PRELIMINARY REPORT OF 050128

ATTENTION: This report is automatically generated no comments are provided on data analysis

last update on Mon Jan 31 08:57:03 GMT 2005

1. Introduction
2. Summary
    - Instrument Unavailability
    - Auxiliary files used
    - Browse Visual Inspection
    - Module Stepping Results
    - Data Analysis
3. Module Stepping
4. Internal Calibration pulses
    - Daily statistics
    - Cyclic statistics
    - cal pulses monitoring (all rows)
5. Raw Data Statistics
    - raw data mean I and Q
    - raw data stdev I and Q
    - raw gain imbalance
6. TLM analysis
7. Wave Doppler analysis
    - Unbiased Doppler Error for WVS
    - Absolute Doppler for WVS
    - Doppler evolution versus ANX for WVS
    - Unbiased Doppler Error for GM1
    - Absolute Doppler for GM1
    - Doppler evolution versus ANX for GM1

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

ASAR unavailable from 27-JAn-2005 at 19:59:57 to 27-Jan-2005 at 22:52:29 due to tile D1 PSU'S switched off

2.2 - Auxiliary files

Summary of the auxiliary files used from 2005-01-30 00:00:00 to 2005-01-31 08:57:03

PDHS-K					
AUXILIARY FILE	**WVS**	**GM1**	**IMM**	**APM**	**WSM**
ASA_INS_AXVIEC20041215_180208_20030211_000000_20051231_000000	27	46	4	1	4
ASA_XCA_AXVIEC20041027_164238_20040412_000000_20051231_000000	27	46	4	1	4
ASA_CON_AXVIEC20041215_175442_20030601_000000_20051231_000000	27	46	4	1	4
ASA_XCH_AXVIEC20041215_180350_20020301_000000_20051231_000000	27	46	4	1	4

PDHS-E					
AUXILIARY FILE	**WVS**	**GM1**	**IMM**	**APM**	**WSM**
ASA_INS_AXVIEC20041215_180208_20030211_000000_20051231_000000	19	15	4	9	5
ASA_XCA_AXVIEC20041027_164238_20040412_000000_20051231_000000	19	15	4	9	5
ASA_CON_AXVIEC20041215_175442_20030601_000000_20051231_000000	19	15	4	9	5
ASA_XCH_AXVIEC20041215_180350_20020301_000000_20051231_000000	19	15	4	9	5

2.3 - Browse Visual Inspection

No anomalies observed on available browse products related to the instrument.
A problem has been experienced for LR products in the acquistion chain at ground station
Corrupted products related to this problem since 25-Jan-2005.

2.4 - Data Analysis

-Stable wave internal calibration pulses gain and phase.
-Stable raw data statistics.
-Nominal Doppler behavior.
-Corrupted LR products since 25-Jan-2005 due to problems in the acquistion chain at ESRIN.

3 - Module Stepping Mode

The MS mode provides an internal health check on an individual module basis.
The purpose of this mode is to identify any malfunctionning modules and
to identify modules for which calibration offsets are to be applied.
No anomalies observed on available MS products:

- ASA_MS__0PNPDK20050127_074718_000000152034_00135_15219_0176.N1

Polarisation	Start Time
V	20050127 074718
H	20050126 081855

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)

P1 Cyclic statistics

row	pulse	mean (dB)	stdev (dB)	slope(dB/cycle)
3	P1	-3.411439	0.008096	0.030513
7	P1	-3.086707	0.016606	0.037422
11	P1	-4.659049	0.024746	-0.002382
15	P1	-5.638338	0.060946	-0.084348
19	P1	-3.669841	0.011206	0.032823
22	P1	-4.565717	0.016932	0.041994
26	P1	-4.962702	0.067924	0.131651
30	P1	-7.139771	0.015655	-0.052890
3	P1	-15.918296	0.103970	0.036254
7	P1	-15.526810	0.162647	0.104118
11	P1	-20.777351	0.652572	-0.331340
15	P1	-11.634412	0.107514	0.094564
19	P1	-14.191041	0.051803	0.068969
22	P1	-15.965547	0.434400	0.295795
26	P1	-17.654156	0.233585	0.151237
30	P1	-17.878414	0.330462	-0.124038

P2 Cyclic statistics

row	pulse	mean (dB)	stdev (dB)	slope(dB/cycle)
3	P2	-22.268030	0.086804	0.127320
7	P2	-22.433168	0.317648	-0.004237

11	P2	-14.678630	0.408890	0.018717
15	P2	-7.133398	0.145151	0.158345
19	P2	-9.764974	0.566147	0.385835
22	P2	-17.066845	0.100069	0.100446
26	P2	-16.531197	0.167446	0.202744
30	P2	-18.932341	0.081514	0.017925

P3 Cyclic statistics

row	pulse	mean (dB)	stdev (dB)	slope(dB/cycle)
3	P3	-8.192150	0.006710	0.018180
7	P3	-8.192007	0.006706	0.017381
11	P3	-8.191959	0.006706	0.017116
15	P3	-8.192118	0.006713	0.017930
19	P3	-8.192217	0.006712	0.018455
22	P3	-8.192219	0.006712	0.018423
26	P3	-8.192224	0.006720	0.018546
30	P3	-8.192514	0.006665	0.011019

4.2.2 - Evolution for GM1

Evolution of cal pulses for GM1

P1a Cyclic statistics

row	pulse	mean (dB)	stdev (dB)	slope(dB/cycle)

P1 Cyclic statistics

row	pulse	mean (dB)	stdev (dB)	slope(dB/cycle)
3	P1	-2.812322	0.019215	0.032228
7	P1	-2.958315	0.069249	-0.017668
11	P1	-3.951197	0.030898	-0.018226
15	P1	-3.517979	0.030718	-0.048449
19	P1	-3.604690	0.014044	0.024790
22	P1	-5.659381	0.067544	-0.071143

26	P1	-6.748275	0.152863	-0.999830
30	P1	-6.291317	0.046163	-0.015361
3	P1	-10.773369	0.086747	0.037593
7	P1	-10.144397	0.185630	-0.012461
11	P1	-12.528665	0.132070	-0.094836
15	P1	-11.757960	0.076724	-0.039529
19	P1	-15.619520	0.055137	0.089759
22	P1	-24.074732	1.774411	0.078562
26	P1	-15.065093	0.452990	-0.936016
30	P1	-20.026196	0.864498	0.211924

P2 Cyclic statistics

row	pulse	mean (dB)	stdev (dB)	slope(dB/cycle)
3	P2	-17.968040	0.050007	0.080934
7	P2	-22.512266	0.121912	0.153165
11	P2	-10.521874	0.050179	0.203071
15	P2	-5.030166	0.024275	0.039681
19	P2	-6.918225	0.036424	0.041849
22	P2	-7.239713	0.049517	0.070337
26	P2	-23.922461	0.088793	0.081628
30	P2	-21.969349	0.054888	0.047224

P3 Cyclic statistics

row	pulse	mean (dB)	stdev (dB)	slope(dB/cycle)
3	P3	-8.029180	0.002860	0.011288
7	P3	-8.029164	0.002864	0.011417
11	P3	-8.029194	0.002859	0.011163
15	P3	-8.029300	0.002856	0.011683
19	P3	-8.029153	0.002868	0.010783
22	P3	-8.029208	0.002846	0.011096
26	P3	-8.029104	0.002864	0.011222
30	P3	-8.029188	0.002860	0.011243

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	0.000465498
	stdev	2.19159e-07
MEAN Q	mean	0.000538875
	stdev	2.32703e-07

5.2 - Input stdev I/Q

channel	stat	DSS-B
STDEV I	mean	0.128518
	stdev	0.000969748
STDEV Q	mean	0.128752
	stdev	0.000980690

5.3 - Gain imbalance I/Q

6 - Telemetry analysis

7 - Doppler Analysis

Doppler analysis performed over the last 35 days.

7.1 - Unbiased Doppler Error for WVS

Evolution of unbiased Doppler error (Real - Expected)
☒
Acsending
☒
Descending

7.2 - Absolute Doppler for WVS

Evolution of Absolute Doppler
☒
Acsending
☒
Descending

7.3 - Doppler evolution versus ANX for WVS

Evolution Doppler error versus ANX
☒

7.4 - Unbiased Doppler Error for GM1

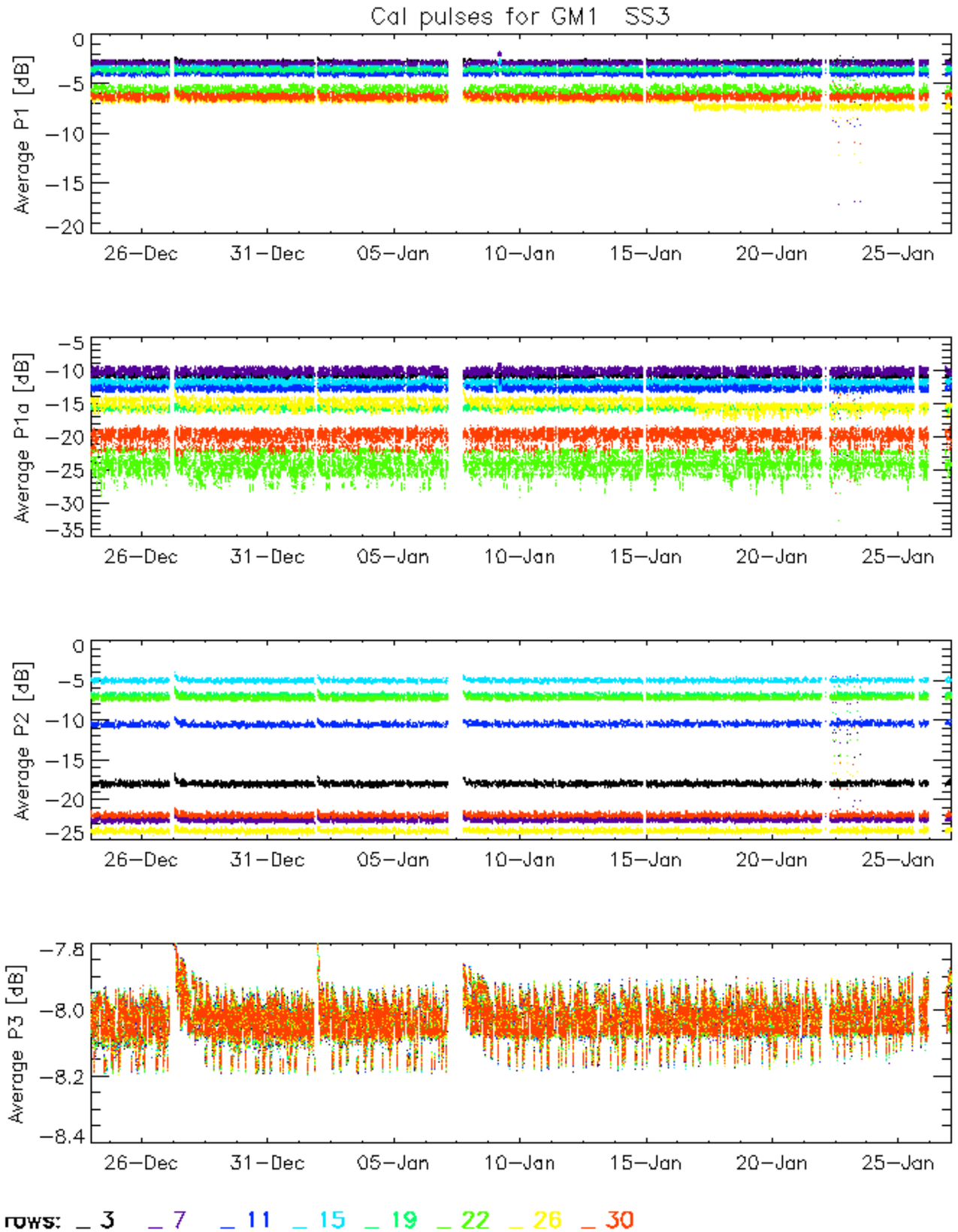
Evolution of unbiased Doppler error (Real - Expected)
☒
Acsending
☒
Descending

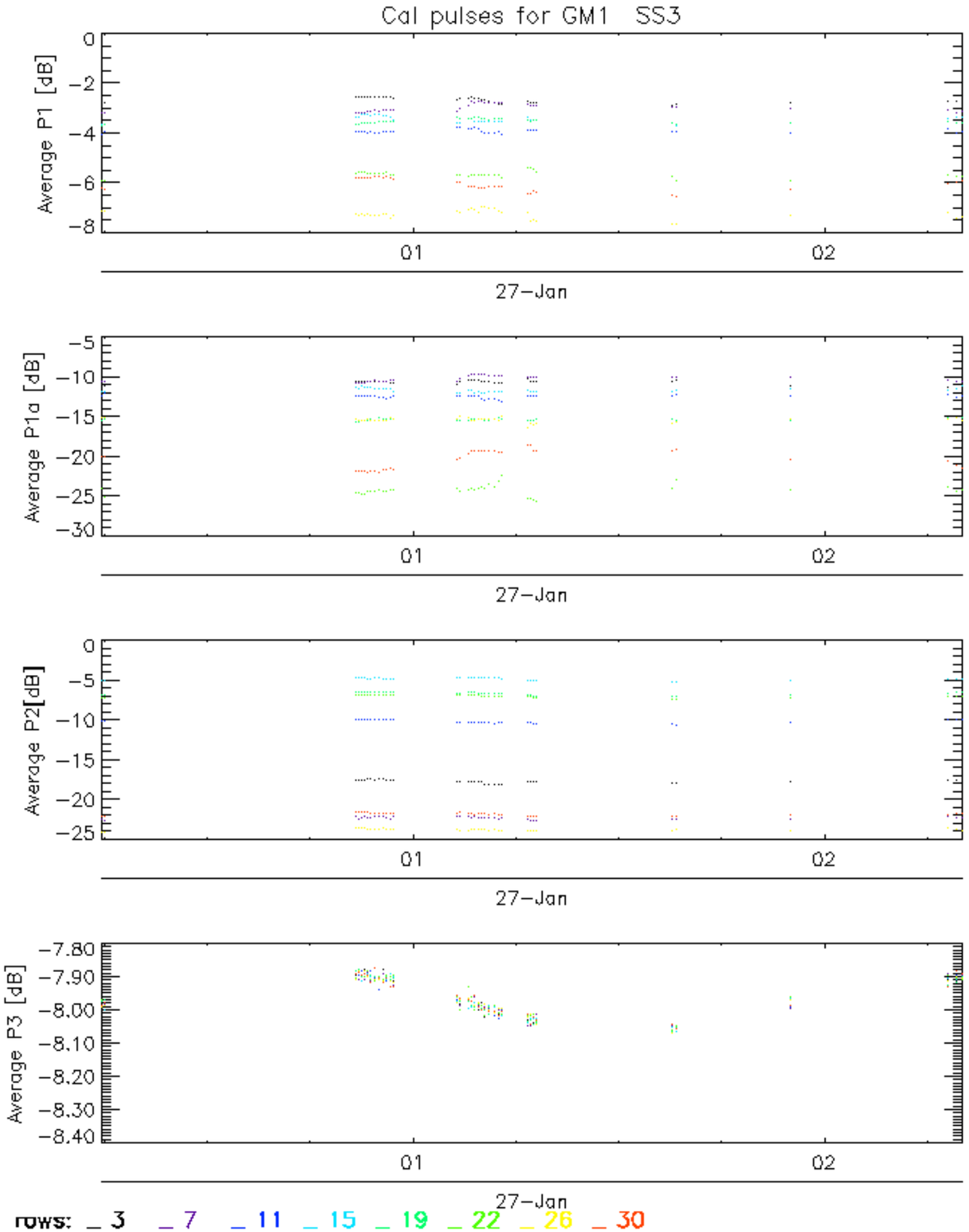
7.5 - Absolute Doppler for GM1

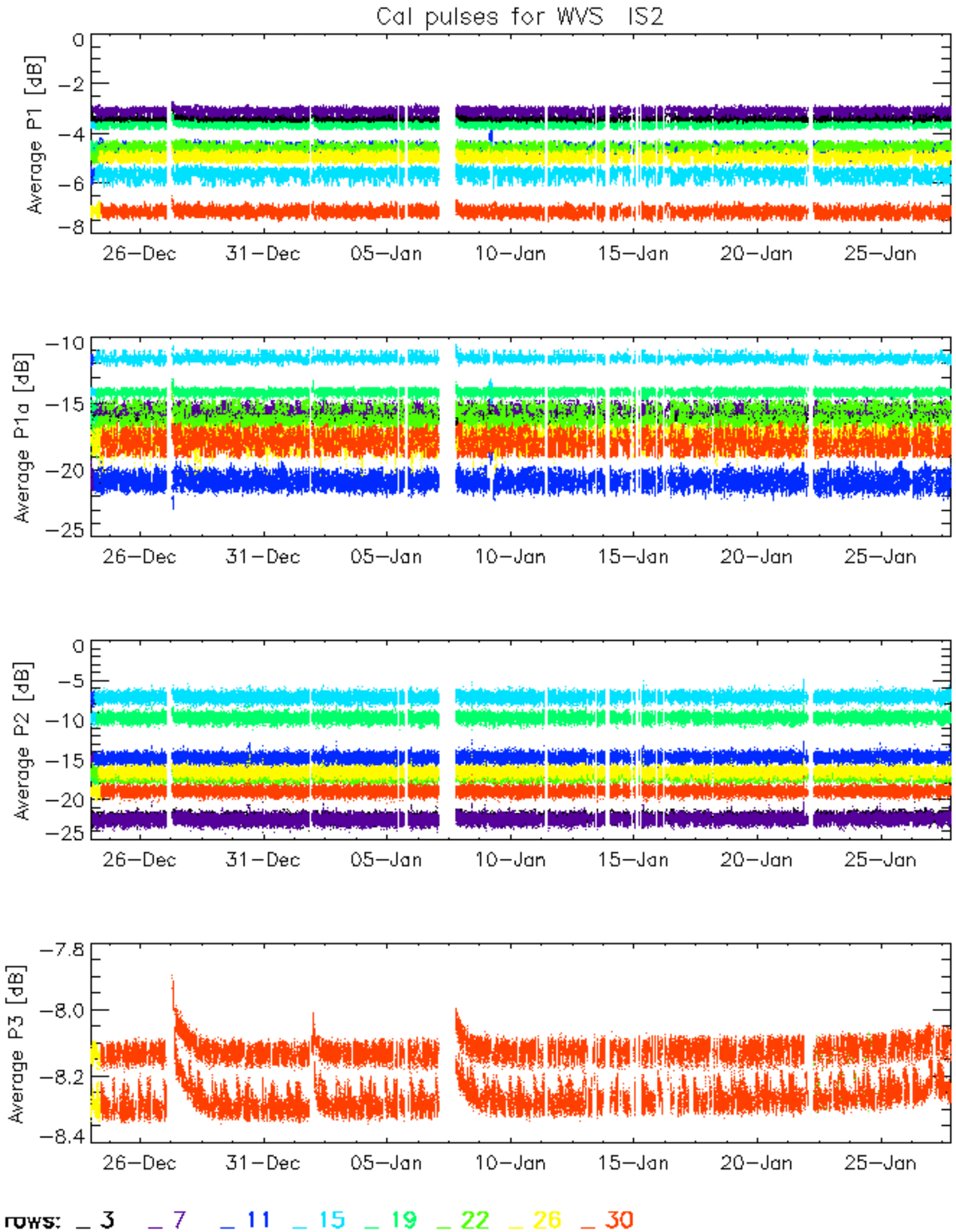
Evolution of Absolute Doppler
☒
Acsending
☒
Descending

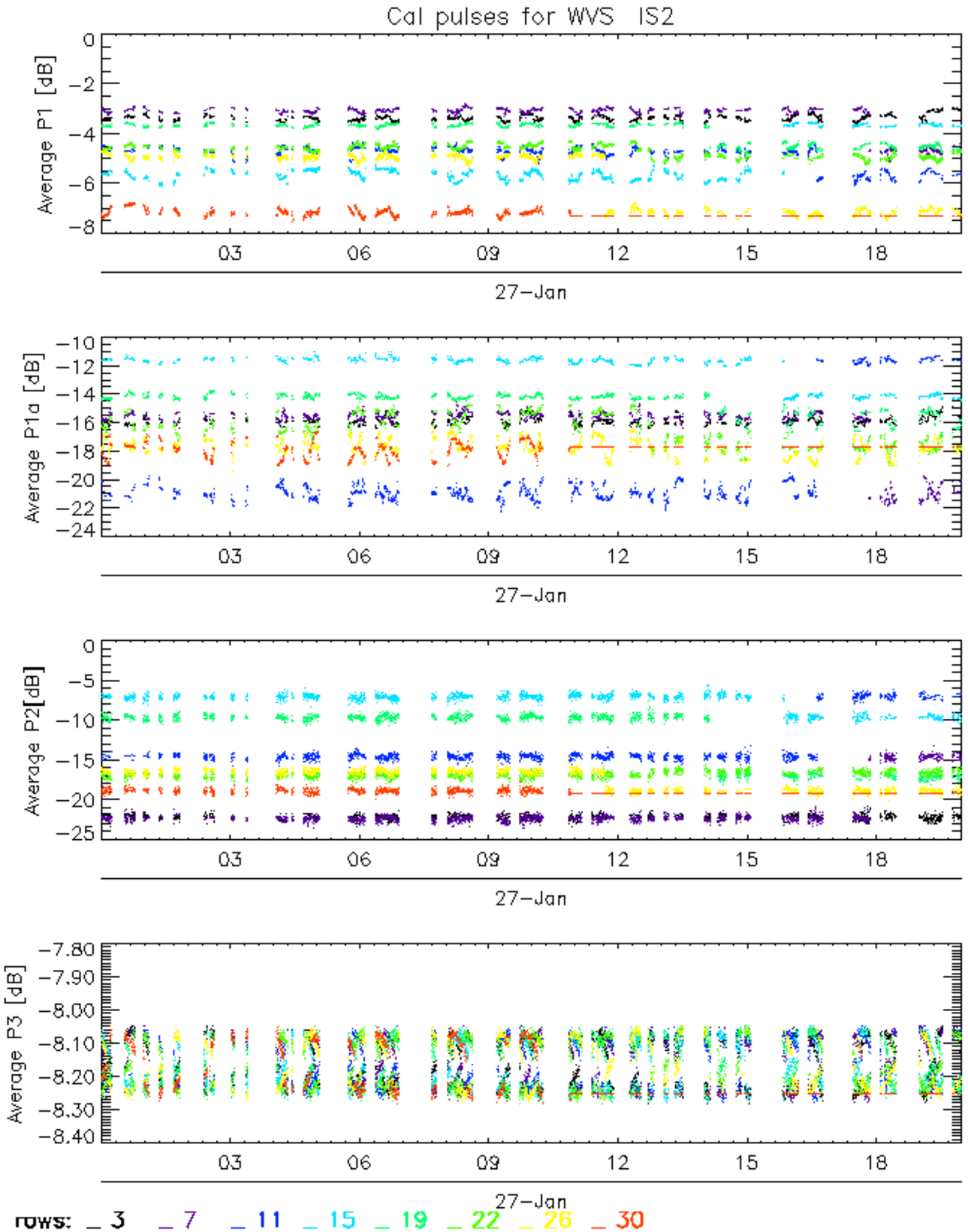
7.6 - Doppler evolution versus ANX for GM1

Evolution Doppler error versus ANX
☒


Cal pulses for GM1 SS3
Average P1 [dB]
0
−5
−10
−15
−20
Average P1a [dB]
−5
−10
−15
−20
−25
−30
−35
Average P2 [dB]
0
−5
−10
−15
−20
−25
Average P3 [dB]
−7.8
−8.0
−8.2
−8.4
26−Dec
31−Dec
05−Jan
10−Jan
15−Jan
20−Jan
25−Jan
rows: _ 3 _ 7 _ 11 _ 15 _ 19 _ 22 _ 26 _ 30

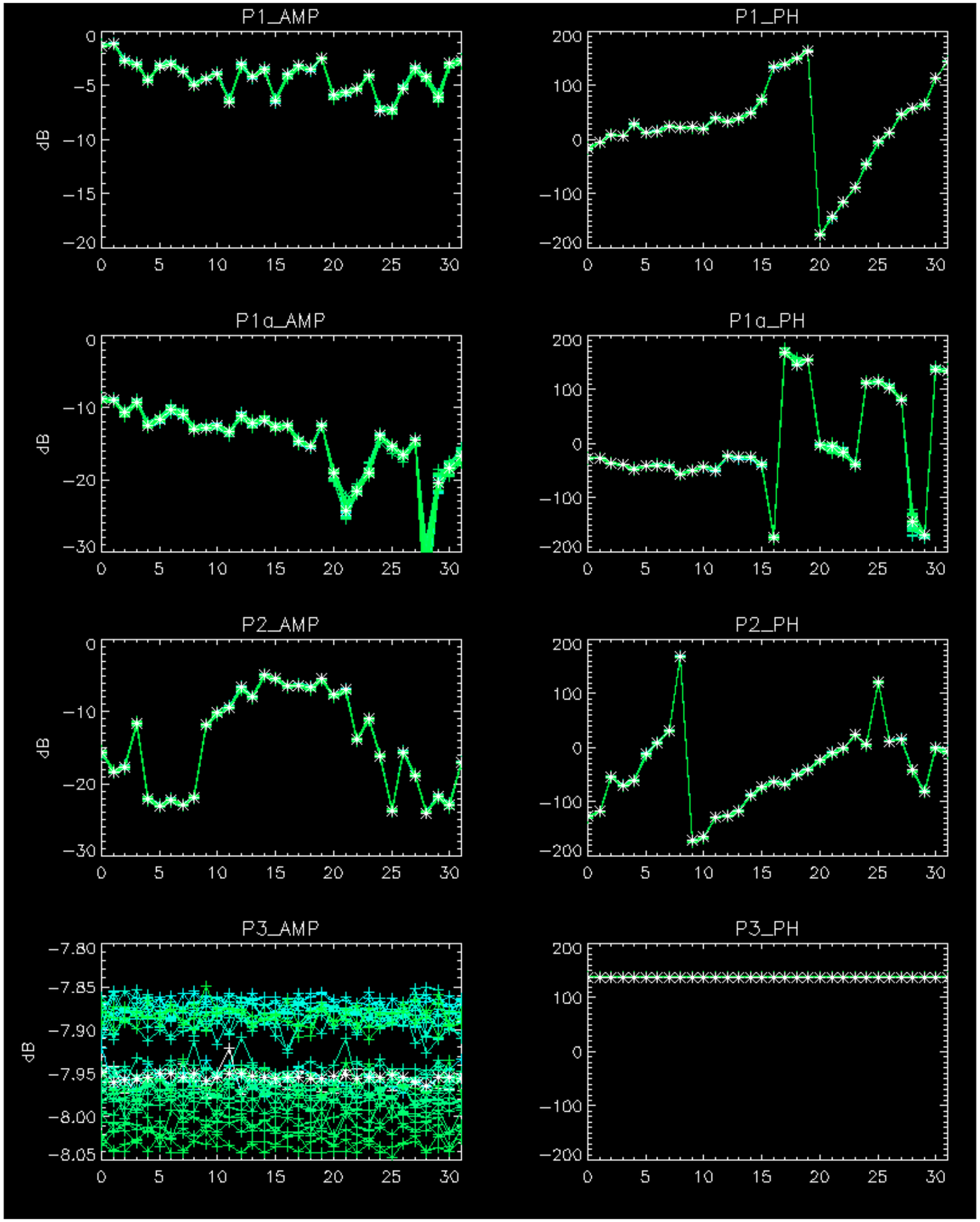

Cal pulses for GM1 SS3
Average P1 [dB]
0
−2
−4
−6
−8
01
02
27−Jan
Average P1a [dB]
−5
−10
−15
−20
−25
−30
01
02
27−Jan
Average P2[dB]
0
−5
−10
−15
−20
−25
01
02
27−Jan
Average P3 [dB]
−7.80
−7.90
−8.00
−8.10
−8.20
−8.30
−8.40
01
02
27−Jan
rows: _ 3 _ 7 _ 11 _ 15 _ 19 _ 22 _ 26 _ 30

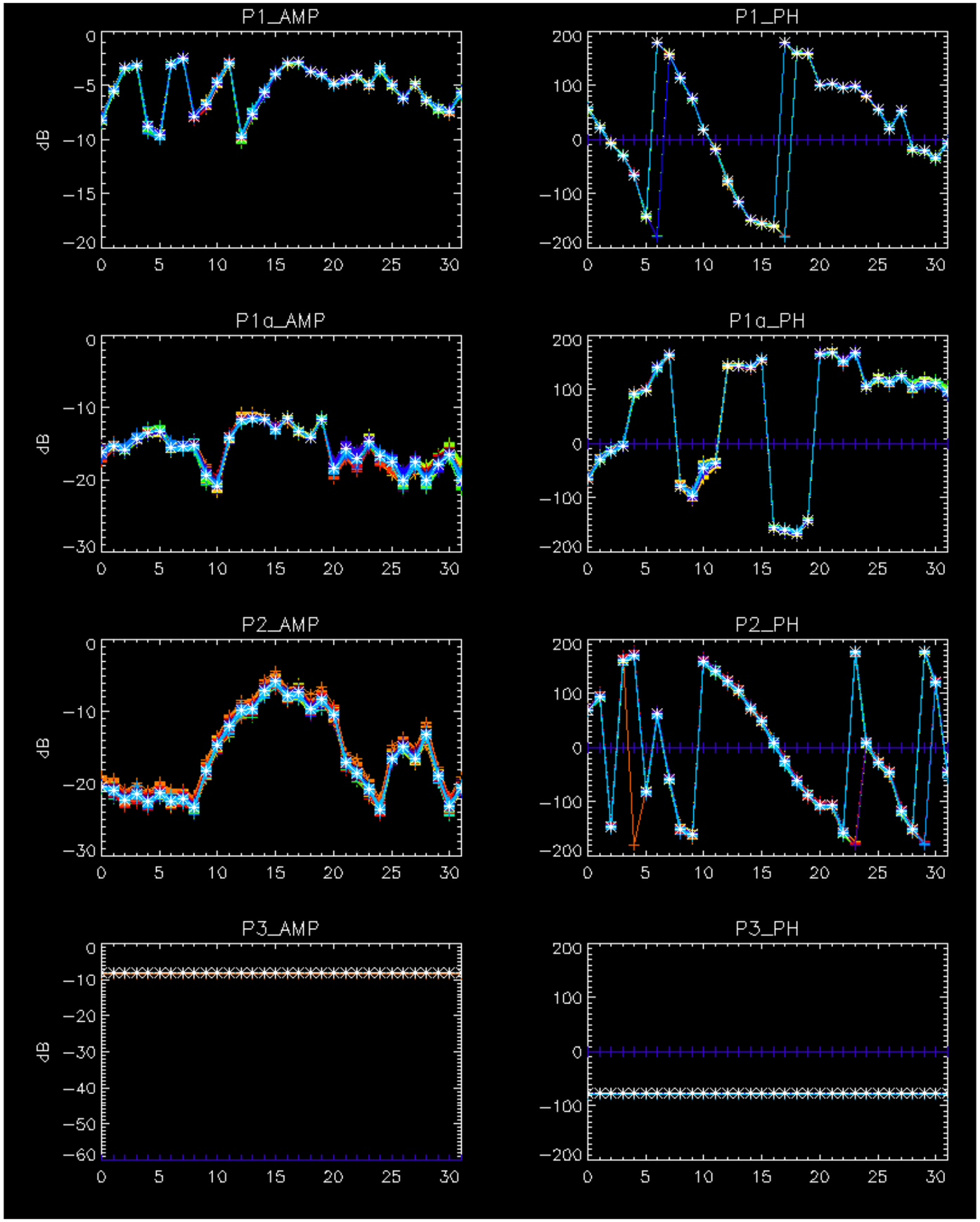

Cal pulses for WVS IS2
Average P1 [dB]
0
−2
−4
−6
−8
26−Dec
31−Dec
05−Jan
10−Jan
15−Jan
20−Jan
25−Jan
Average P1a [dB]
−10
−15
−20
−25
Average P2 [dB]
0
−5
−10
−15
−20
−25
Average P3 [dB]
−7.8
−8.0
−8.2
−8.4
rows: _ 3 _ 7 _ 11 _ 15 _ 19 _ 22 _ 26 _ 30


Cal pulses for WVS IS2
Average P1 [dB]
0
−2
−4
−6
−8
03
06
09
12
15
18
27−Jan
Average P1a [dB]
−10
−12
−14
−16
−18
−20
−22
−24
Average P2[dB]
−5
−10
−15
−20
−25
Average P3 [dB]
−7.80
−7.90
−8.00
−8.10
−8.20
−8.30
−8.40
rows: _ 3 _ 7 _ 11 _ 15 _ 19 _ 22 _ 26 _ 30

No anomalies observed on available browse products related to the instrument.
A problem has been experienced for LR products in the acquistion chain at ground station
Corrupted products related to this problem since 25-Jan-2005.

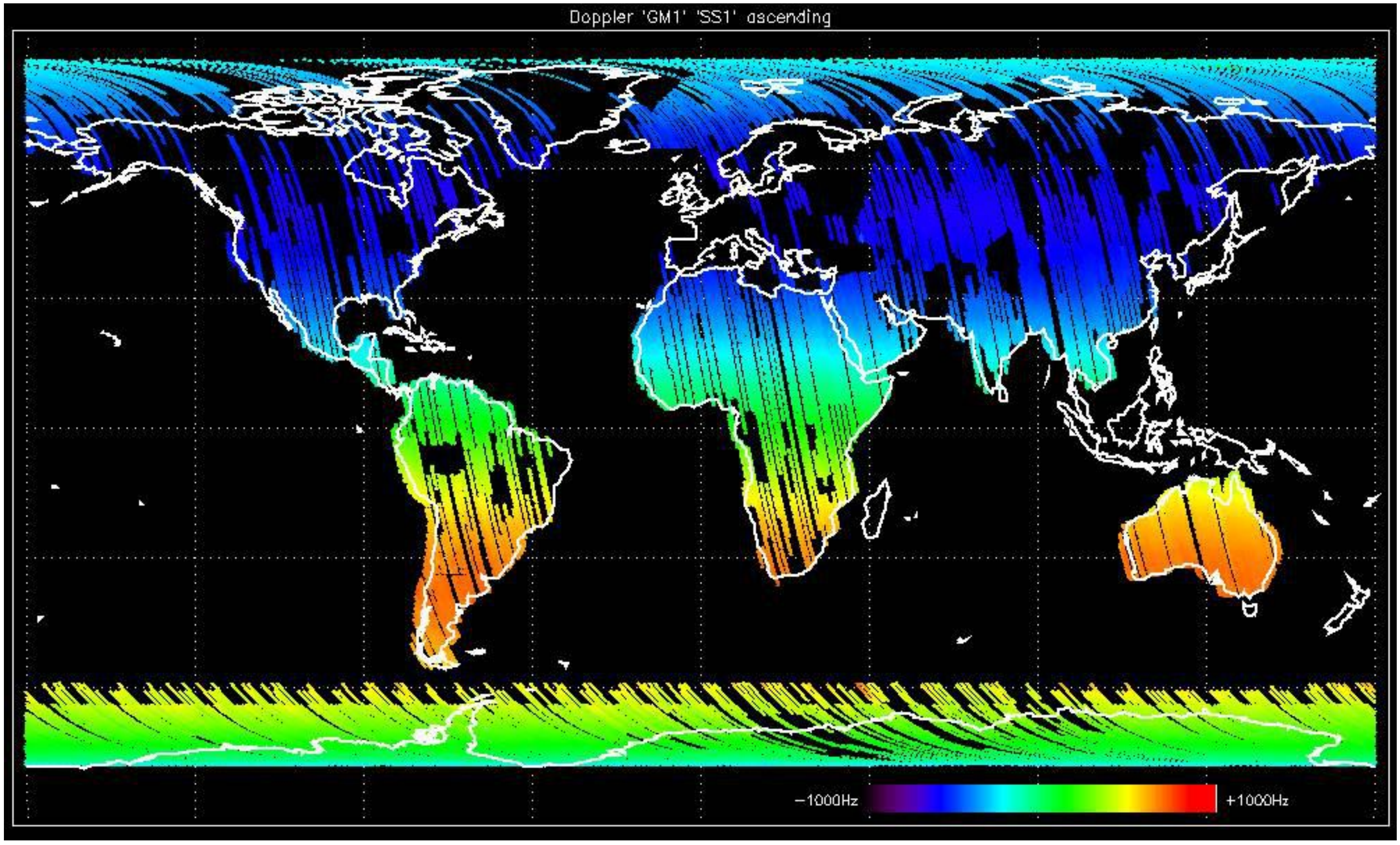
No anomalies observed.

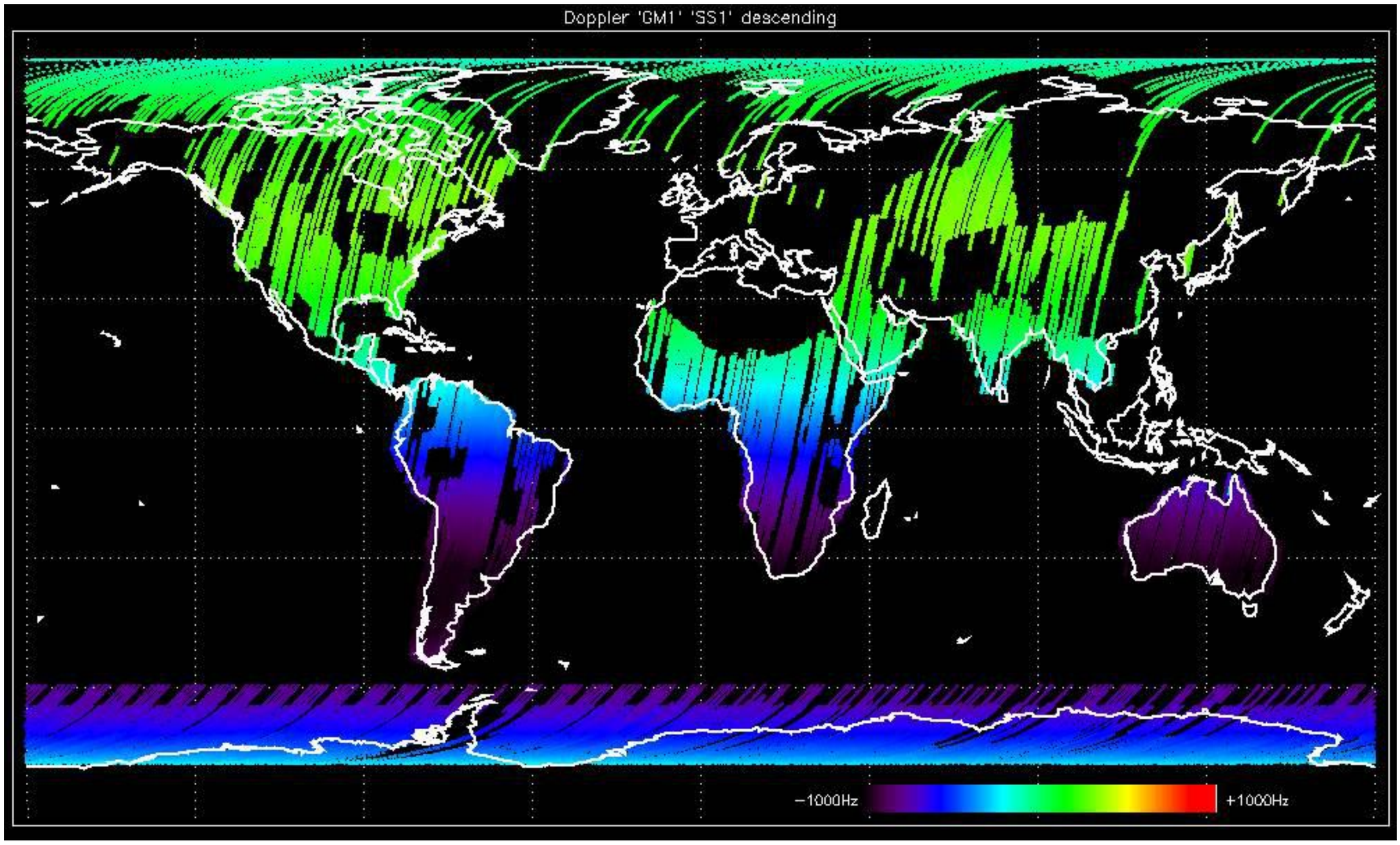

P1_AMP
dB
0
−5
−10
−15
−20
0 5 10 15 20 25 30
P1_PH
200
100
0
−100
−200
0 5 10 15 20 25 30
P1a_AMP
dB
0
−10
−20
−30
0 5 10 15 20 25 30
P1a_PH
200
100
0
−100
−200
0 5 10 15 20 25 30
P2_AMP
dB
0
−10
−20
−30
0 5 10 15 20 25 30
P2_PH
200
100
0
−100
−200
0 5 10 15 20 25 30
P3_AMP
dB
−7.80
−7.85
−7.90
−7.95
−8.00
−8.05
0 5 10 15 20 25 30
P3_PH
200
100
0
−100
−200
0 5 10 15 20 25 30

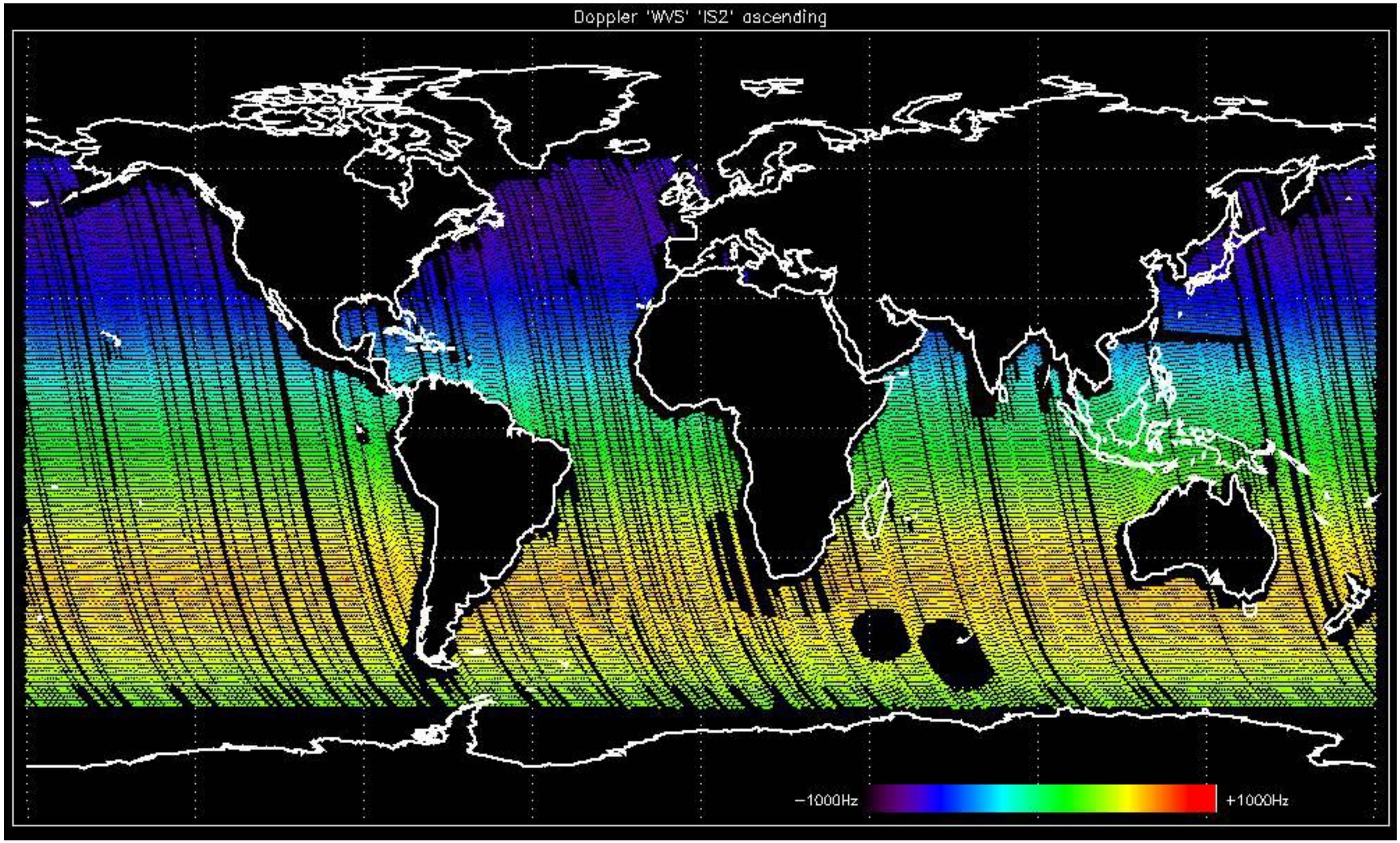

P1_AMP
dB
0
−5
−10
−15
−20
0 5 10 15 20 25 30
P1_PH
200
100
0
−100
−200
0 5 10 15 20 25 30
P1a_AMP
dB
0
−10
−20
−30
0 5 10 15 20 25 30
P1a_PH
200
100
0
−100
−200
0 5 10 15 20 25 30
P2_AMP
dB
0
−10
−20
−30
0 5 10 15 20 25 30
P2_PH
200
100
0
−100
−200
0 5 10 15 20 25 30
P3_AMP
dB
0
−10
−20
−30
−40
−50
−60
0 5 10 15 20 25 30
P3_PH
200
100
0
−100
−200
0 5 10 15 20 25 30

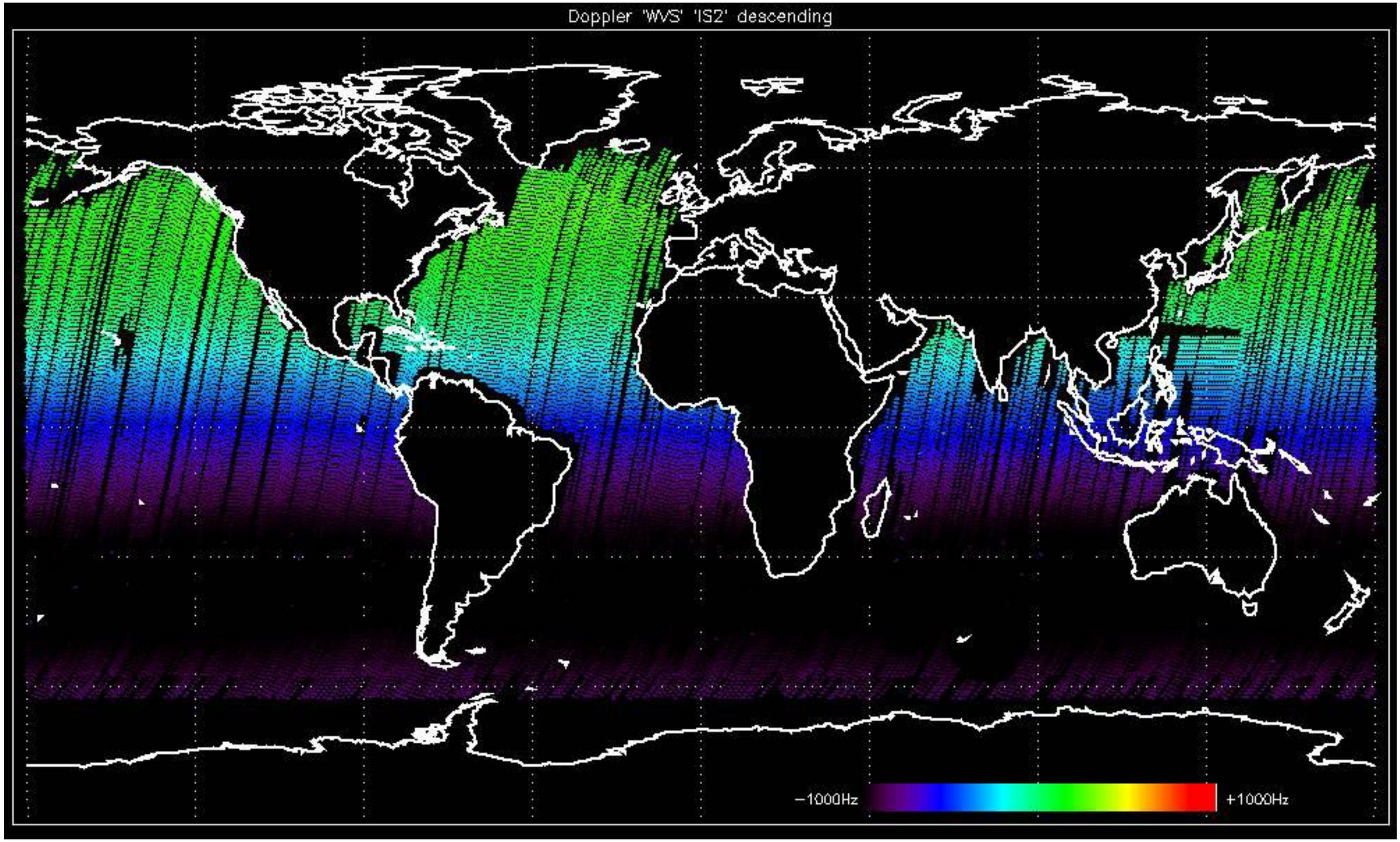
-Stable wave internal calibration pulses gain and phase.
-Stable raw data statistics.
-Nominal Doppler behavior.
-Corrupted LR products since 25-Jan-2005 due to problems in the acquistion chain at ESRIN.

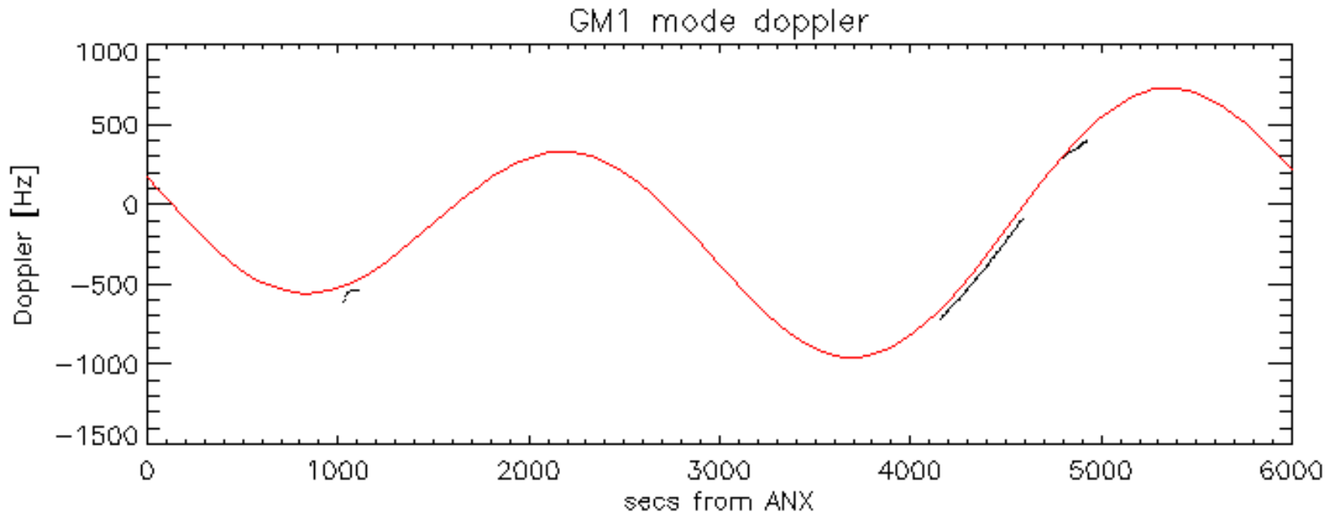
Doppler analysis performed over the last 35 days.

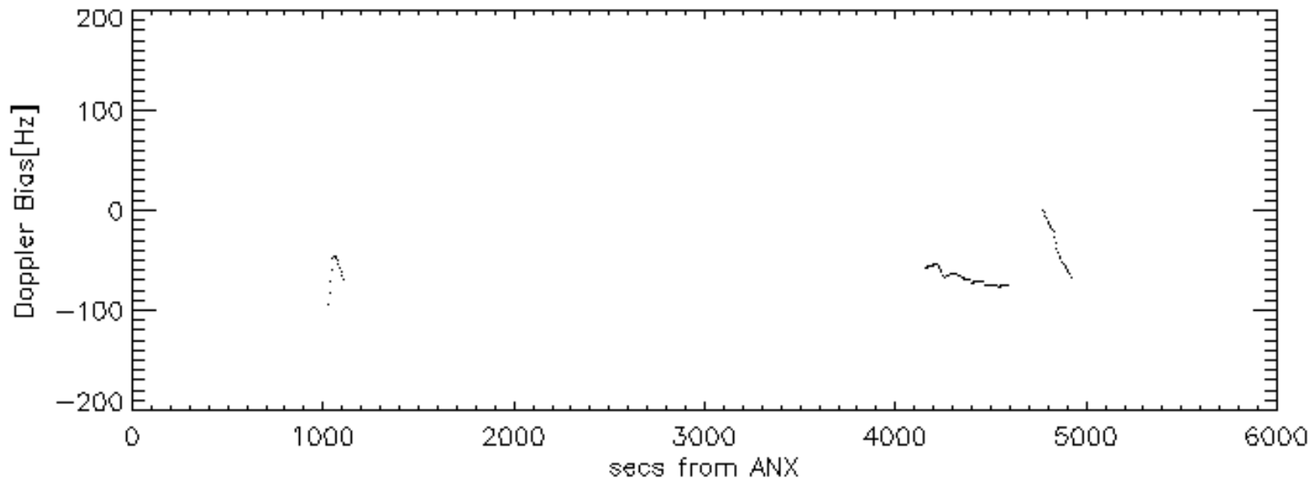

Doppler 'GM1' 'SS1' ascending
−1000Hz
+1000Hz

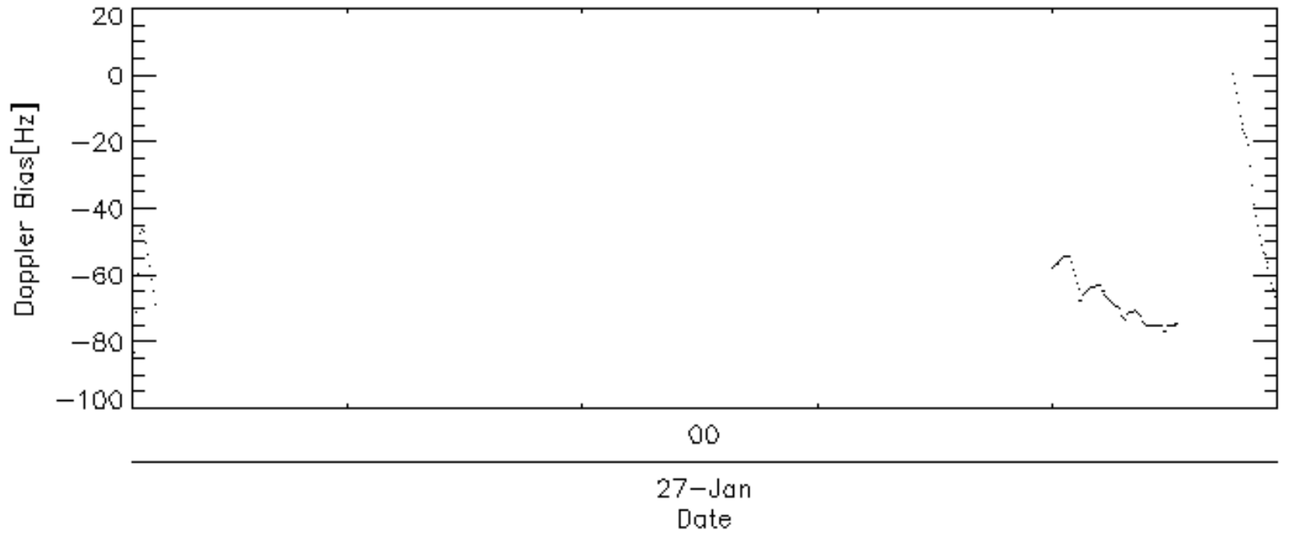

Doppler 'GM1' 'SS1' descending
−1000Hz
+1000Hz

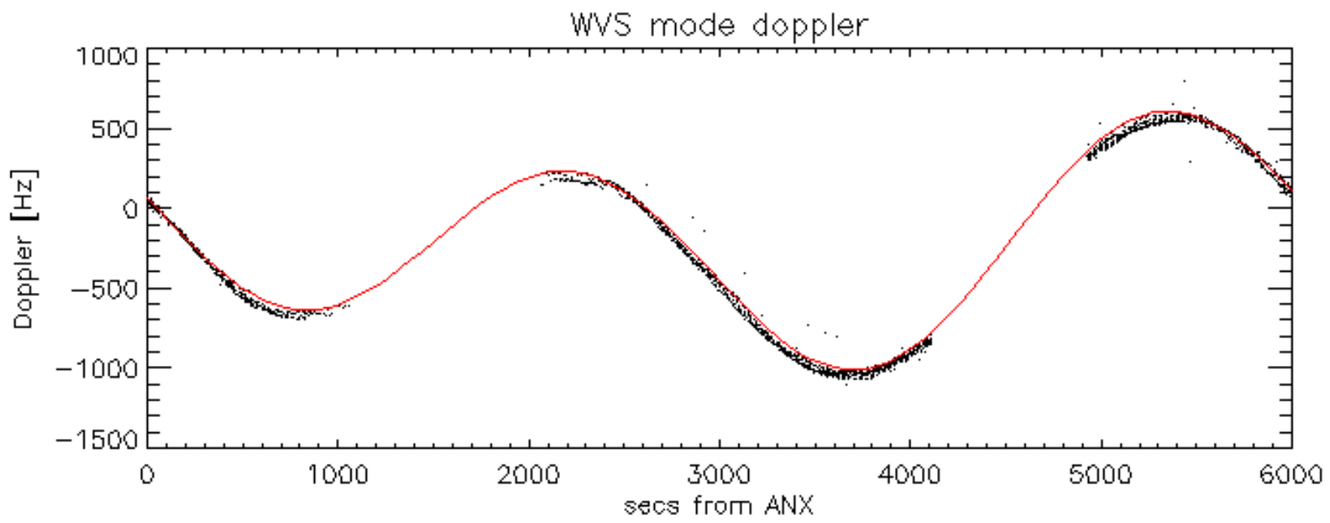

Doppler 'WVS' 'IS2' ascending
−1000Hz
+1000Hz

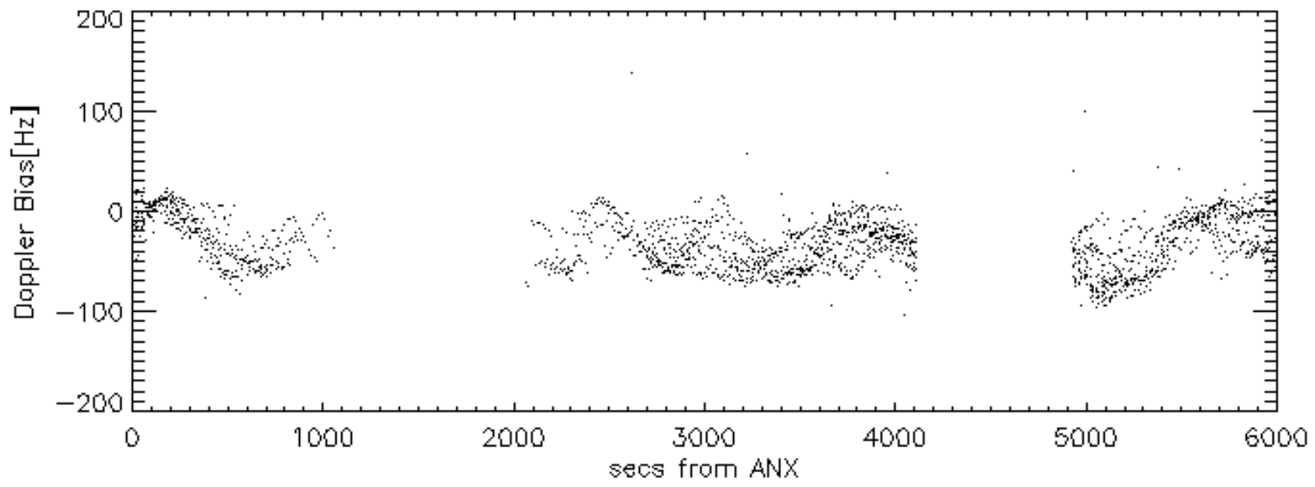

Doppler 'WVS' 'IS2' descending
−1000Hz
+1000Hz

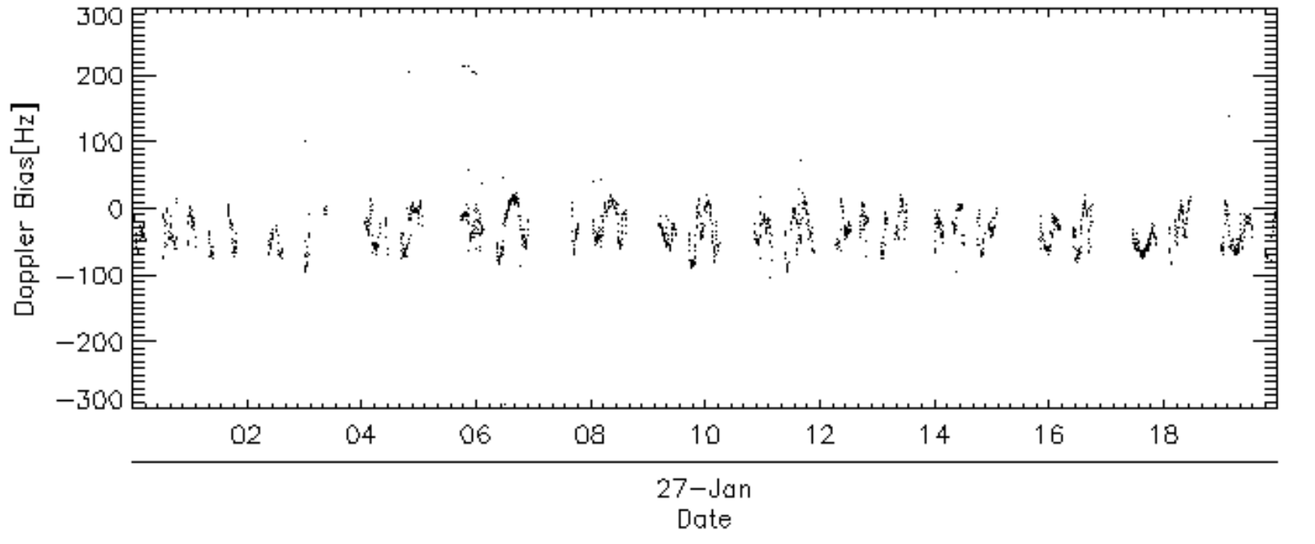

GM1 mode doppler
Doppler [Hz]
1000
500
0
−500
−1000
−1500
0
1000
2000
3000
4000
5000
6000
secs from ANX

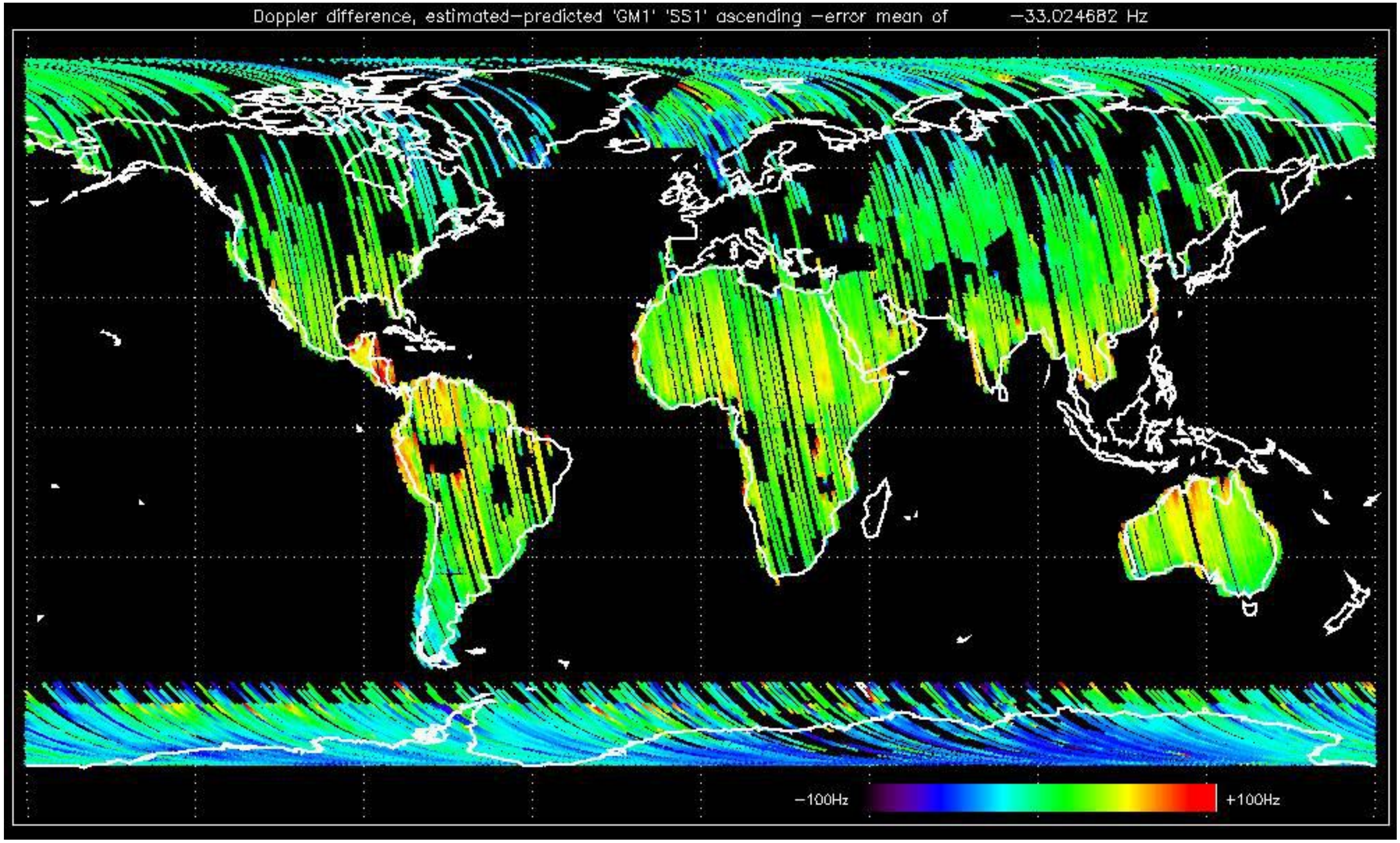

Doppler Bias[Hz]
200
100
0
−100
−200
0
1000
2000
3000
4000
5000
6000
secs from ANX

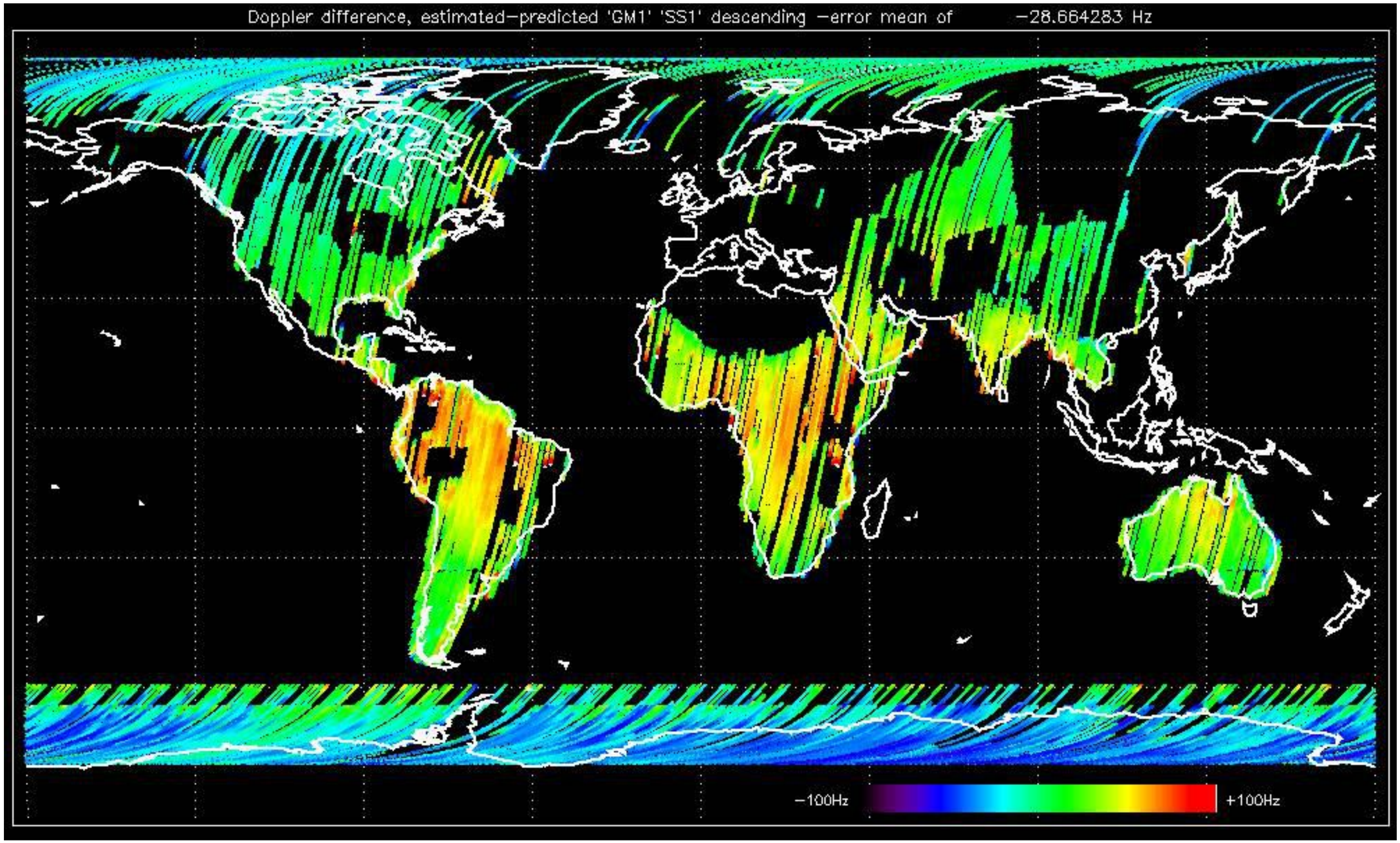

Doppler Bias[Hz]
20
0
−20
−40
−60
−80
−100
00
27−Jan
Date

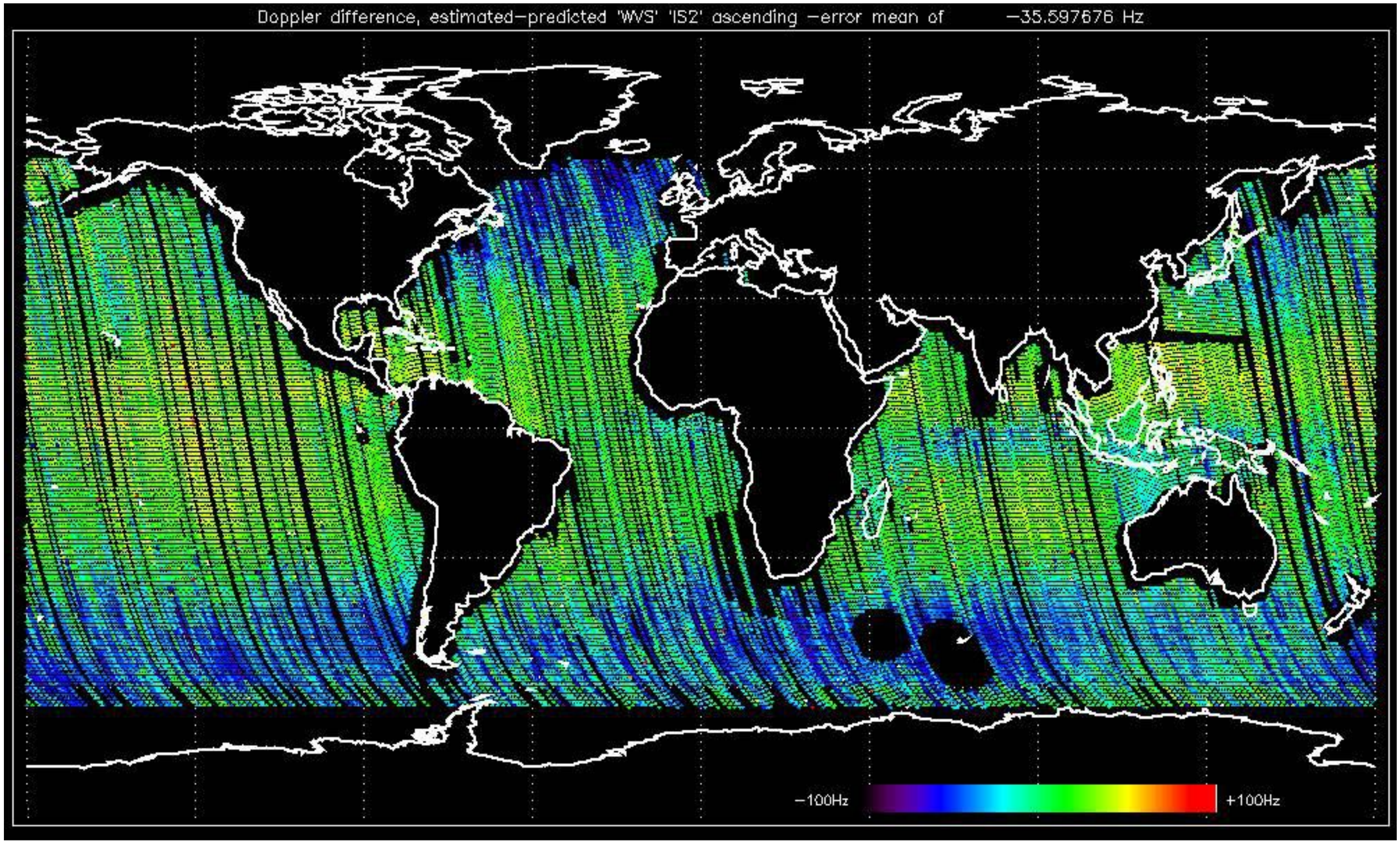

WVS mode doppler
Doppler [Hz]
1000
500
0
−500
−1000
−1500
0
1000
2000
3000
4000
5000
6000
secs from ANX

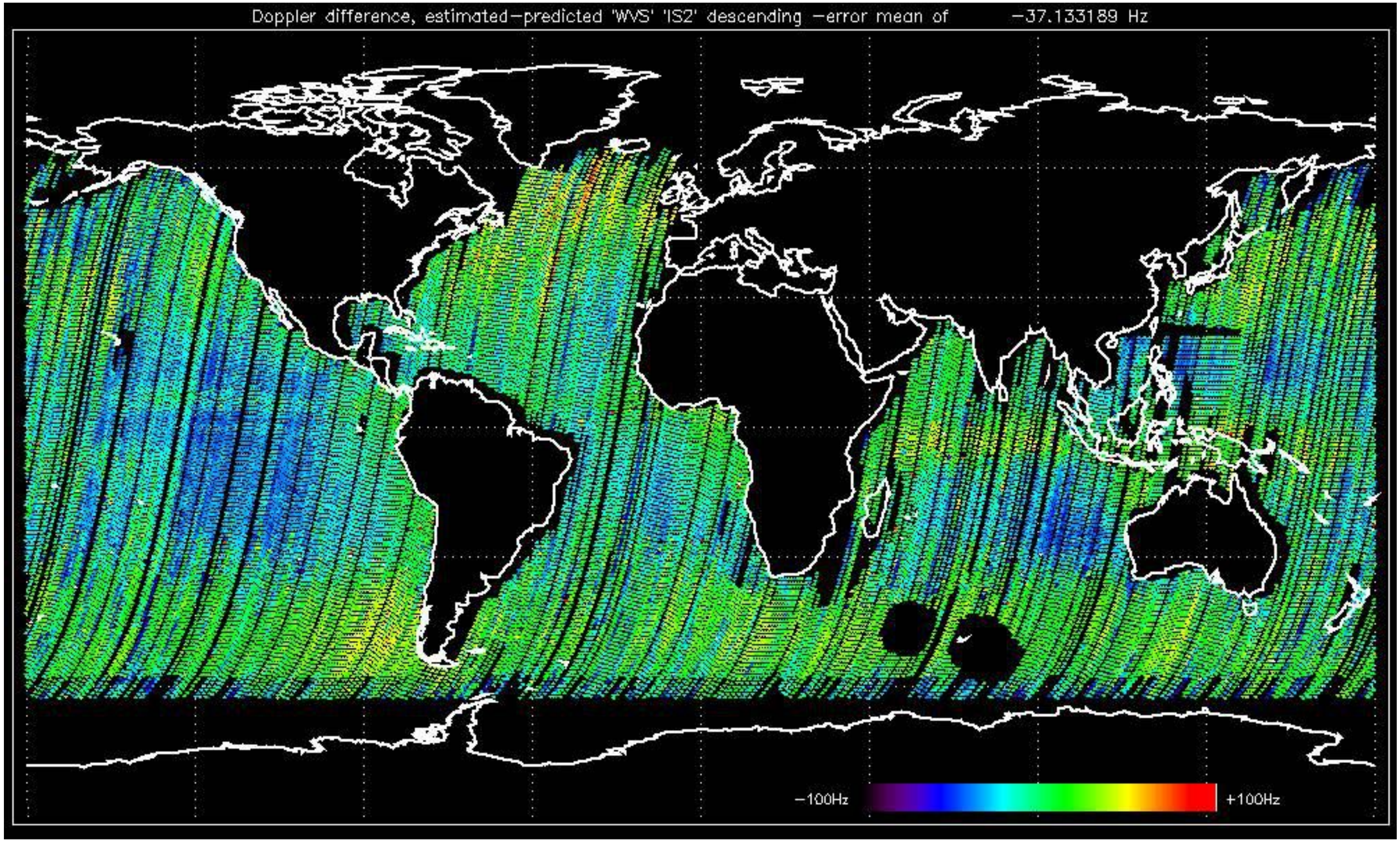

Doppler Bias[Hz]
200
100
0
−100
−200
0
1000
2000
3000
4000
5000
6000
secs from ANX


Doppler Bias[Hz]
300
200
100
0
−100
−200
−300
02
04
06
08
10
12
14
16
18
27−Jan
Date


Doppler difference, estimated−predicted 'GM1' 'SS1' ascending −error mean of −33.024682 Hz
−100Hz
+100Hz


Doppler difference, estimated−predicted 'GM1' 'SS1' descending −error mean of −28.664283 Hz
−100Hz
+100Hz

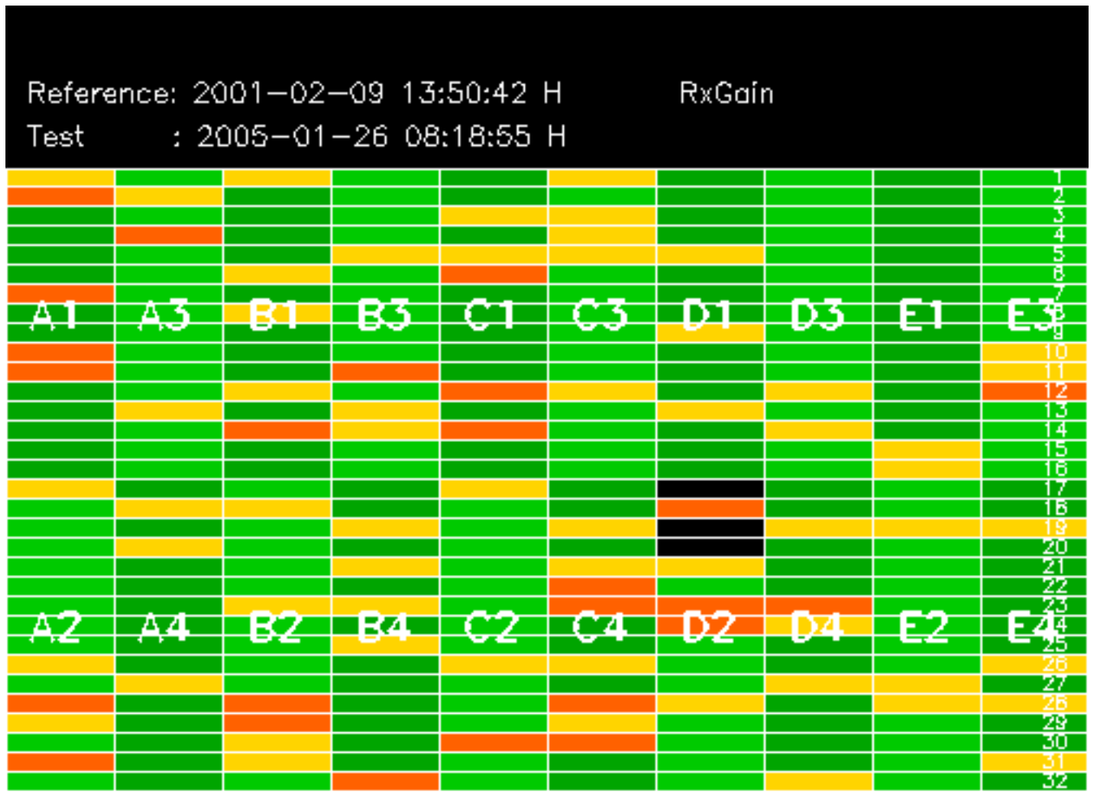

Doppler difference, estimated−predicted 'WVS' 'IS2' ascending −error mean of −35.597676 Hz
−100Hz
+100Hz

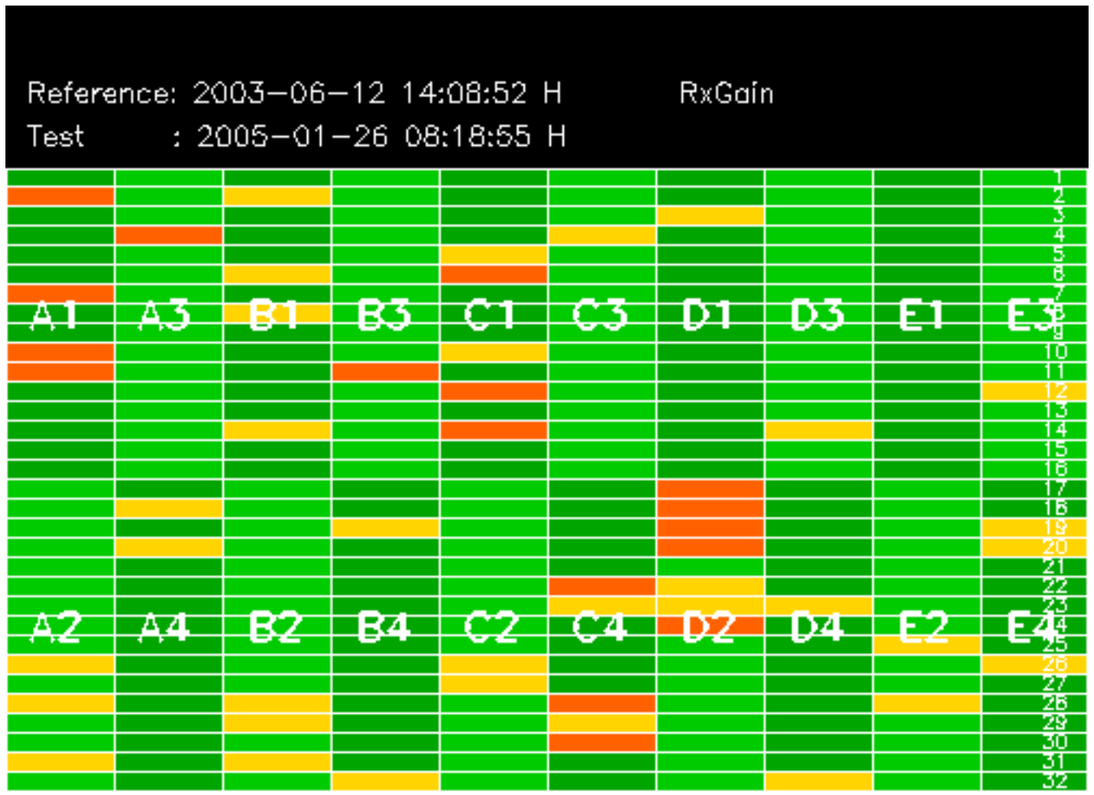

Doppler difference, estimated−predicted 'WVS' 'IS2' descending −error mean of −37.133189 Hz
−100Hz
+100Hz

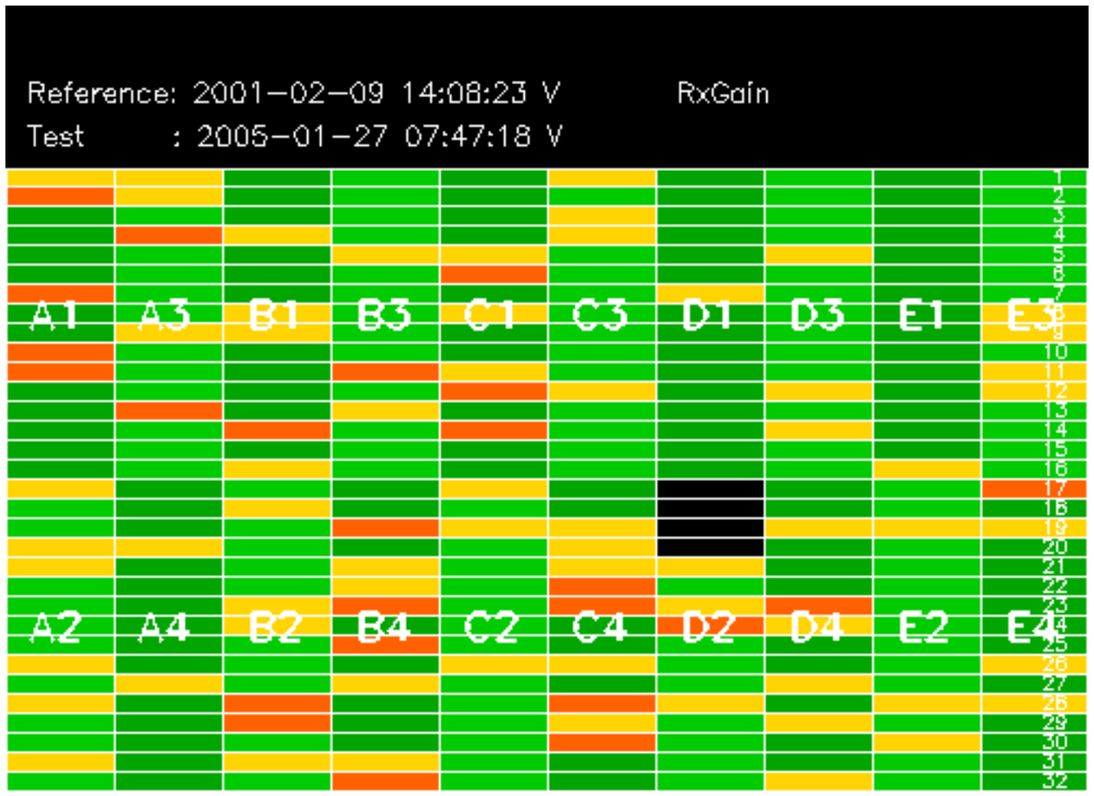
The MS mode provides an internal health check on an individual module basis.
The purpose of this mode is to identify any malfunctionning modules and
to identify modules for which calibration offsets are to be applied.
No anomalies observed on available MS products:

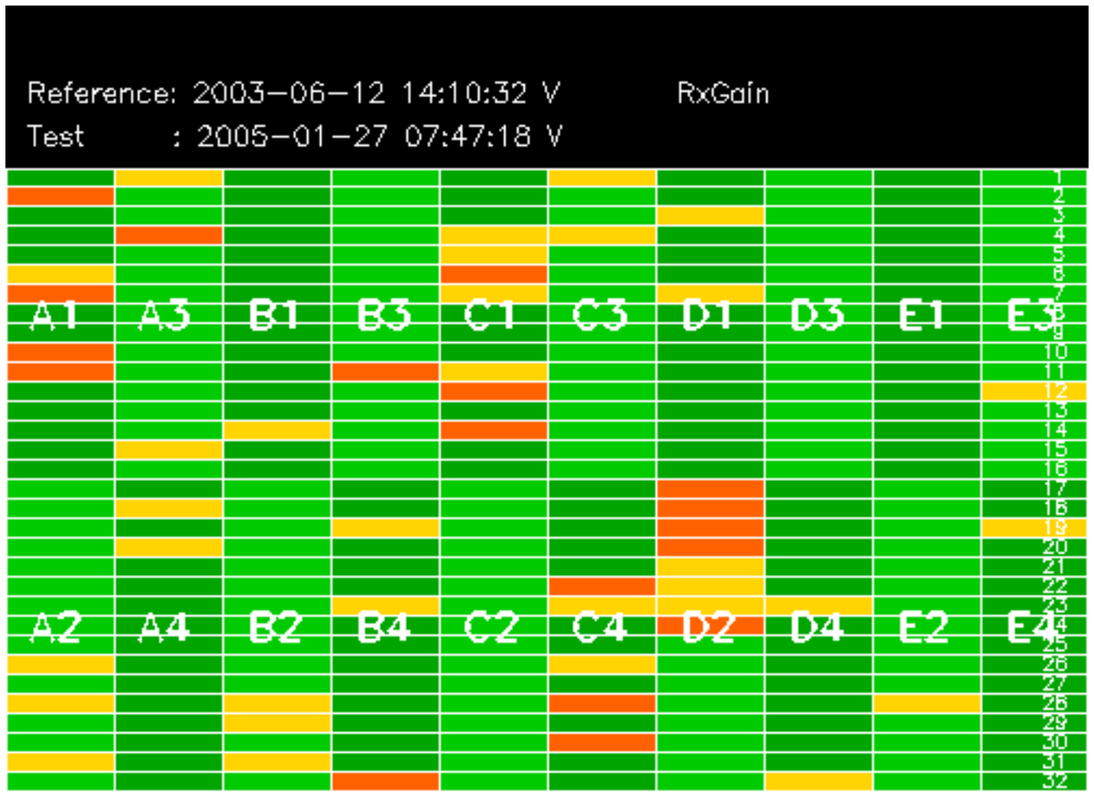
- ASA_MS__0PNPDK20050127_074718_000000152034_00135_15219_0176.N1

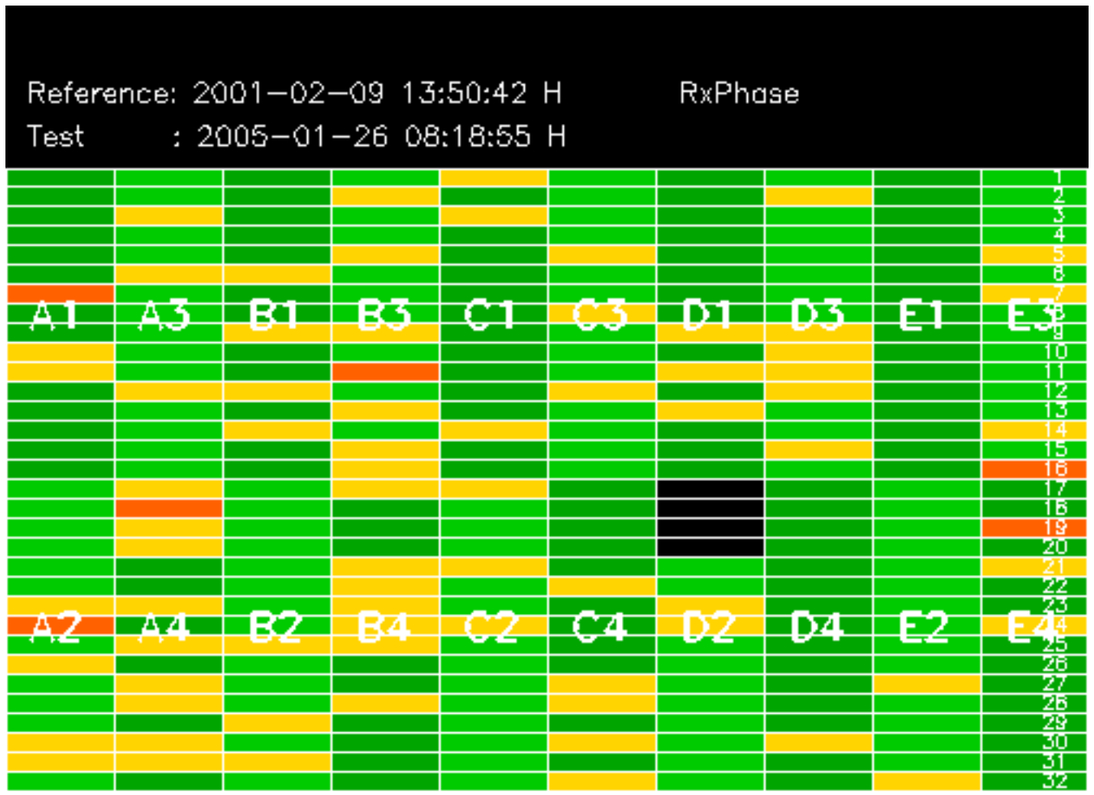
No anomalies observed.


Reference: 2001-02-09 13:50:42 H
Test : 2005-01-26 08:18:55 H
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

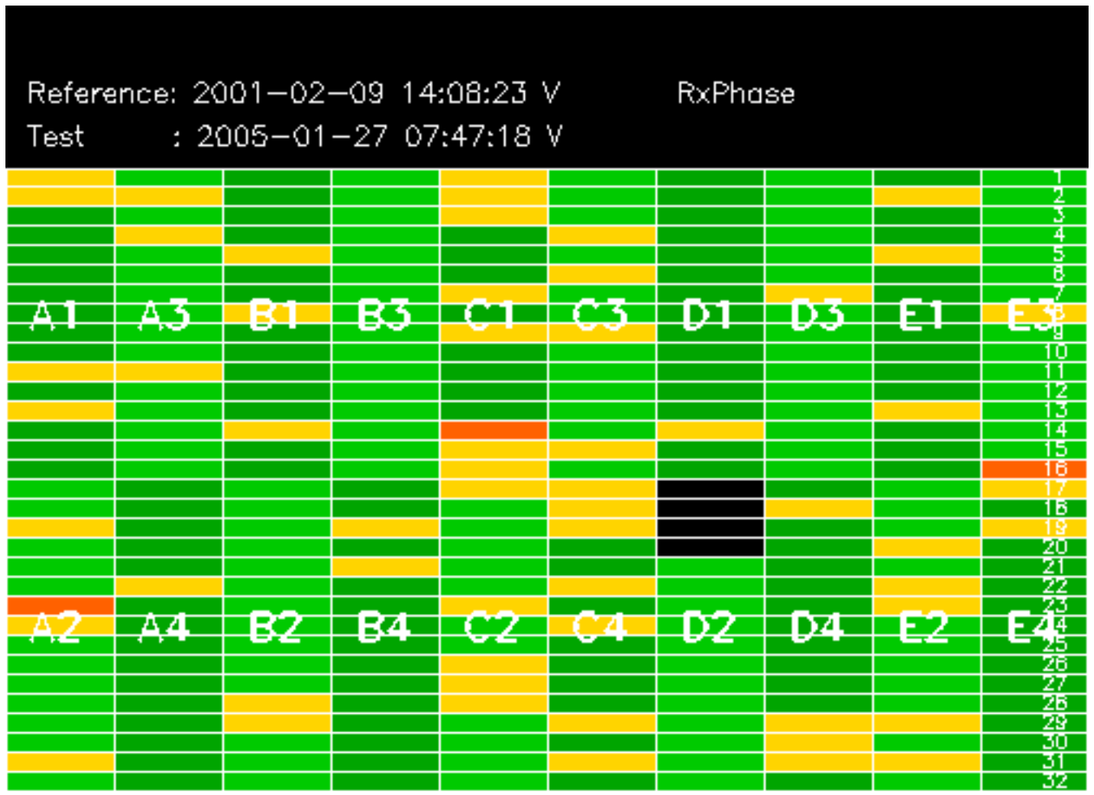

Reference: 2003-06-12 14:08:52 H
Test : 2005-01-26 08:18:55 H
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

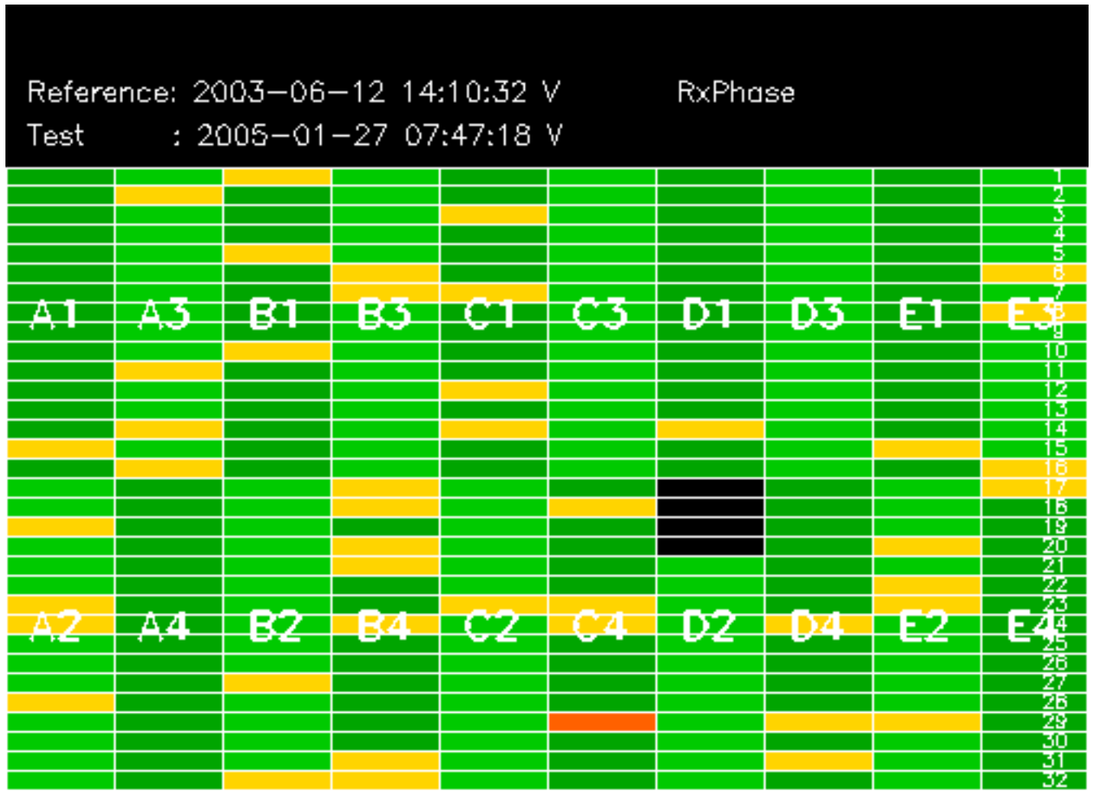

Reference: 2001-02-09 14:08:23 V
Test : 2005-01-27 07:47:18 V
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

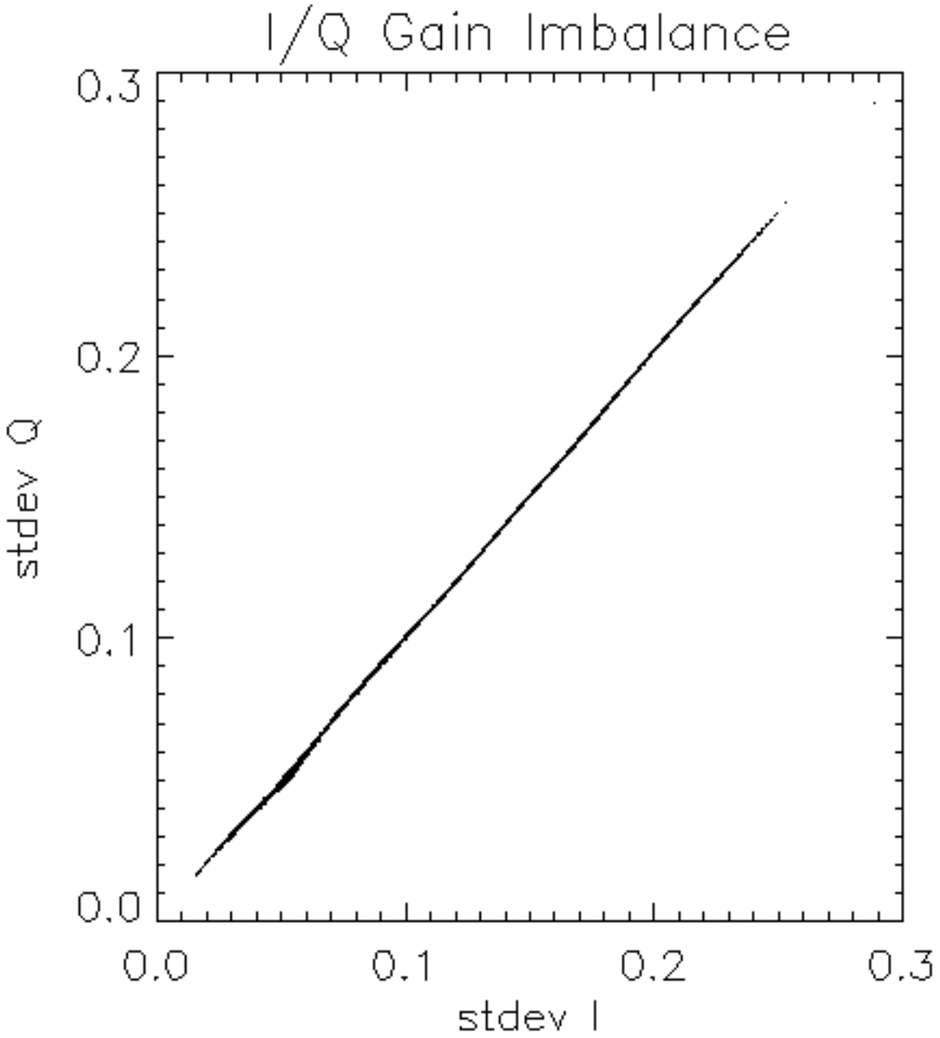

Reference: 2003-06-12 14:10:32 V
Test : 2005-01-27 07:47:18 V
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

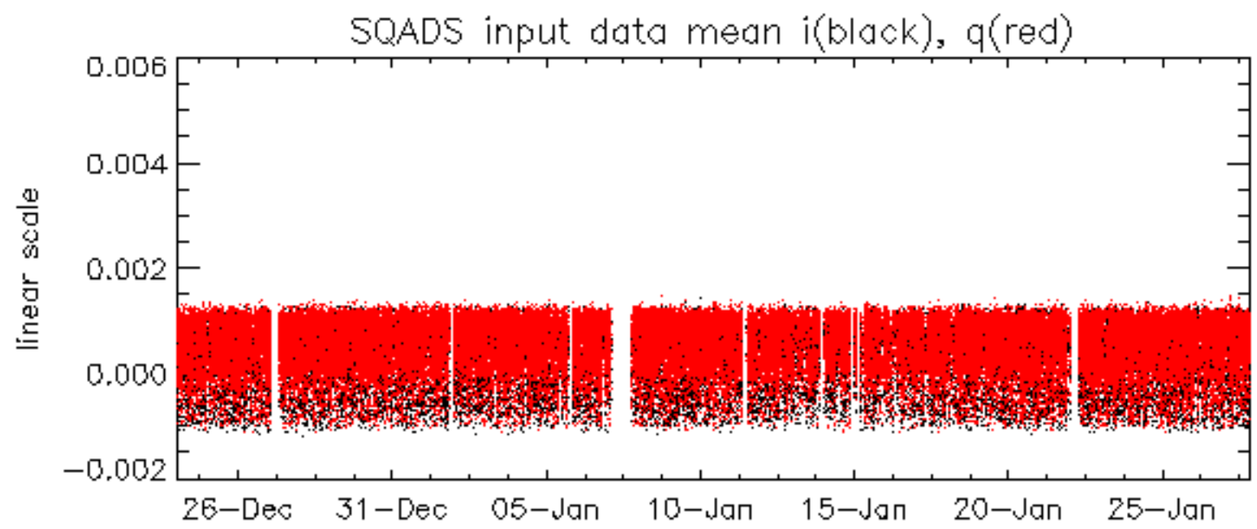

Reference: 2001-02-09 13:50:42 H
RxPhase
Test : 2005-01-26 08:18:55 H
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

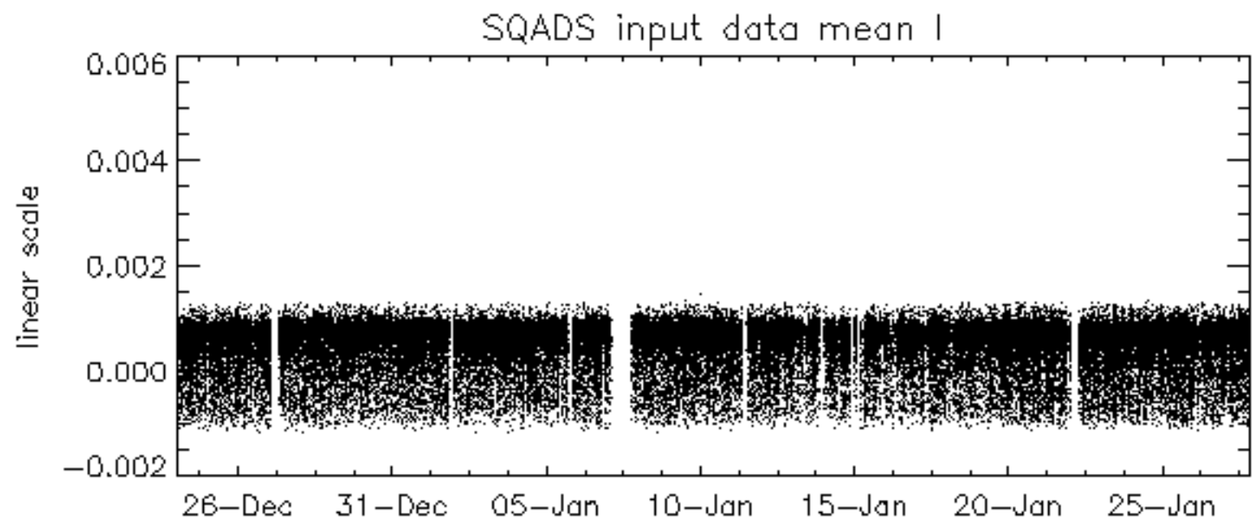
Reference: 2003-06-12 14:08:52 H
Test : 2005-01-26 08:18:55 H
RxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

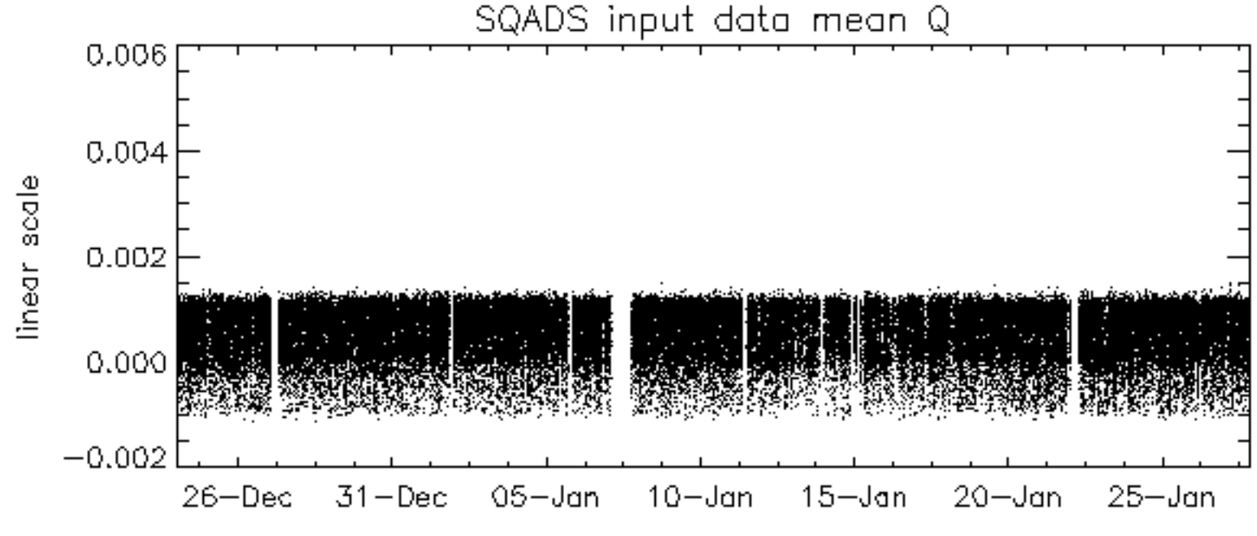

Reference: 2001-02-09 14:08:23 V
Test : 2005-01-27 07:47:18 V
RxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

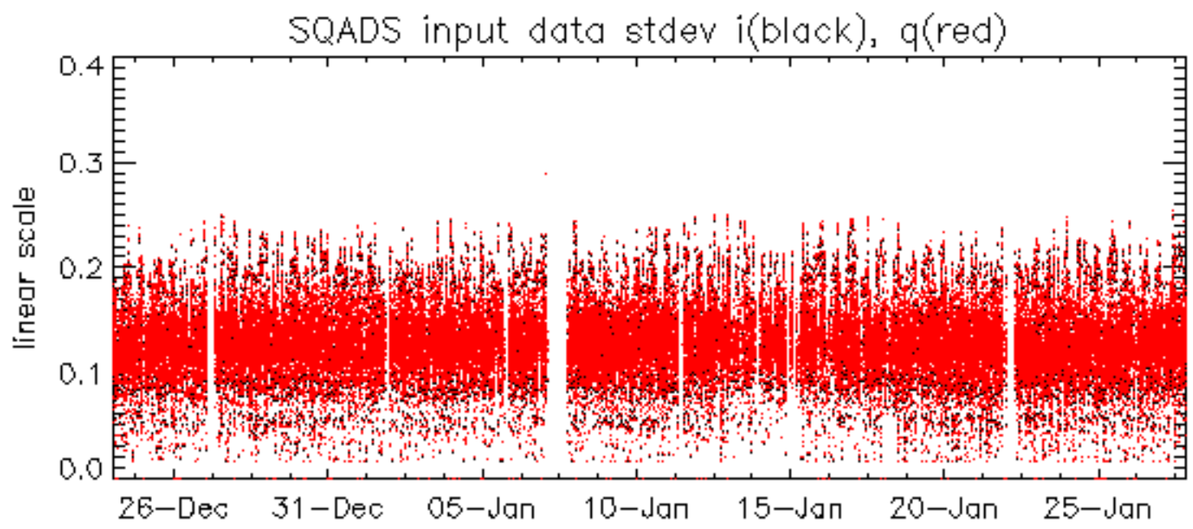

Reference: 2003-06-12 14:10:32 V
Test : 2005-01-27 07:47:18 V
RxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

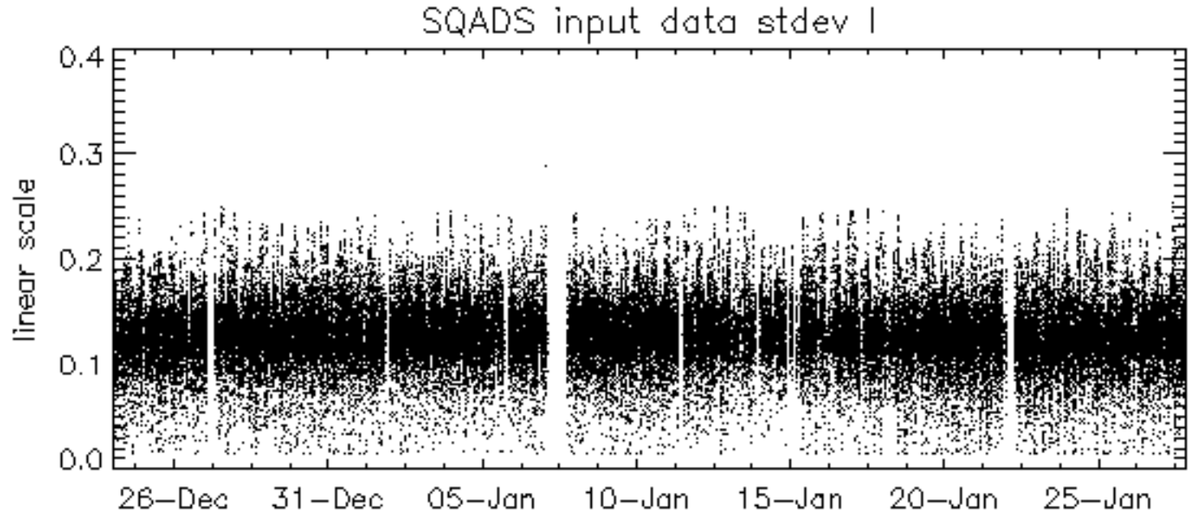

I/Q Gain Imbalance
0.3
0.2
0.1
0.0
stdev Q
0.0
0.1
0.2
0.3
stdev I

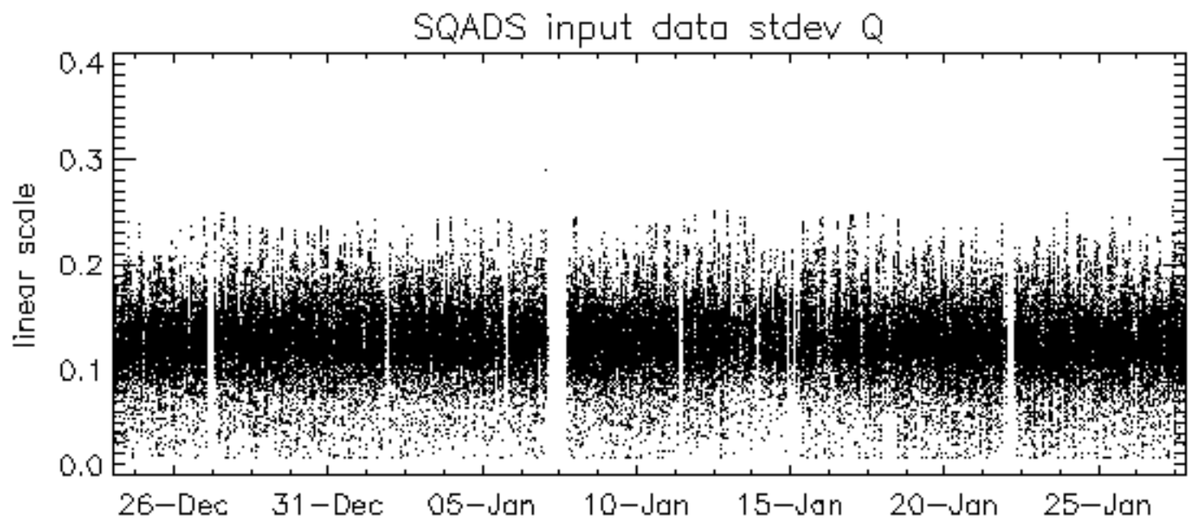

SQADS input data mean i(black), q(red)
linear scale
0.006
0.004
0.002
0.000
−0.002
26−Dec
31−Dec
05−Jan
10−Jan
15−Jan
20−Jan
25−Jan

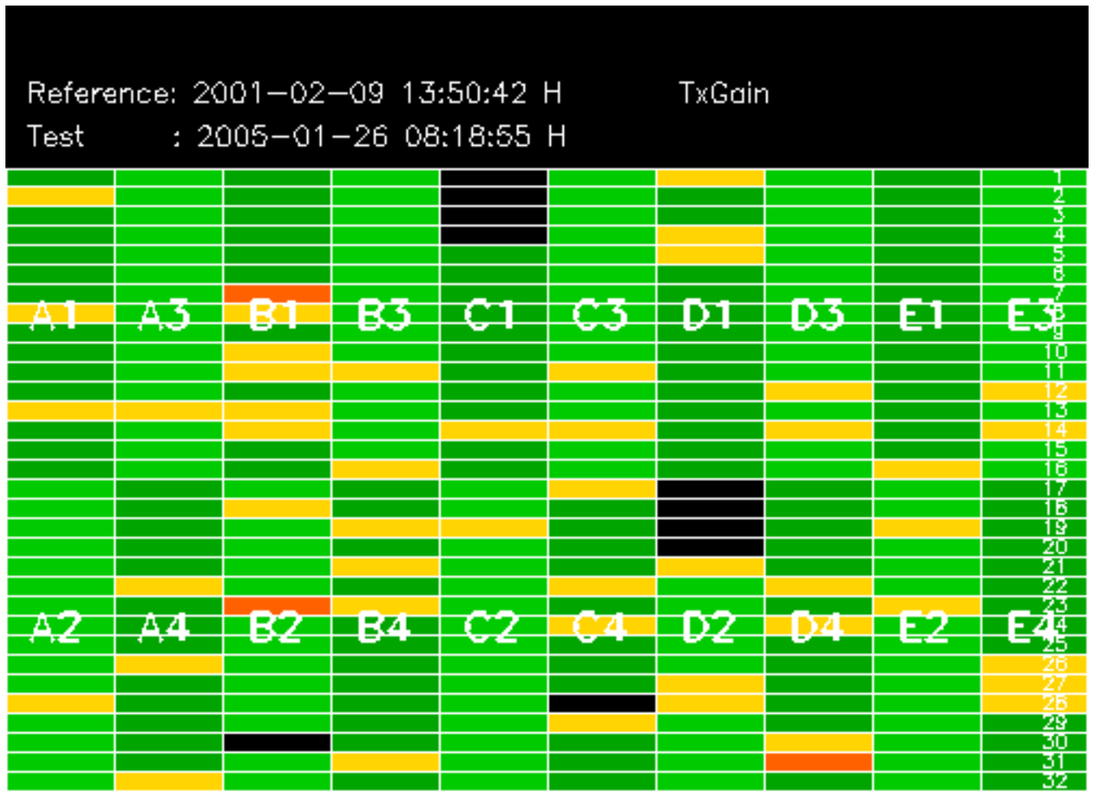

SQADS input data mean I
linear scale
0.006
0.004
0.002
0.000
−0.002
26−Dec
31−Dec
05−Jan
10−Jan
15−Jan
20−Jan
25−Jan

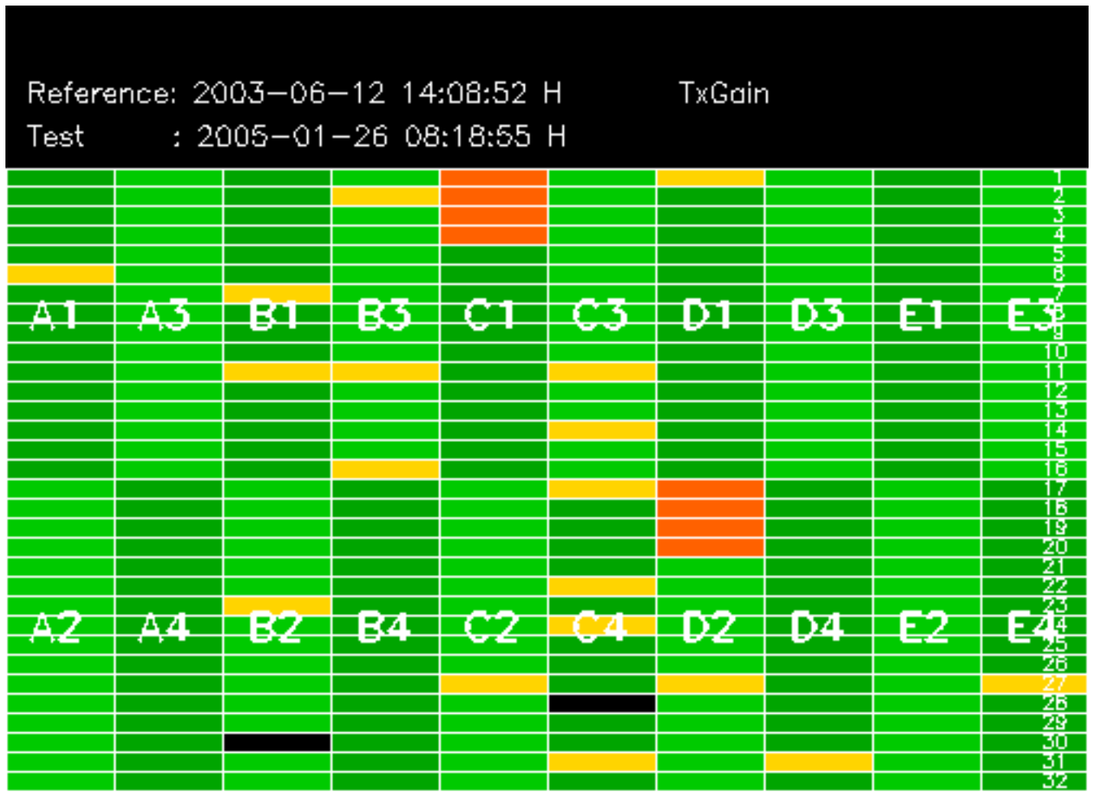

SQADS input data mean Q
linear scale
0.006
0.004
0.002
0.000
−0.002
26−Dec
31−Dec
05−Jan
10−Jan
15−Jan
20−Jan
25−Jan

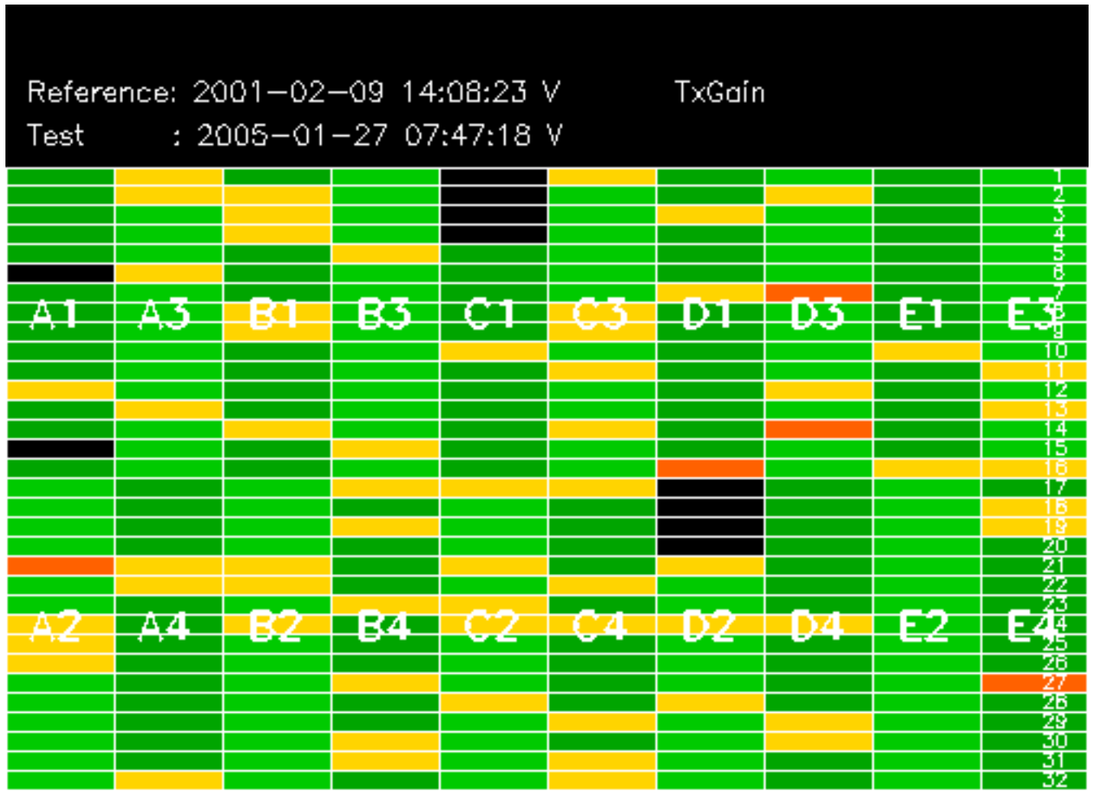

SQADS input data stdev i(black), q(red)
linear scale
0.4
0.3
0.2
0.1
0.0
26−Dec
31−Dec
05−Jan
10−Jan
15−Jan
20−Jan
25−Jan

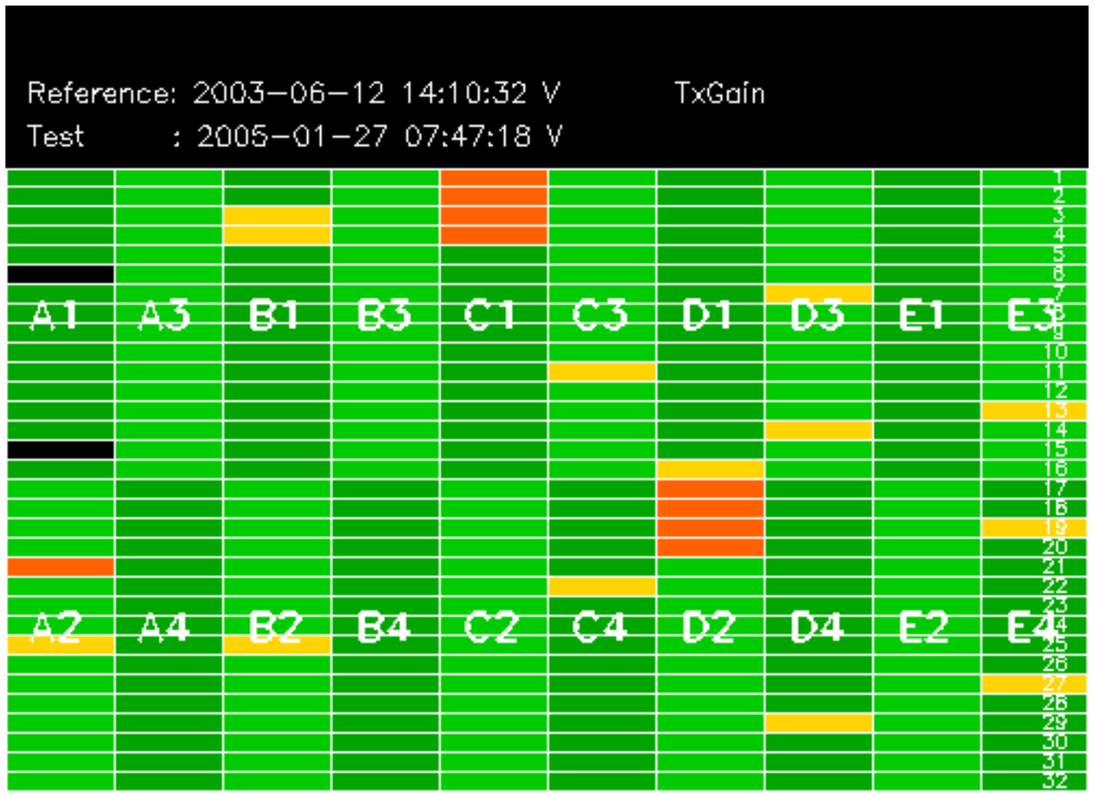

SQADS input data stdev I
linear scale
0.4
0.3
0.2
0.1
0.0
26−Dec
31−Dec
05−Jan
10−Jan
15−Jan
20−Jan
25−Jan

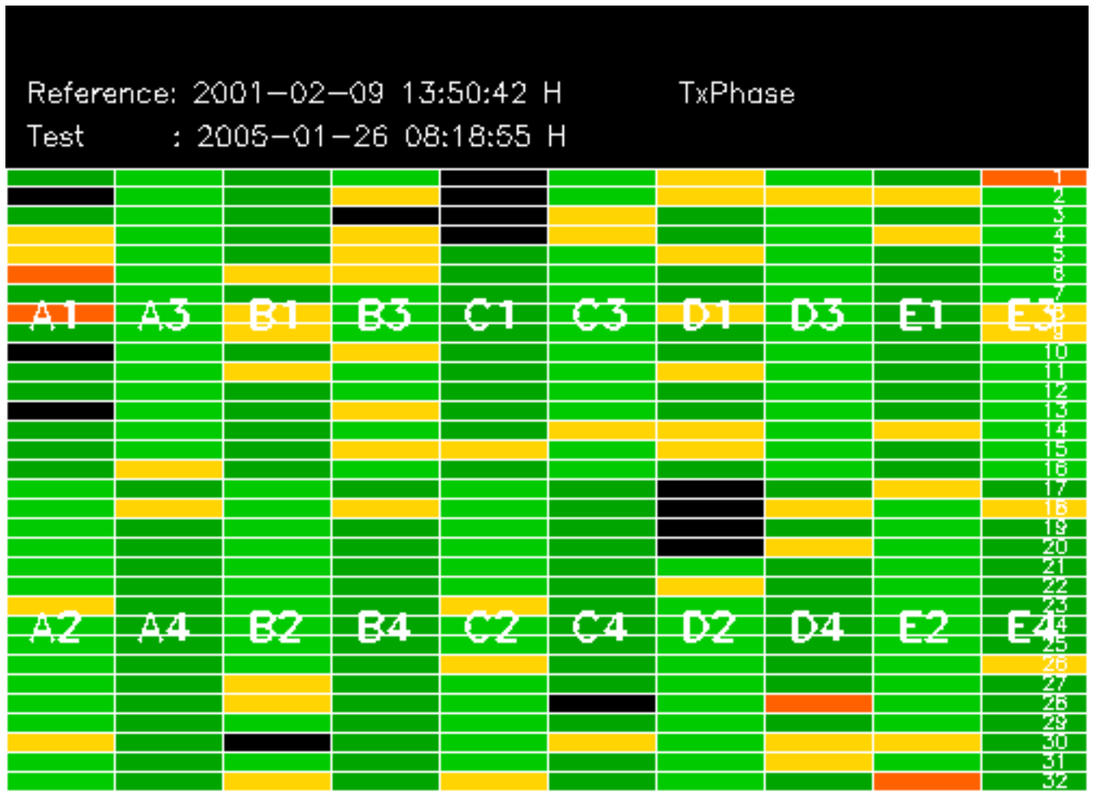

SQADS input data stdev Q
linear scale
0.4
0.3
0.2
0.1
0.0
26−Dec
31−Dec
05−Jan
10−Jan
15−Jan
20−Jan
25−Jan

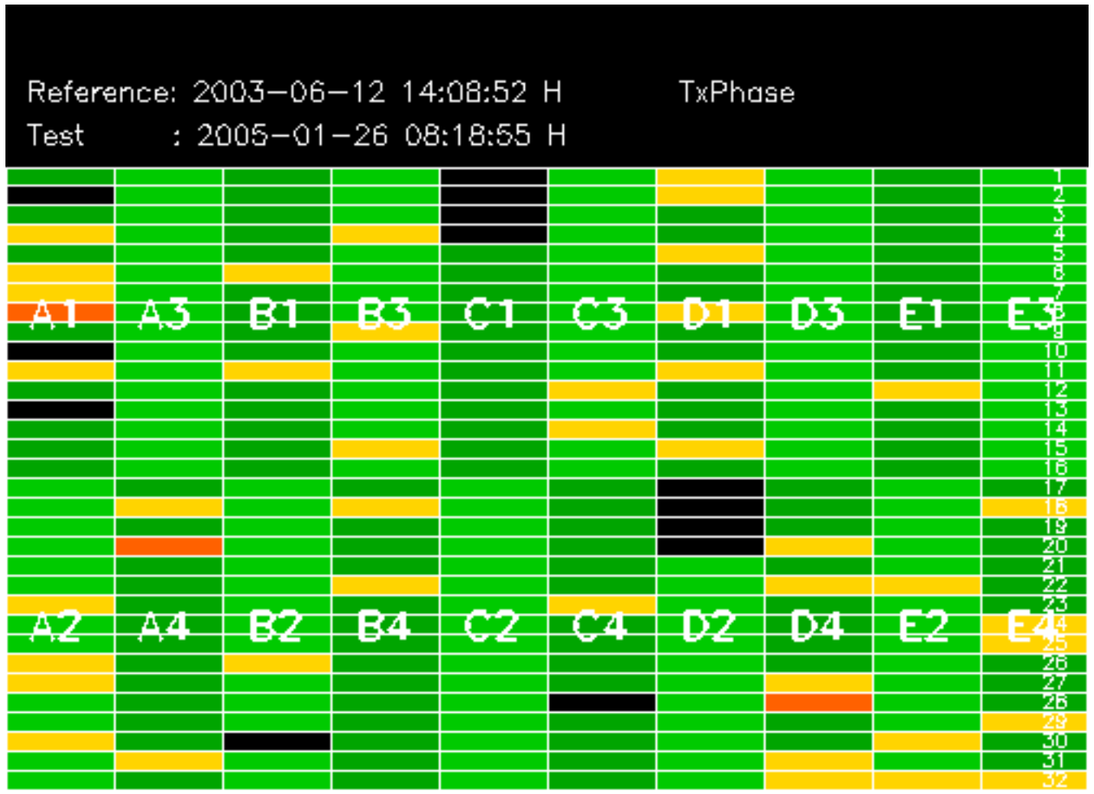

Reference: 2001-02-09 13:50:42 H
Test : 2005-01-26 08:18:55 H
TxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

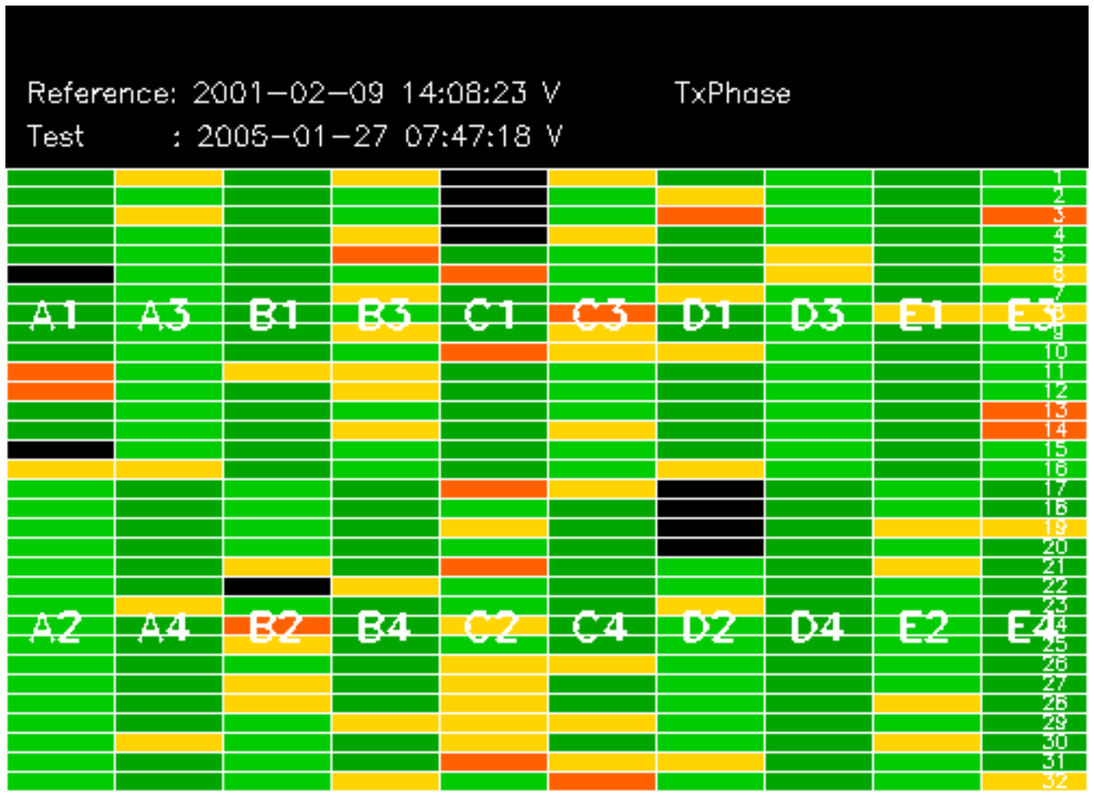

Reference: 2003-06-12 14:08:52 H
Test : 2005-01-26 08:18:55 H
TxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

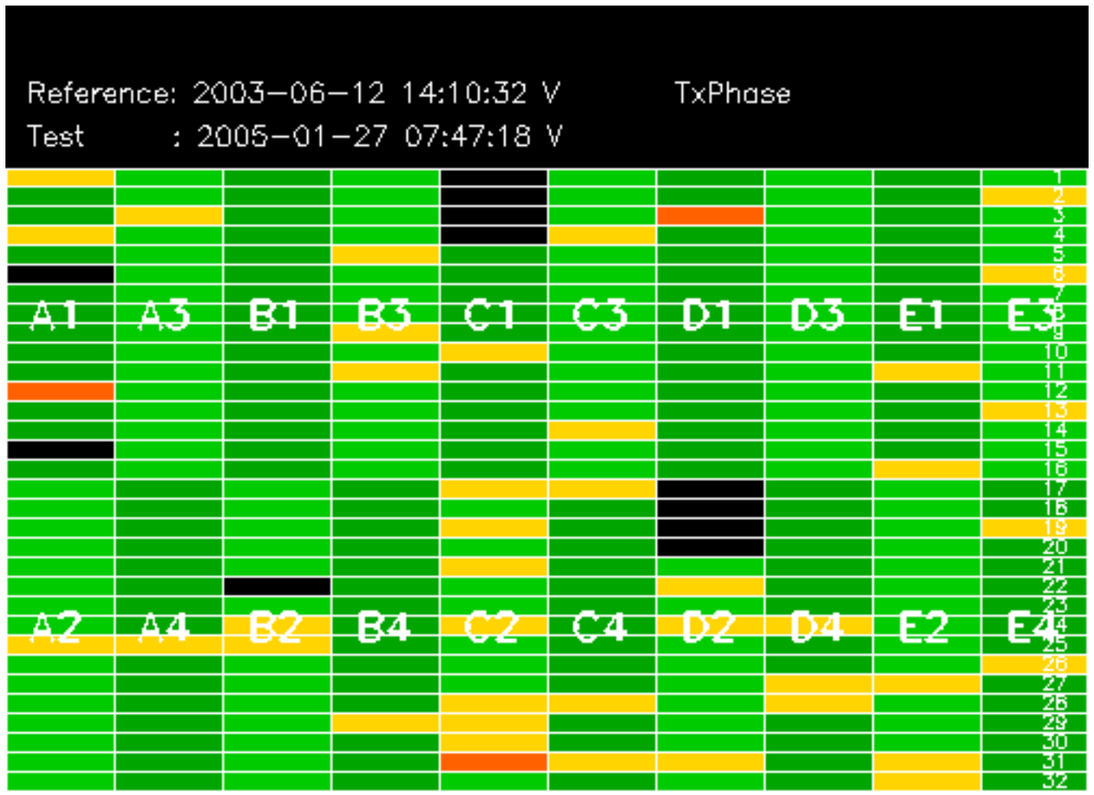

Reference: 2001-02-09 14:08:23 V
Test : 2005-01-27 07:47:18 V
TxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

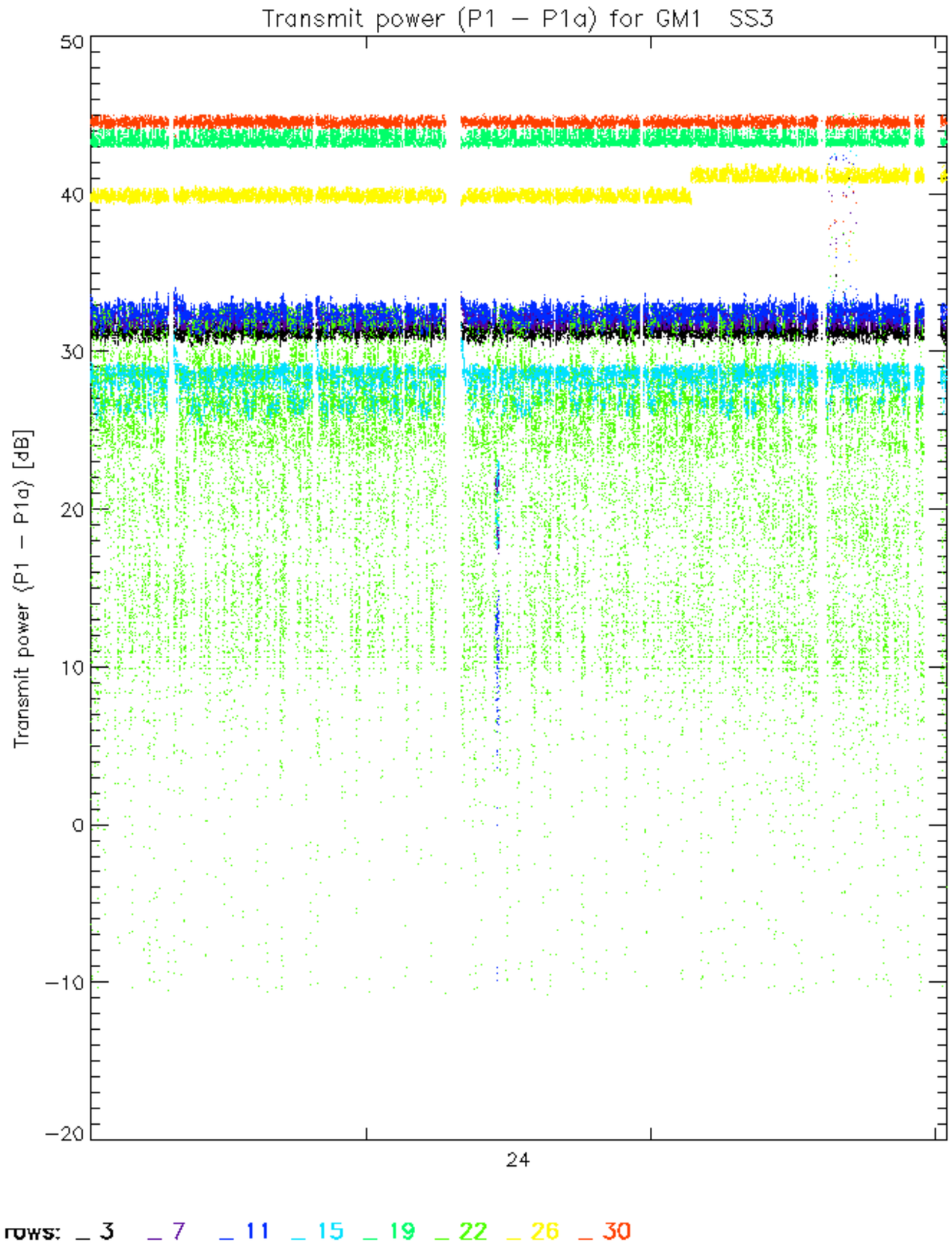

Reference: 2003-06-12 14:10:32 V
Test : 2005-01-27 07:47:18 V
TxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

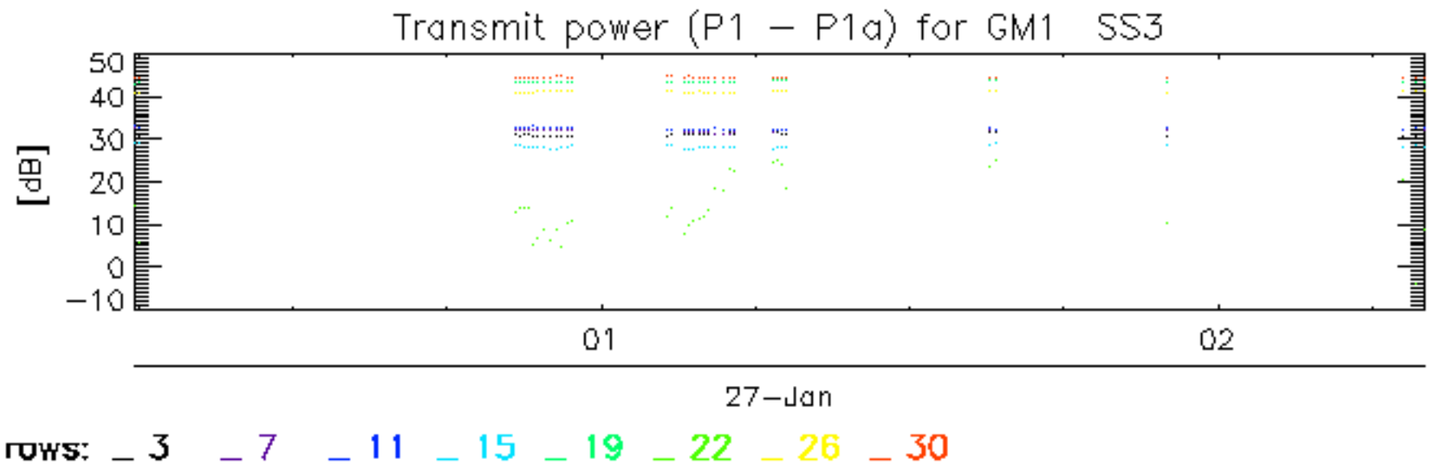

Reference: 2001-02-09 13:50:42 H
Test : 2005-01-26 08:18:55 H
TxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

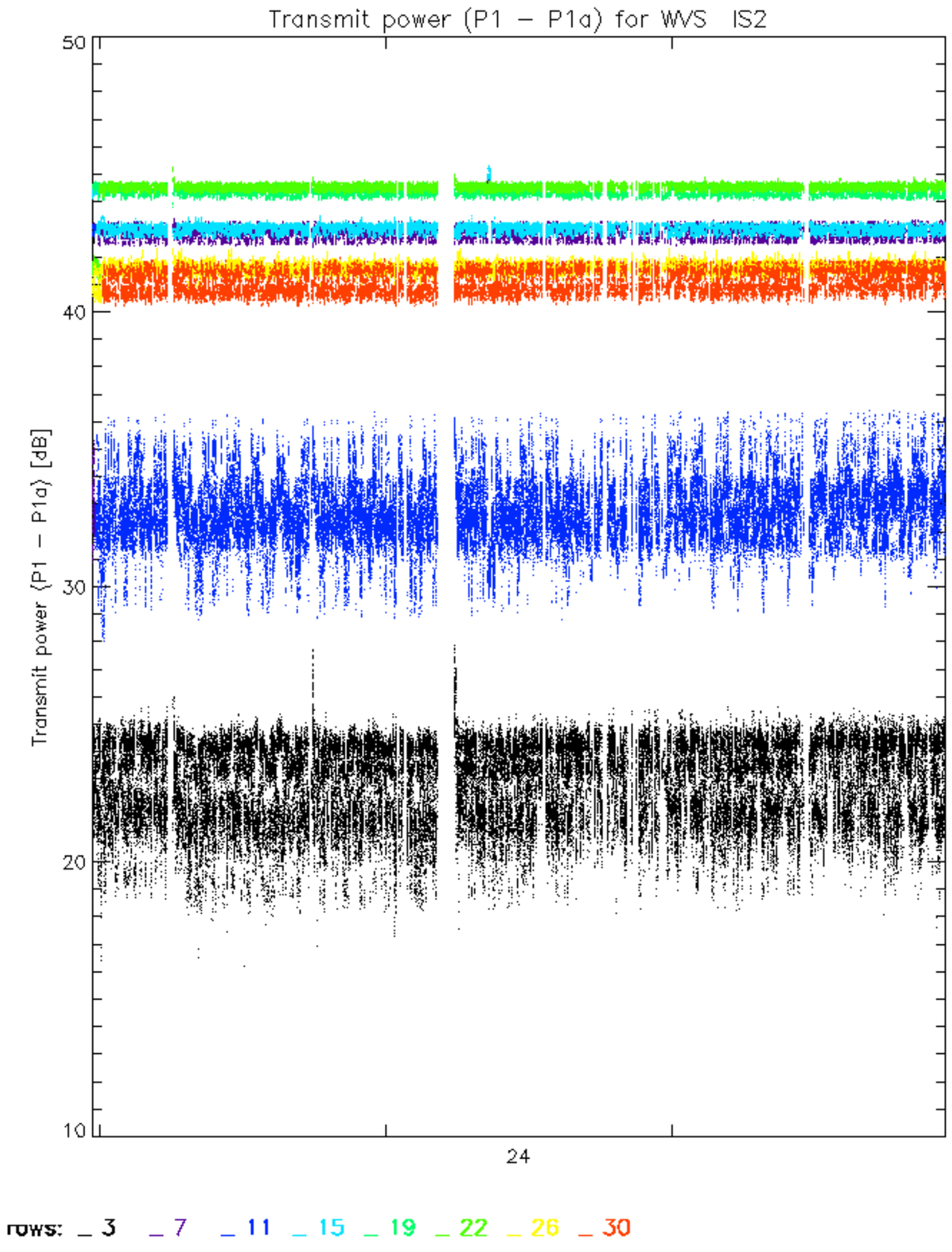

Reference: 2003-06-12 14:08:52 H
Test : 2005-01-26 08:18:55 H
TxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

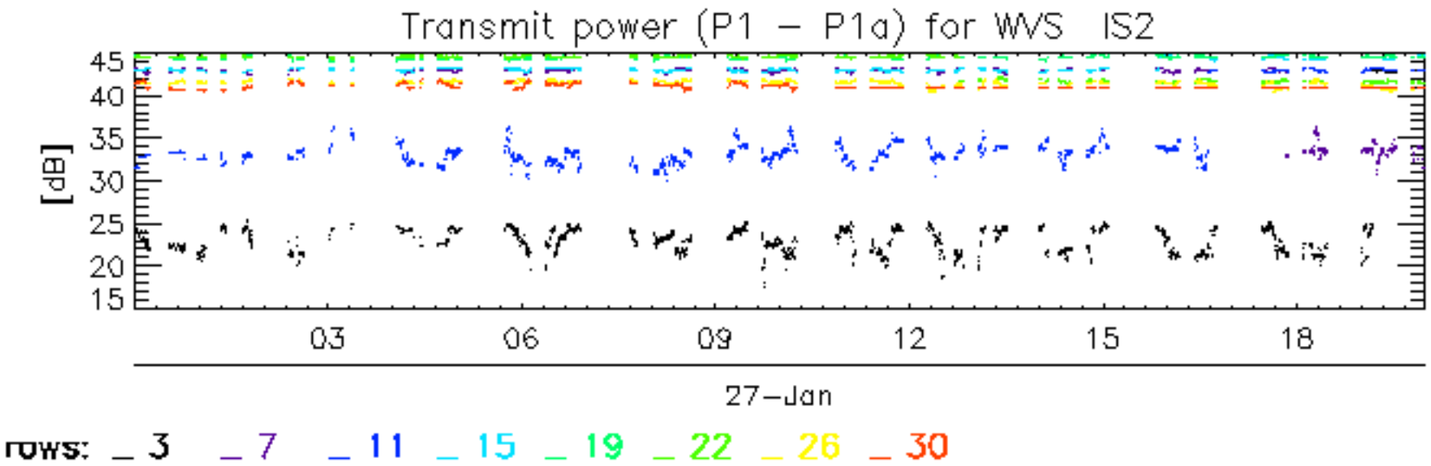

Reference: 2001-02-09 14:08:23 V
Test : 2005-01-27 07:47:18 V
TxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4


Reference: 2003-06-12 14:10:32 V
Test : 2005-01-27 07:47:18 V
TxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4


Transmit power (P1 – P1a) for GM1 SS3
Transmit power (P1 – P1a) [dB]
50
40
30
20
10
0
−10
−20
24
rows: 3 7 11 15 19 22 26 30


Transmit power (P1 – P1a) for GM1 SS3
[dB]
50
40
30
20
10
0
−10
01
02
27−Jan
rows: _ 3 _ 7 _ 11 _ 15 _ 19 _ 22 _ 26 _ 30


Transmit power (P1 – P1a) for WVS IS2
Transmit power (P1 – P1a) [dB]
50
40
30
20
10
24
rows: 3 7 11 15 19 22 26 30


Transmit power (P1 – P1a) for WVS IS2
[dB]
45
40
35
30
25
20
15
03
06
09
12
15
18
27–Jan
rows: 3 7 11 15 19 22 26 30

ASAR unavailable from 27-JAn-2005 at 19:59:57 to 27-Jan-2005 at 22:52:29 due to tile D1 PSU'S switched off