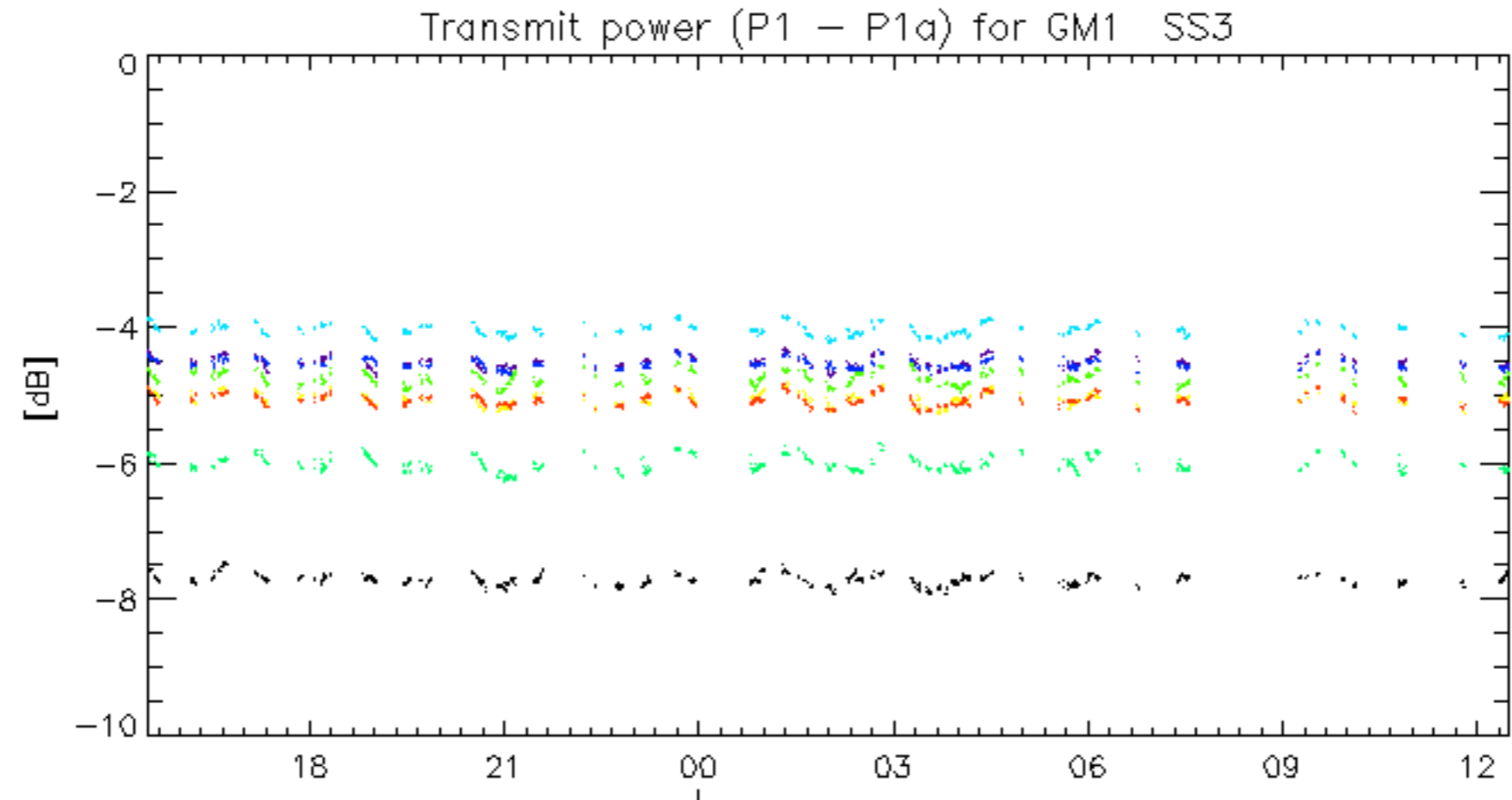




Transmit power (P1 - P1a) for GM1 SS3

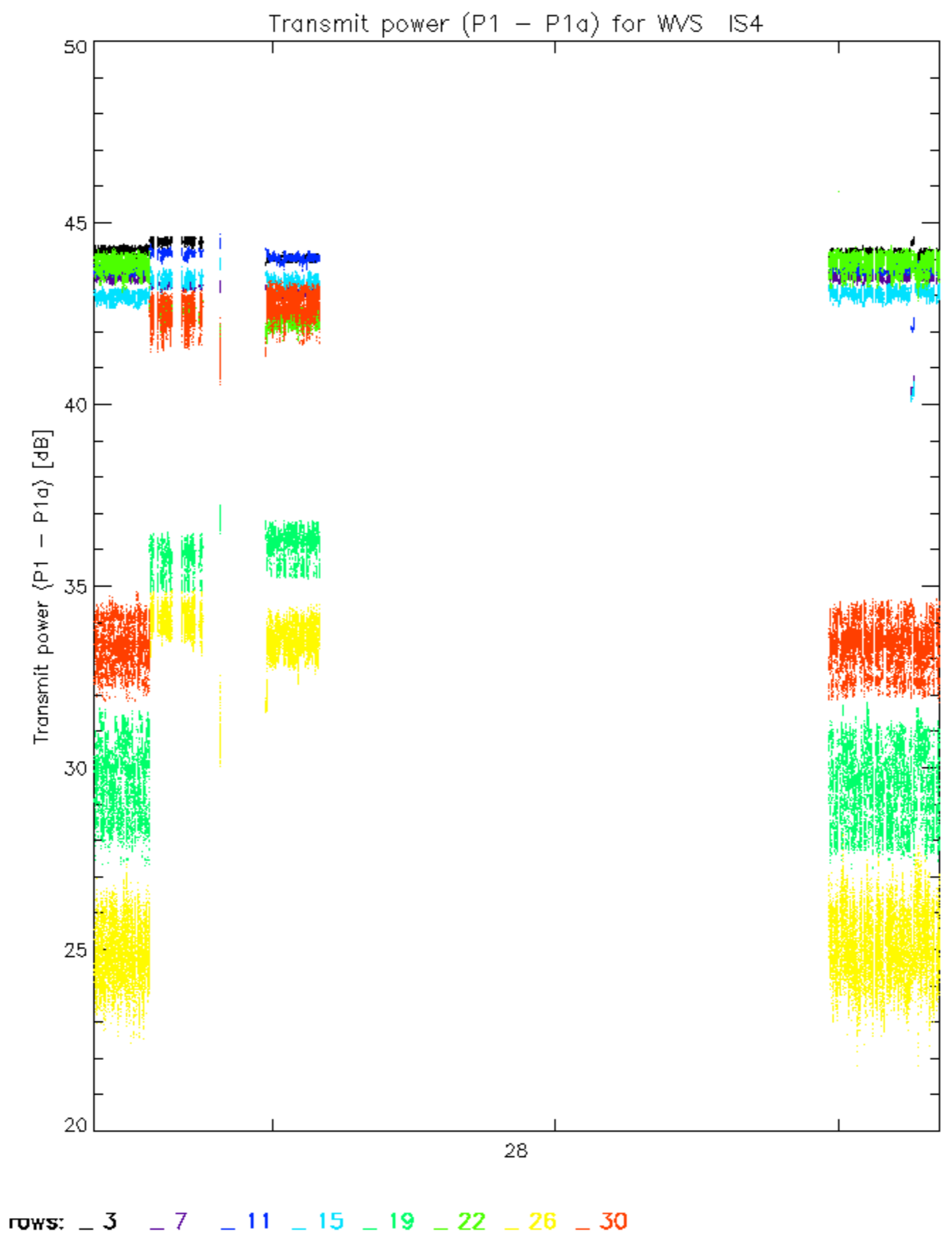


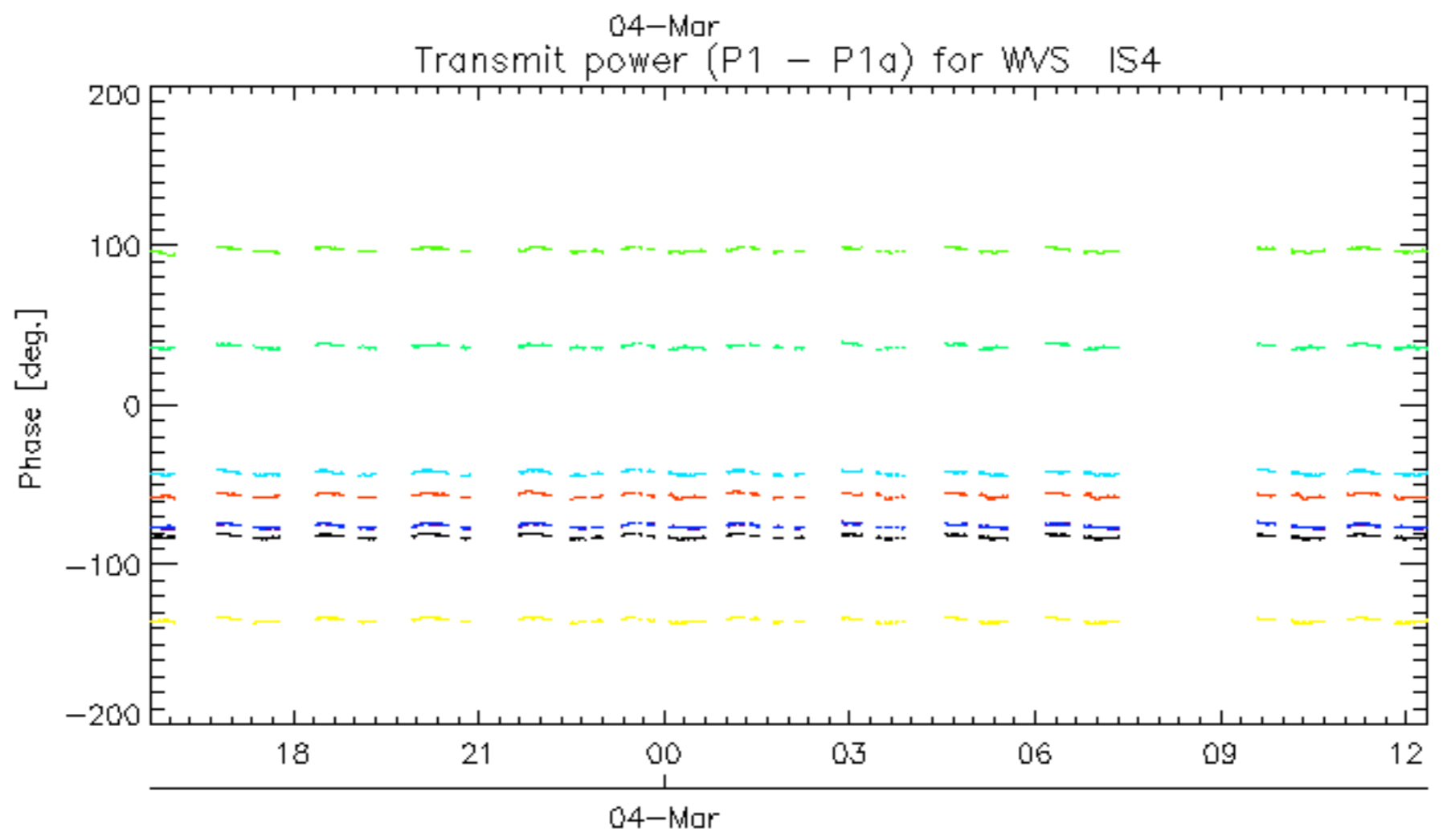
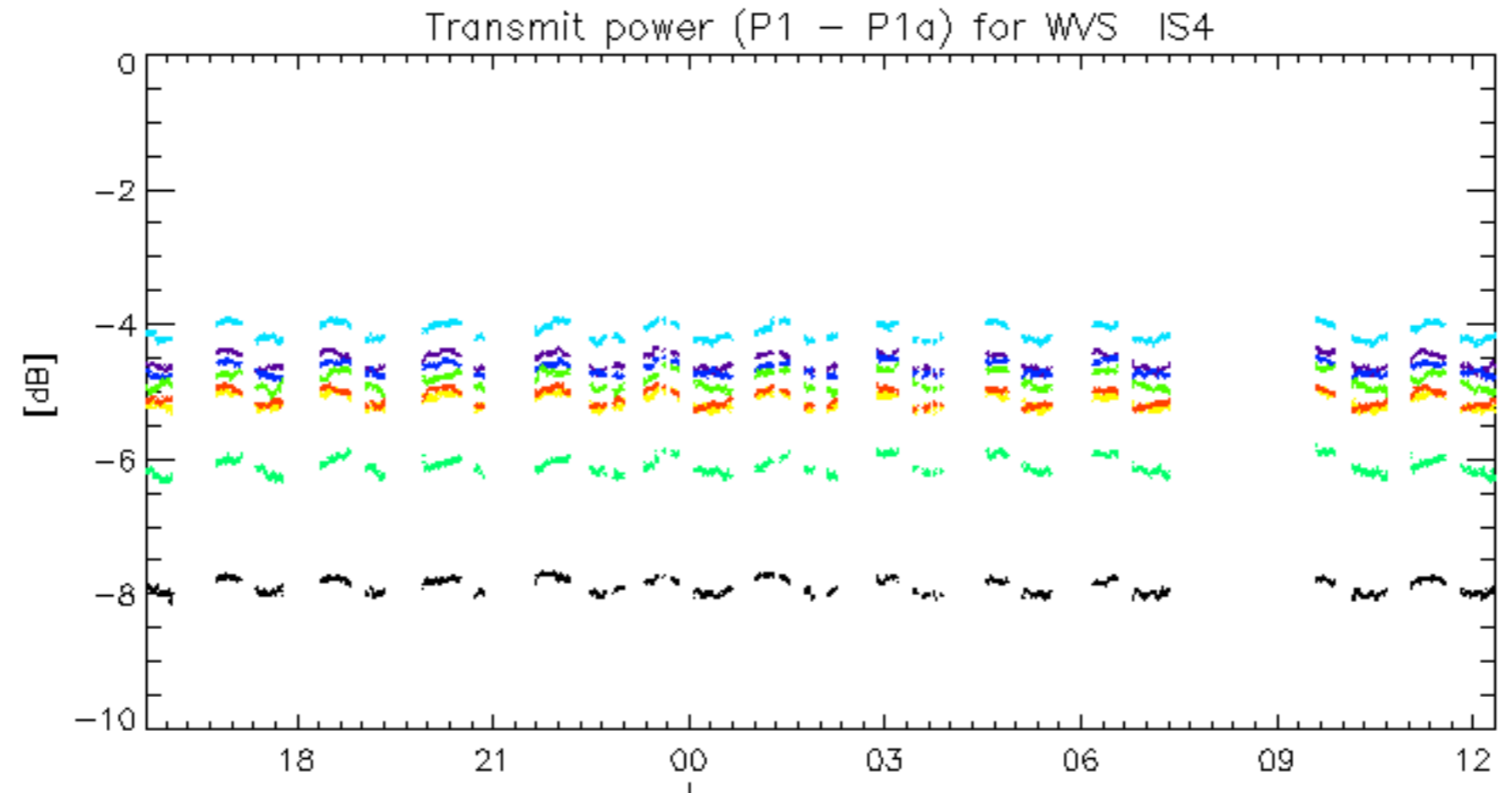
rows: \_ 3 \_ 7 \_ 11 \_ 15 \_ 19 \_ 22 \_ 26 \_ 30



rows: \_ 3 \_ 7 \_ 11 \_ 15 \_ 19 \_ 22 \_ 26 \_ 30







rows: \_ 3 \_ 7 \_ 11 \_ 15 \_ 19 \_ 22 \_ 26 \_ 30

No unavailabilities during the reported period.