GOMOS Daily Report 08-NOV-2011

Level 0 and Level 1 products

SUMMARY

1. General Info

2. Summary of products arrived in PCF (Product Control Facility)
   - 2.1 Level 0: products arrived in PCF during current month (see template here)
   - 2.2 Level 0: plot of mission plan versus production during reporting period
   - 2.3 Level 0: summary of missing occultations with respect to the plan
   - 2.4 Level 1: products arrived in PCF during reporting period

3. Plot of Spectrometers and Photometers temperatures

4. Dark Charge monitoring
   - 4.1 Products that did not use the Dark Sky Area observation for DC computation
   - 4.2 Plot of Dark Charge

5. Demodulation correction and quality product information monitoring
   - 5.1 Percentage of products with some flags set
   - 5.2 Plot of quality information per product (time dependant)
   - 5.3 Plot of quality information per product (world map)

6. Star tangent altitude lost
   - 6.1 Statistics on star tangent altitude lost
   - 6.2 Plot of star tangent altitude lost: DARK products
   - 6.3 Plot of star tangent altitude lost: BRIGHT products
   - 6.3 Plot of star tangent altitude lost: TWILIGHT products

7. Star Acquisition and Tracking Unit (SATU)
   - 7.1 SATU plots (dark limb): 'X' and 'Y' axis
   - 7.2 SATU Noise Equivalent Angle statistics
     - 7.2.1 SATU NEA Statistics (table)
       - 7.2.2 Daily SATU NEA STD (dark limb) - trend since 1st April 2006

8.Auxiliary Data Files used for the production reported in section 2.4

Level 2 products

---

1. General Info

This report presents the daily analysis on parameters extracted from GOMOS level 1b data (GOM_TRA_1P).
It is intended to monitor some important parameters that will impact the quality of the level 2 products
as the Spectrometers and Photometers CCD Temperatures and Dark Charge, SATU noise equivalent angle...
A list of level 0 products (and content) that have arrived during the actual month to the PCF is also given.

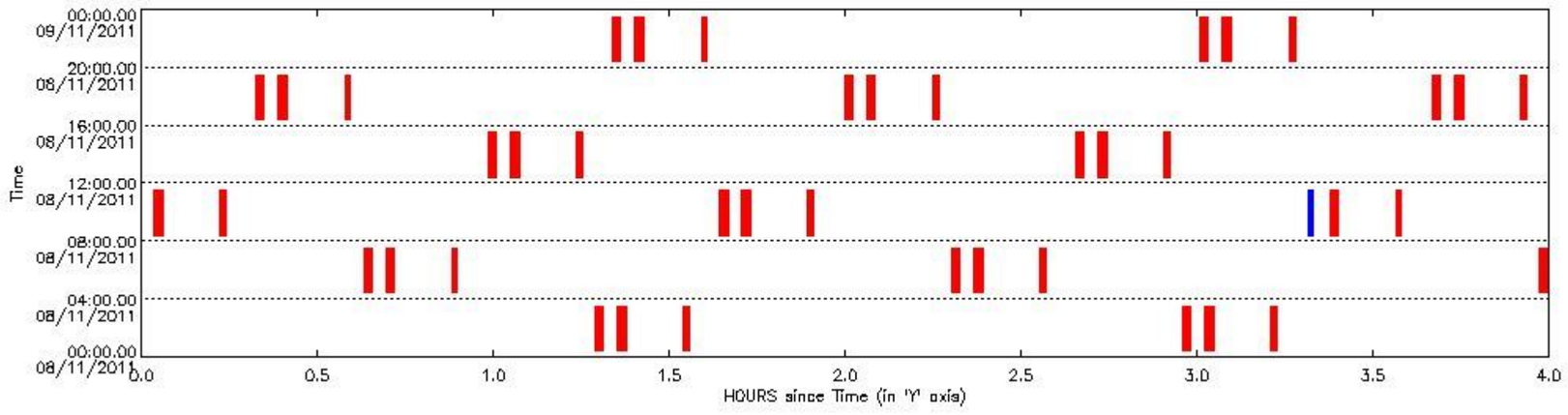
Item	Value
Time of report generation	10NOV2011 07:00:34
Data source version	GOMOS/6.01
Start time of products	08NOV2011 11:18:48
Stop time of products	08NOV2011 11:18:48
Store outputs in DB	Yes
Nb of level 1b prods	1
Nb of prods with errors	0

2. Summary of products arrived in PCF (Product Control Facility)

2.1 Level 0 products arrived in PCF (see template here)

2.2 Plot of mission plan versus Level 0 production arrived in PCF during reporting period

Red segments are missing products.
Blue segments are available products.
Green segments are calibration measurements (not available products to users).



2.3 Summary of missing occultations (red segments in previous plot)

UTC start time	Star name	Star ID	Orbit
08-NOV-2011 01:17:22	41Gam1Leo	51	50691
08-NOV-2011 01:21:05	32AlpLeo	22	50691
08-NOV-2011 01:32:19	DSA1054	0	50691
08-NOV-2011 02:57:37	41Gam1Leo	51	50692
08-NOV-2011 03:01:20	32AlpLeo	22	50692
08-NOV-2011 03:12:34	DSA1054	0	50692
08-NOV-2011 04:37:51	41Gam1Leo	51	50693
08-NOV-2011 04:41:35	32AlpLeo	22	50693
08-NOV-2011 04:52:50	DSA1054	0	50693
08-NOV-2011 06:18:06	41Gam1Leo	51	50694
08-NOV-2011 06:21:50	32AlpLeo	22	50694
08-NOV-2011 06:33:05	DSA1054	0	50694
08-NOV-2011 07:58:20	41Gam1Leo	51	50695
08-NOV-2011 08:02:05	32AlpLeo	22	50695
08-NOV-2011 08:13:20	DSA1054	0	50695

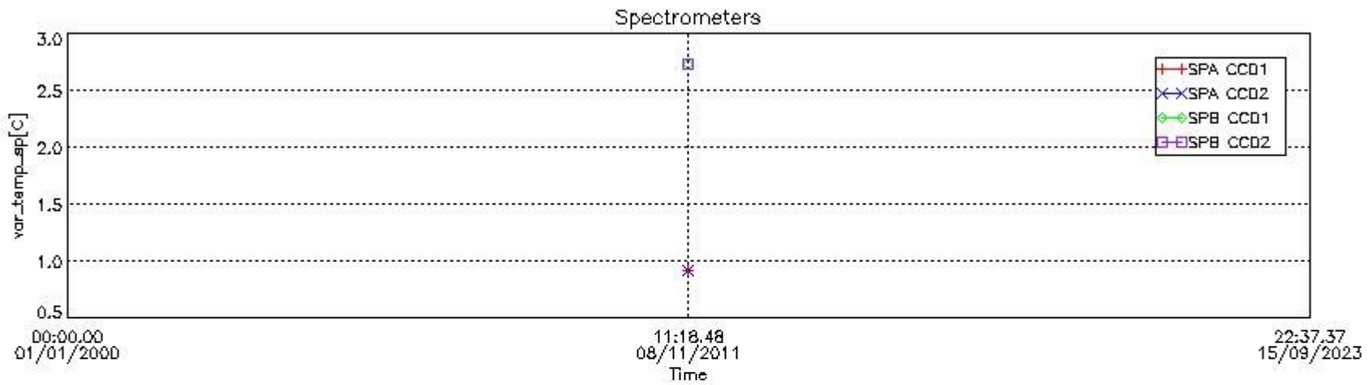
08-NOV-2011 09:38:35	41Gam1Leo	51	50696
08-NOV-2011 09:42:19	32AlpLeo	22	50696
08-NOV-2011 09:53:36	DSA1054	0	50696
08-NOV-2011 11:22:34	32AlpLeo	22	50697
08-NOV-2011 11:33:51	DSA1054	0	50697
08-NOV-2011 12:59:04	41Gam1Leo	51	50698
08-NOV-2011 13:02:49	32AlpLeo	22	50698
08-NOV-2011 13:14:07	DSA1054	0	50698
08-NOV-2011 14:39:18	41Gam1Leo	51	50699
08-NOV-2011 14:43:04	32AlpLeo	22	50699
08-NOV-2011 14:54:22	DSA1054	0	50699
08-NOV-2011 16:19:33	41Gam1Leo	51	50700
08-NOV-2011 16:23:19	32AlpLeo	22	50700
08-NOV-2011 16:34:38	DSA1054	0	50700
08-NOV-2011 17:59:47	41Gam1Leo	51	50701
08-NOV-2011 18:03:34	32AlpLeo	22	50701
08-NOV-2011 18:14:53	DSA1054	0	50701
08-NOV-2011 19:40:02	41Gam1Leo	51	50702
08-NOV-2011 19:43:49	32AlpLeo	22	50702
08-NOV-2011 19:55:09	DSA1054	0	50702
08-NOV-2011 21:20:16	41Gam1Leo	51	50703
08-NOV-2011 21:24:04	32AlpLeo	22	50703
08-NOV-2011 21:35:24	DSA1054	0	50703
08-NOV-2011 23:00:31	41Gam1Leo	51	50704
08-NOV-2011 23:04:19	32AlpLeo	22	50704
08-NOV-2011 23:15:40	DSA1054	0	50704

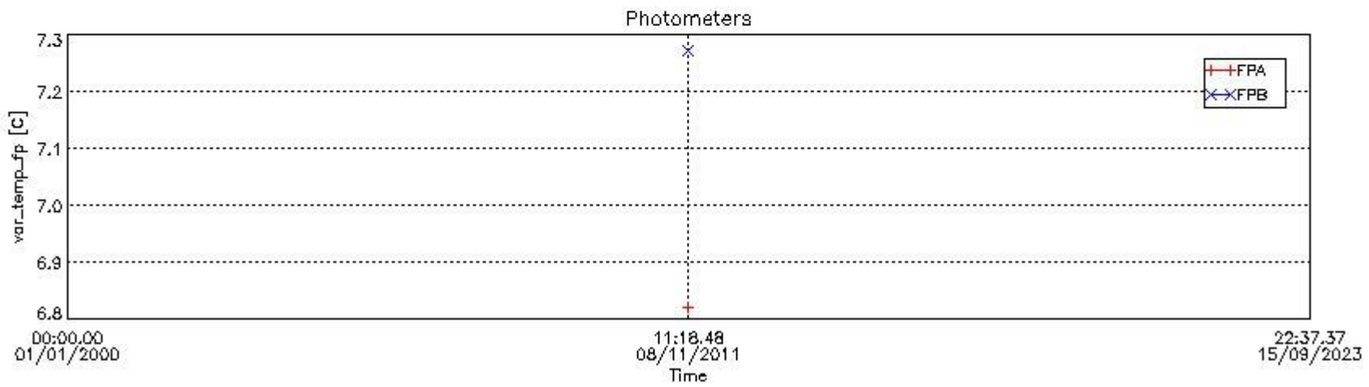
2.4 Summary of processed GOM_TRA_1P products

!Warning: No products without errors in DARK limb contitions found

Nr	Filename	UTC Start time	Limb	Duration	Star Id	Star Name	Star Mag	Star Temp	Nb Meas	Orbit	Prod. error
1	GOM_TRA_1PNPDK20111108_111848_000000603108_00238_50683_7467.N1	08-NOV-2011 11:18:48	Bright	60.000	51	41Gam1Leo	2.0100	4500.0	120	50683	No

3. Plot of GOMOS spectrometers and photometers temperatures from level 1b data





4. Overview of dark signal processing per product

The Dark Charge (DC) is a temperature-dependant signal added to the useful measurements and it is therefore substracted from them during the processing. There are two phenomena that produce a continuous increase of the DC: the "hot pixels" (a pixel is "hot" when its DC exceeds by a significant amount its value measured on ground at the same temperature) and the "Random Telegraphic Signal" (abrupt change positive or negative of the CCD pixel signal, random in time, affecting only the DC part of the signal and not the photon generated signal).
In this section a list of products that did not use the Dark Sky Area (DSA) observation for the DC computation is given.
It is also provided the mean DC plot per product for dark limb products with no error flag set.

4.1 These products did not use the DSA observation for DC computation:

Product name	DC information
GOM_TRA_1PNPDK20111108_111848_000000603108_00238_50683_7467.N1	DC map used

4.2 Plot of mean dark charges per product: only products in DARK limb conditions without errors are used

No products without errors in DARK limb contitions found. No plot performed.

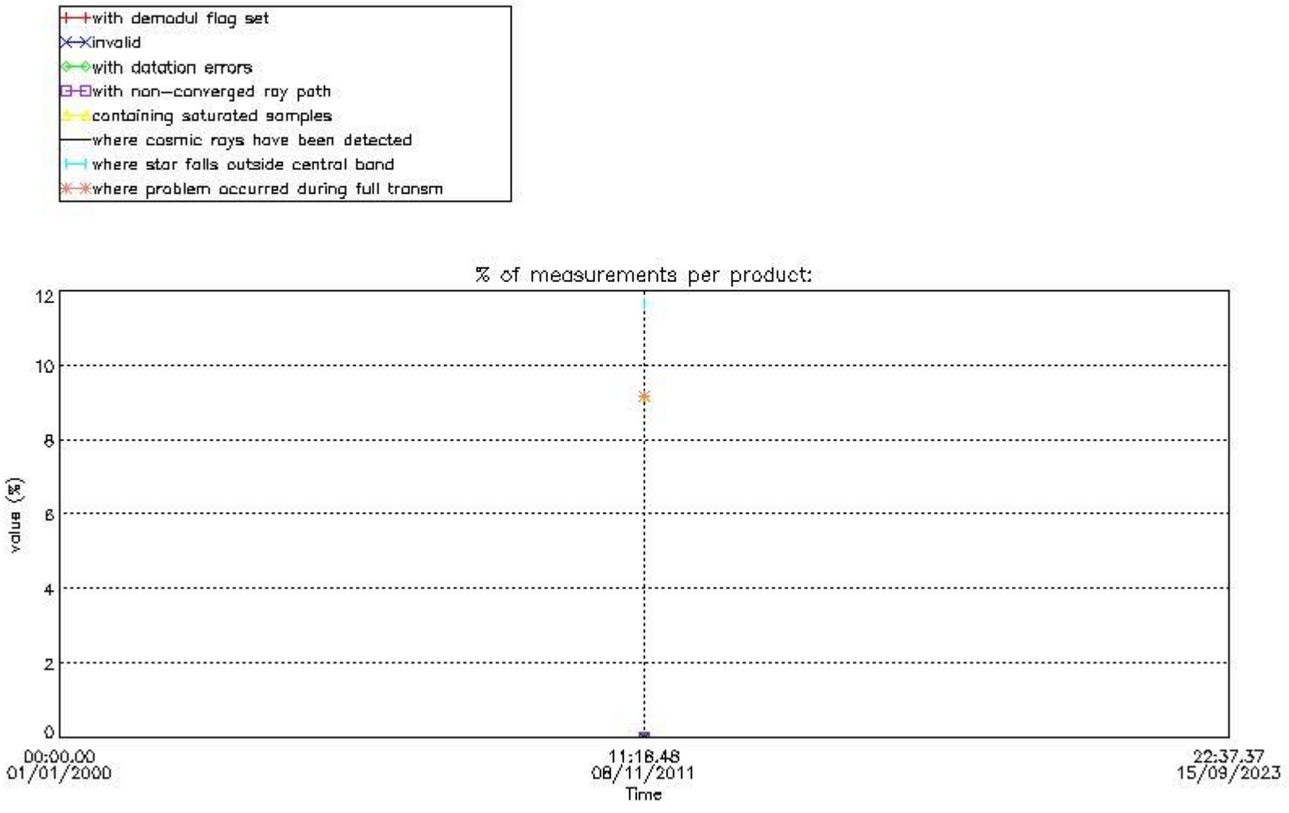
5. Demodulation flag and quality information monitoring

In this section it is presented the modulation information extracted from the pcd (product confidence data) at measurement level and information extracted from the Quality Summary dataset. Only products without errors (error flag in the MPH set to "0") are used.

5.1 Percentage of products during reporting period with:

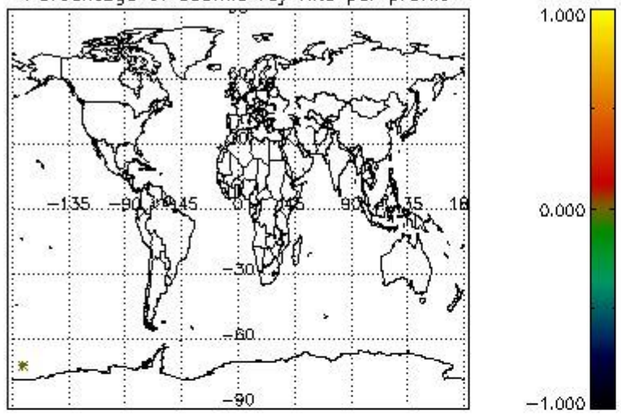
At least one measurement with demodulation flag set:	0.00000 %
Reference spectrum computed from DB:	0.00000 %
Reference spectrum with small number of measurements:	0.00000 %
SATU data not used:	100.000 %

5.2 Plot quality information per product (time dependant)

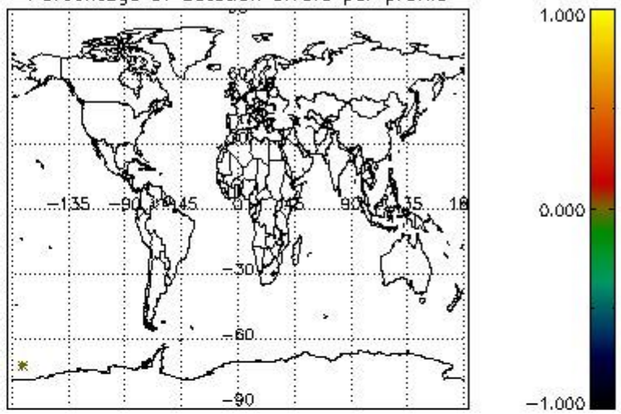


5.3 Plot quality information per product (world map)

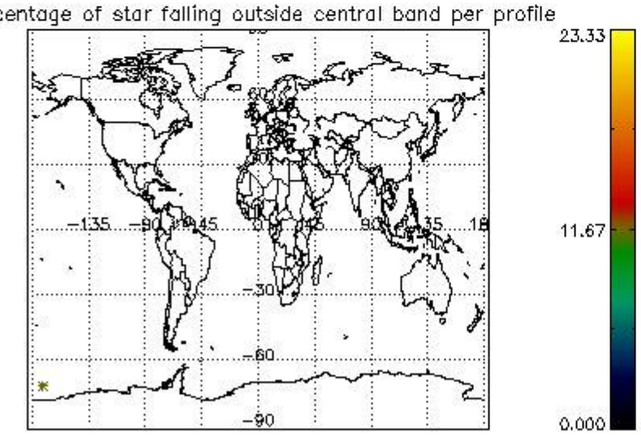
Percentage of cosmic ray hits per profile



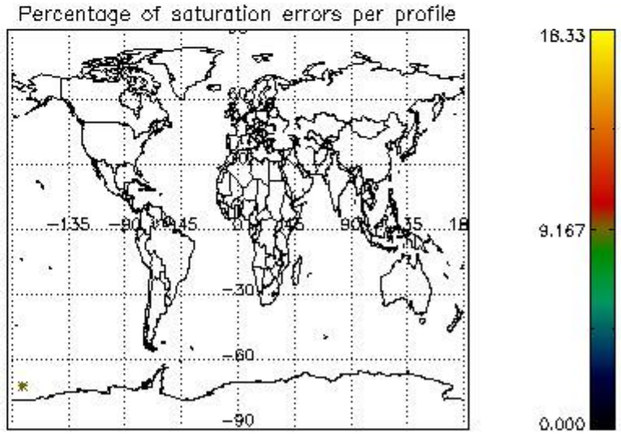
Percentage of datation errors per profile



Percentage of star falling outside central band per profile



Percentage of saturation errors per profile



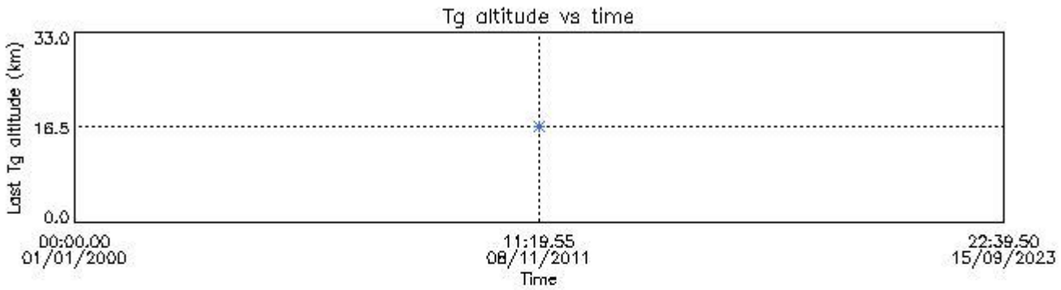
6. Statistics and plot of tangent altitude of the last measurement (DARK & BRIGHT products without errors)

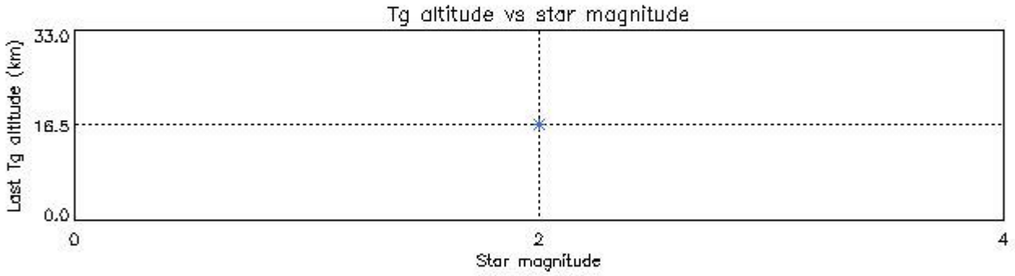
6.1 Statistics on tangent altitude lost:

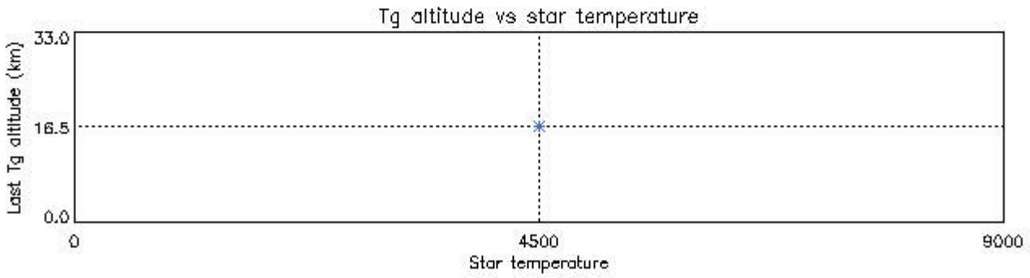
Statistics	DARK	BRIGHT	TWILIGHT
Mean:	NaN	16.492	NaN
St. deviation:	NaN	0.0000	NaN
Maximum:	NaN	16.492	NaN
Minimum:	NaN	16.492	NaN
Number of data:	NaN	1.0000	NaN

6.3 Plot for BRIGHT limb products

Tangent altitude at which the star is lost







7. Star Acquisition and Tracking Unit (SATU)

The Star Acquisition and Tracking Unit (SATU) analyses the position of the tracked star beam collected by the GOMOS telescope and deflected by the optical beam dispatcher. The main functin of the SATU is to detect a star, provide its image position to the science data electronics and to help the pointing function to keep the star image at a fixed position. In tracking mode the SATU data is recorded with a frecuency of 100 Hz.

7.1 SATU 'X' and 'Y' axis plots (dark limb)

SATU CCD 'X' and 'Y' axis plots are provided in order to detect any abnormal behaviour of the tracking system. For every occultation (color) the plot should remain stable (with some noise) until we are deep in the atmosphere where big fluctuations are registered due to the refractive effects.

7.2 Statistics on SATU Noise Equivalent Angle (NEA) for DARK (D) and BRIGHT (B) products above 105 kms

The Star Acquisition and Tracking Unit (it is the CCD that tracks the star while it is occulted) Noise Equivalent Angle consists of the statistical angular variation of the SATU data above the atmosphere.
Statistics (in microradians) above 105 km are computed for every occultation, giving four values per occultation: one in the 'X' direction and one in the 'Y' direction for dark and bright limbs. A mean value per day in every direction and limb is calculated and monitored in order to assess instrument performance in terms of star pointing.

7.2.1 SATU NEA Statistics (table)

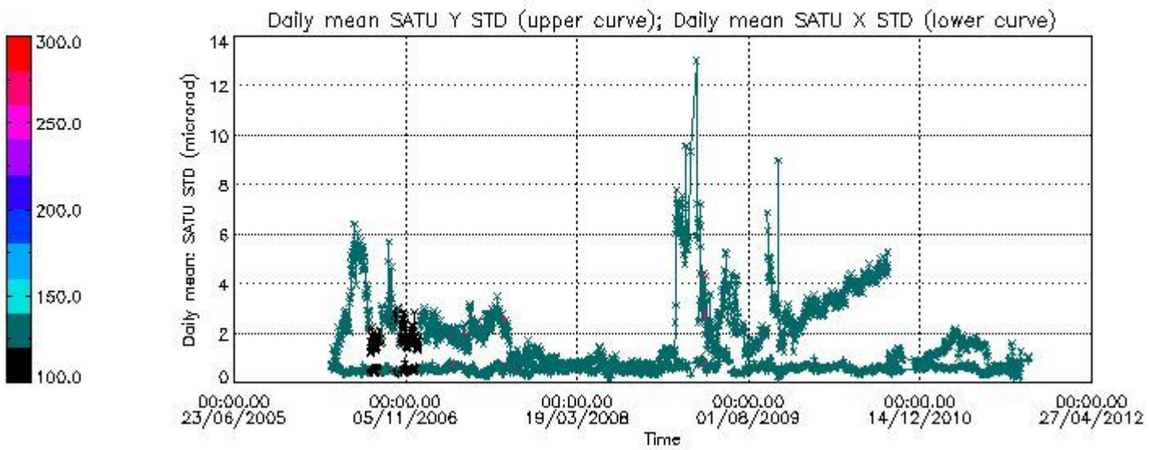
Statistics	SATU X (D)	SATU Y (D)	SATU X (B)	SATU Y (B)
Mean:	NaN	NaN	0.081556	1.6081
St. deviation:	NaN	NaN	0.40108	1.7845
Maximum:	NaN	NaN	1.7000	5.9000
Minimum:	NaN	NaN	-3.1000	-10.500
Number of data:	NaN	NaN	1350.0	1350.0
90Percentile:	NaN	NaN	0.50000	3.2000

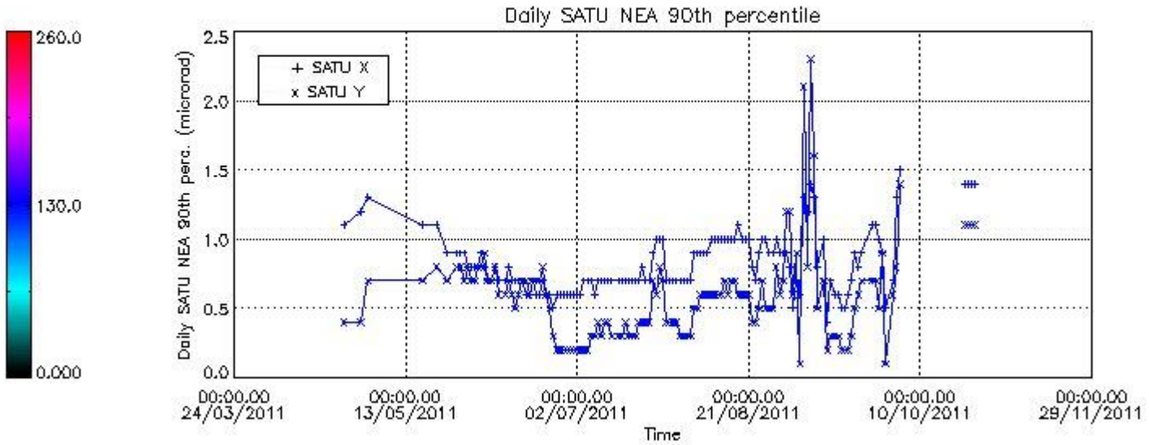
7.2.2 Trend of daily SATU NEA St. deviation since 1st April 2006 (dark limb) and of daily SATU NEA 90th percentile since May 2011

The long term trend of the SATU 'X' and 'Y' standard deviations should be constant during the whole mission.

The colorbar represents the start tangent altitude (km) of the occultations.

Upper curve: STD of SATU Y axis
Lower curve: STD of SATU X axis

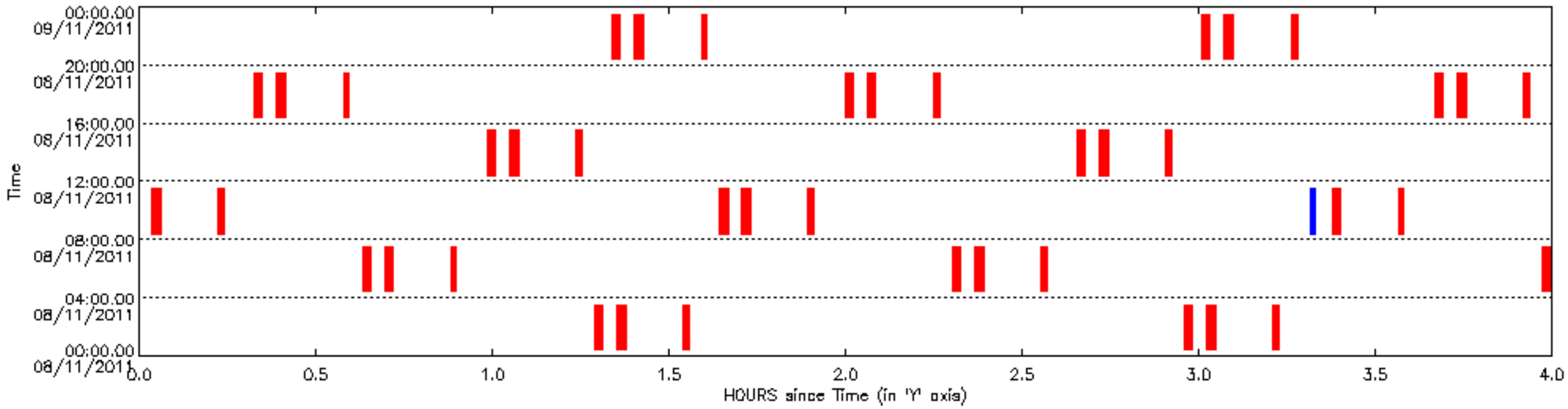


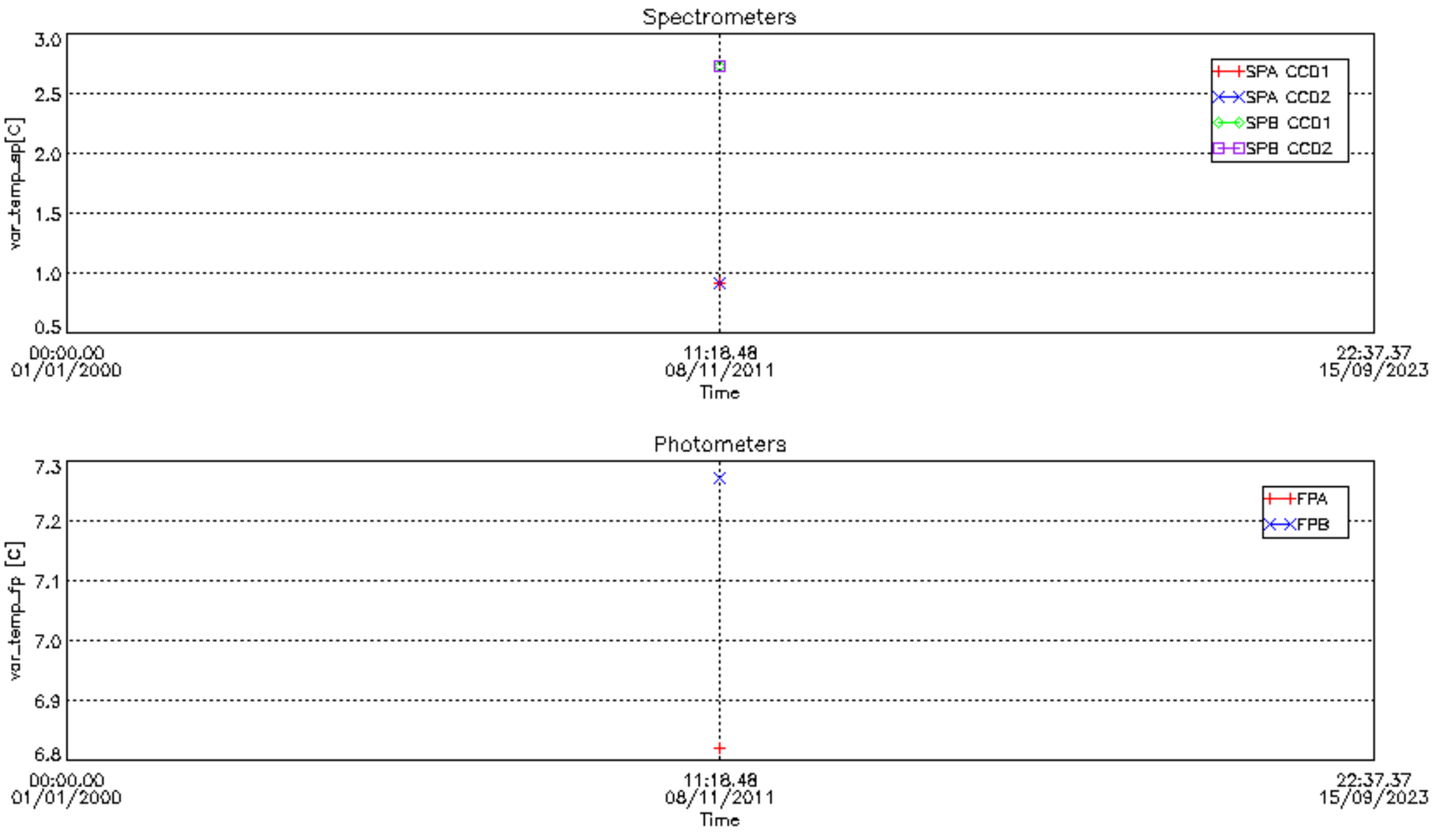


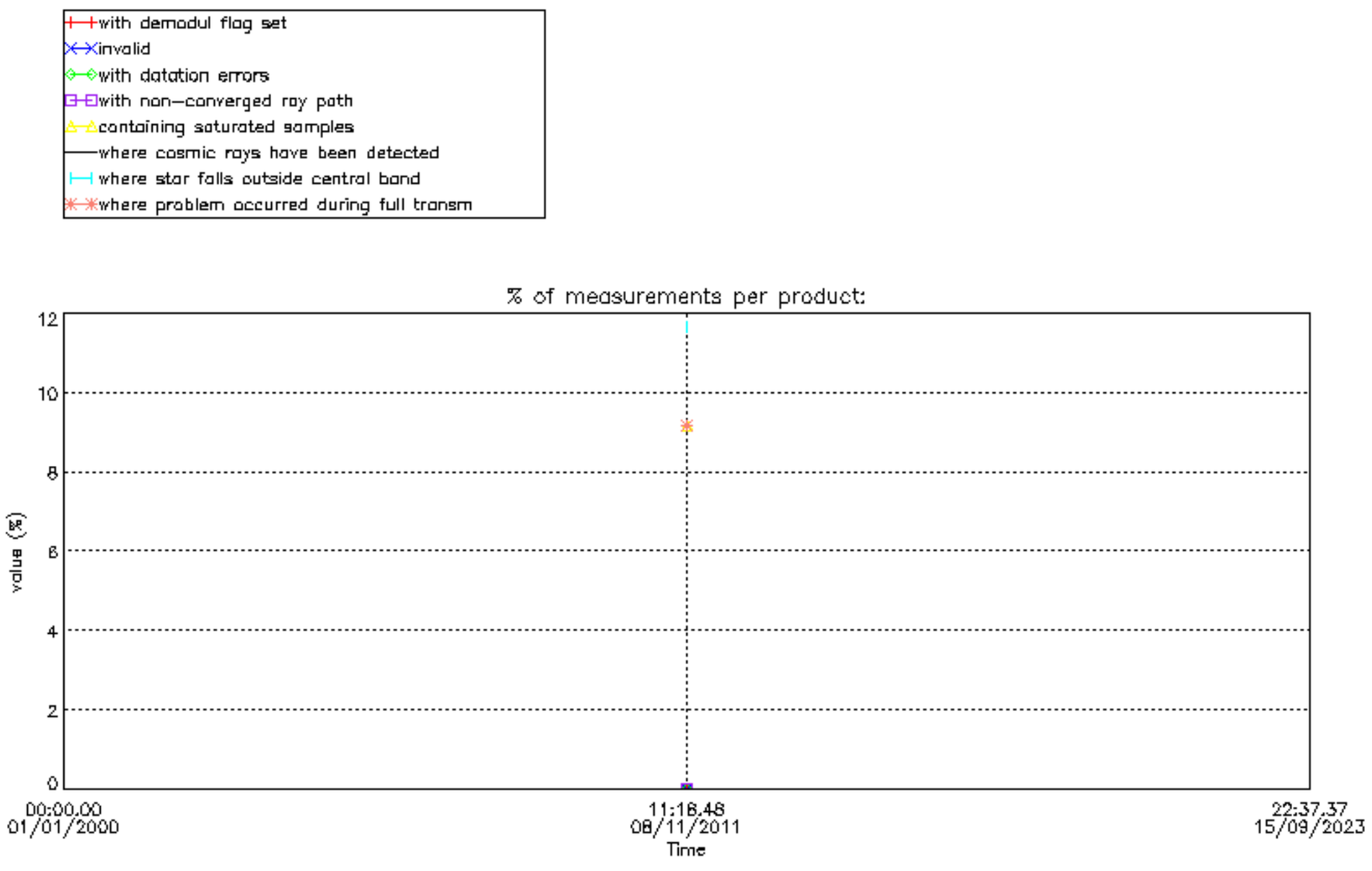
8. Auxiliary Data Files used for the production reported in section 2.4

The number reported in the third column indicates since which file (see list in section 2.4) the corresponding auxiliary file has been used. The fourth column is the date of those product files.

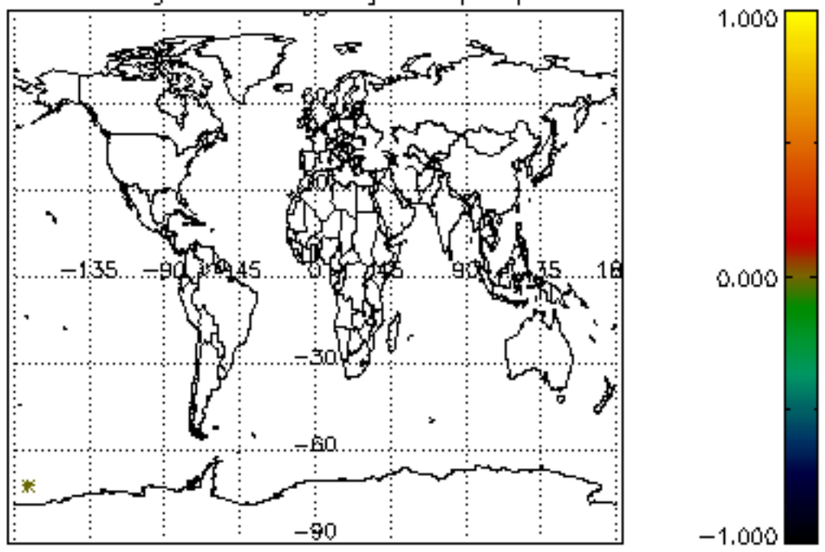
Type	Auxiliary Filename	Used since product	Used since product date
INST_PHYS_CHARACTERISTICS	GOM_INS_AXVIEC20091111_143220_20030716_120000_20500101_000000	1	08-NOV-2011 11:18:48
CALIBRATION_DATABASE	GOM_CAL_AXVIEC20111021_144853_20111020_000000_20500101_000000	1	08-NOV-2011 11:18:48
LEVEL-1B_PROC_CONFIG	GOM_PR1_AXVIEC20110513_081743_20020301_000000_20500101_000000	1	08-NOV-2011 11:18:48
STAR_CATALOGUE	GOM_CAT_AXVIEC20020121_161009_20020101_000000_20200101_000000	1	08-NOV-2011 11:18:48
STELLAR_SPECTRA_DATABANK	GOM_STS_AXVIEC20091111_151504_20020101_160000_20500101_000000	1	08-NOV-2011 11:18:48
ECMWF_FILE	AUX_ECF_AXNECM20111108_062115_20111108_090000_20111108_210000	1	08-NOV-2011 11:18:48
OPTIONAL_ECMWF_FILE	MISSING	1	08-NOV-2011 11:18:48
ORBIT_DATA_FILE	AUX_FPO_AXVPDS20111108_111531_20111107_185703_20111117_211043	1	08-NOV-2011 11:18:48


00:00.00
09/11/2011
20:00.00
08/11/2011
16:00.00
08/11/2011
12:00.00
08/11/2011
08:00.00
08/11/2011
04:00.00
08/11/2011
00:00.00
08/11/2011
Time
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
HOURS since Time (in 'Y' axis)

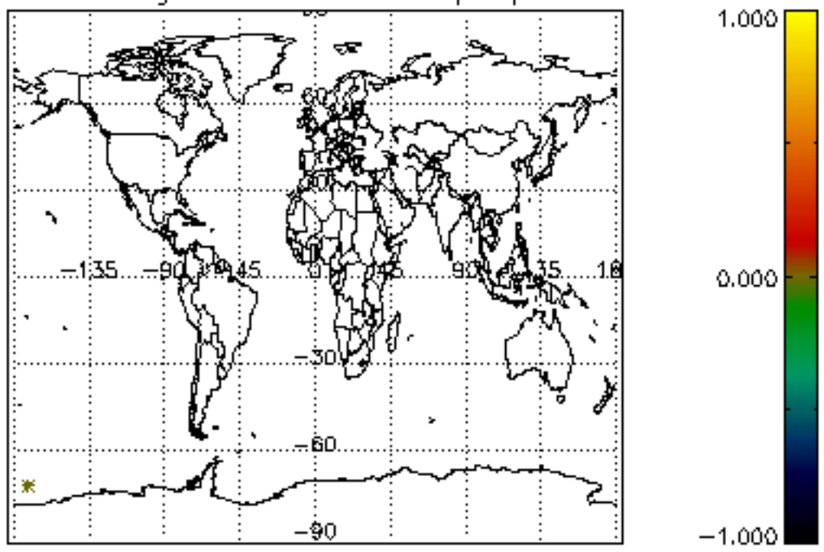

Spectrometers
var_temp_sp[C]
3.0
2.5
2.0
1.5
1.0
0.5
SPA CCD1
SPA CCD2
SPB CCD1
SPB CCD2
00:00.00
01/01/2000
11:18.48
08/11/2011
22:37.37
15/09/2023
Time
Photometers
var_temp_fp [C]
7.3
7.2
7.1
7.0
6.9
6.8
FPA
FPB
00:00.00
01/01/2000
11:18.48
08/11/2011
22:37.37
15/09/2023
Time


with demodul flag set
invalid
with datation errors
with non-converged ray path
containing saturated samples
where cosmic rays have been detected
where star falls outside central band
where problem occurred during full transm
% of measurements per product:
12
10
8
6
4
2
0
value (%)
00:00.00
01/01/2000
11:16.48
08/11/2011
22:37.37
15/09/2023
Time

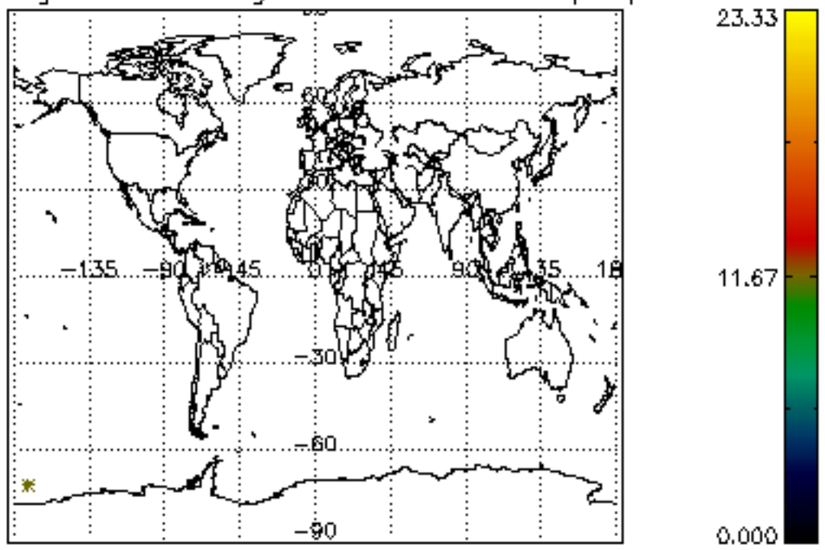
Percentage of cosmic ray hits per profile



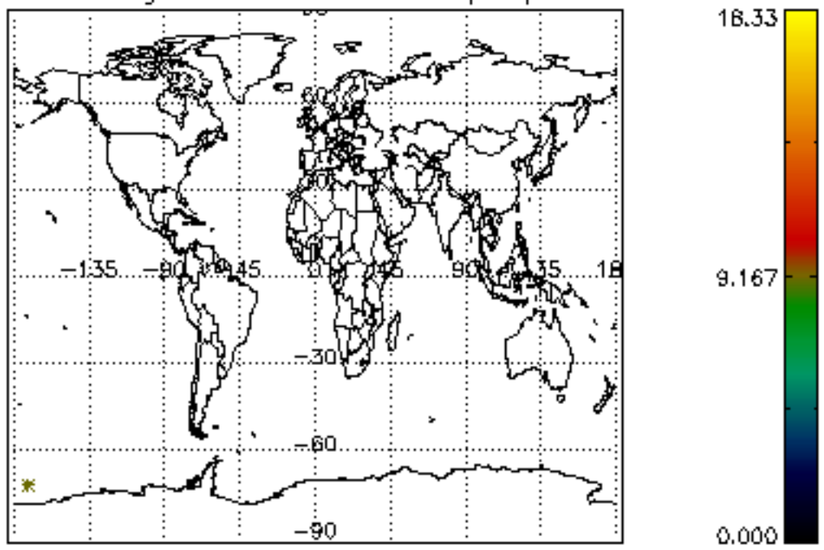
Percentage of datation errors per profile



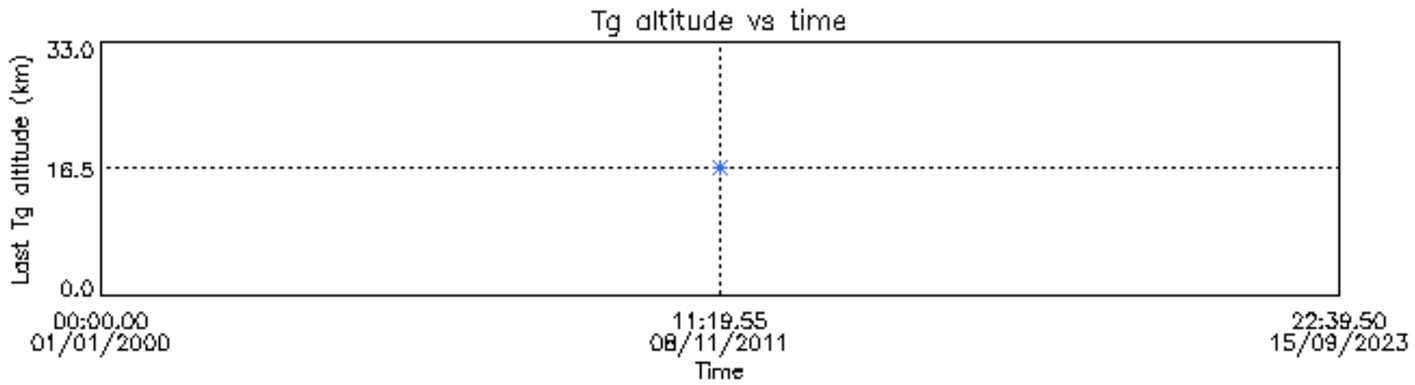
Percentage of star falling outside central band per profile

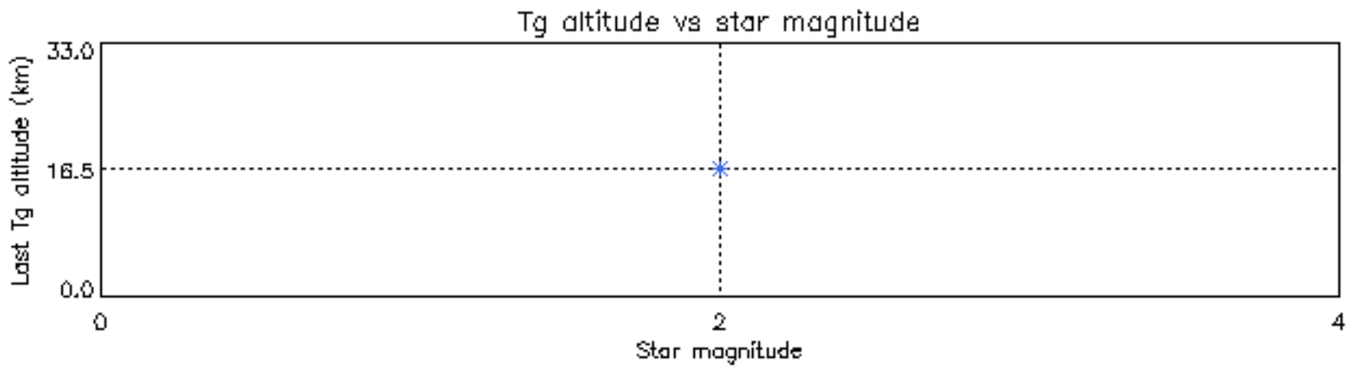


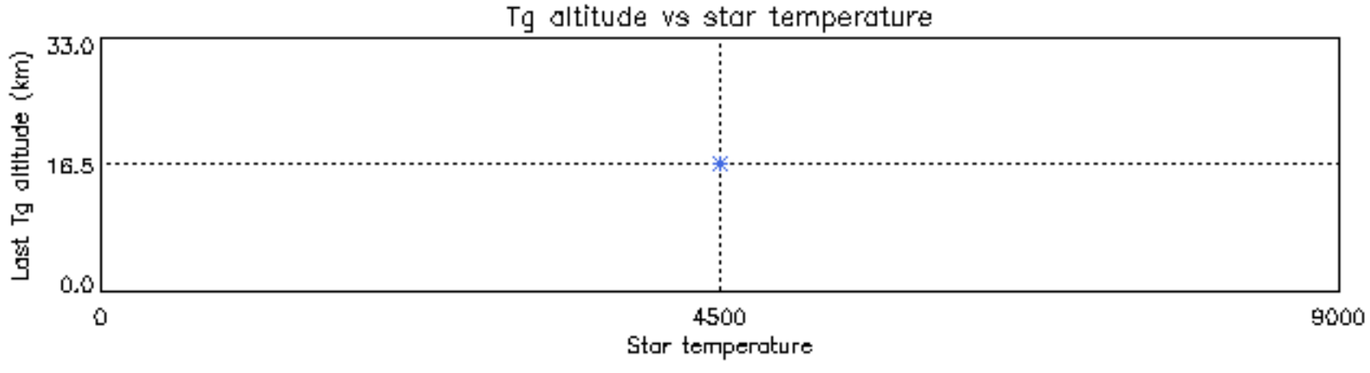
Percentage of saturation errors per profile

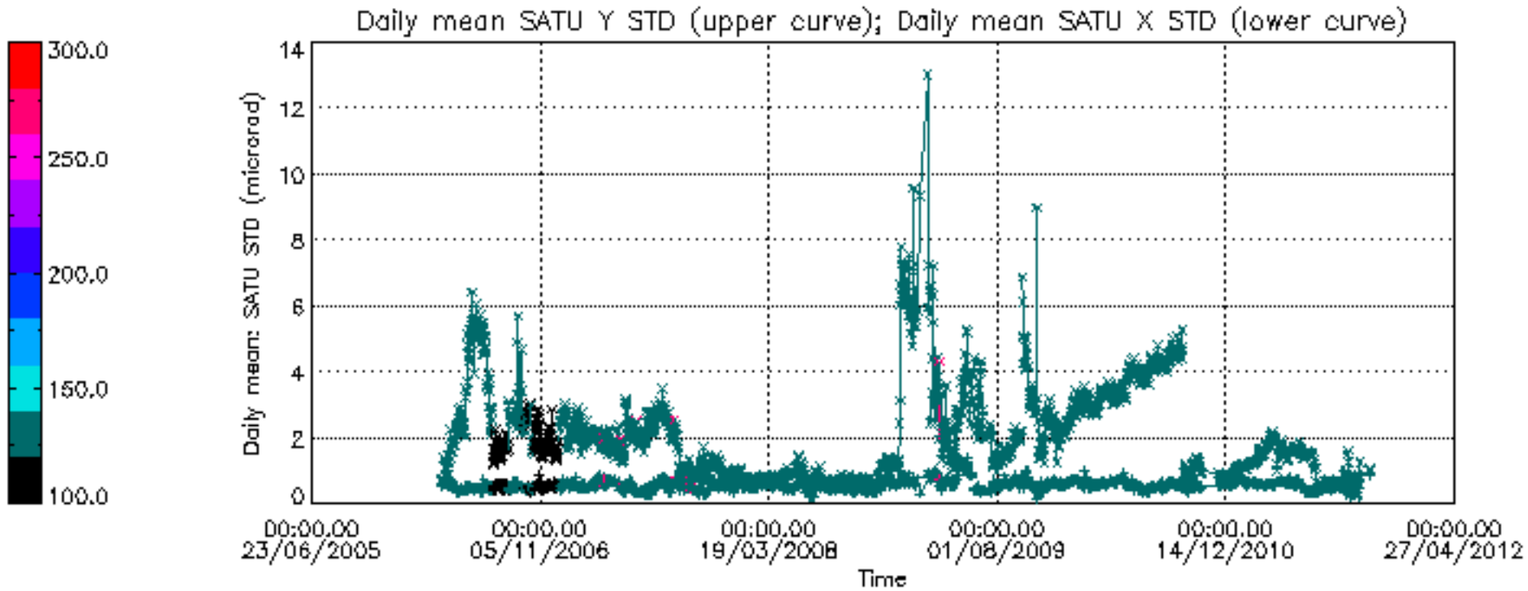


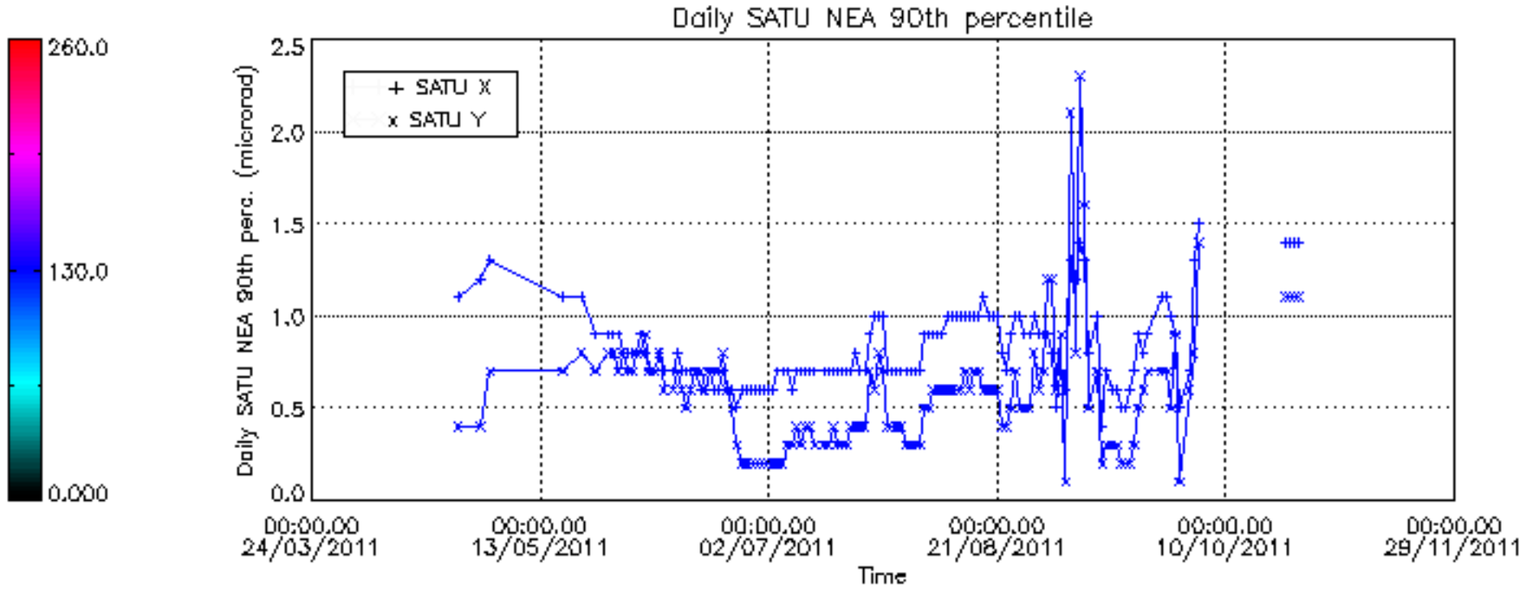
Tangent altitude at which the star is lost








300.0
250.0
200.0
150.0
100.0
Daily mean SATU Y STD (upper curve); Daily mean SATU X STD (lower curve)
Daily mean: SATU STD (microrad)
14
12
10
8
6
4
2
0
00:00.00
23/06/2005
00:00.00
05/11/2006
00:00.00
19/03/2008
00:00.00
01/08/2009
00:00.00
14/12/2010
00:00.00
27/04/2012
Time


Daily SATU NEA 90th percentile
260.0
130.0
0.000
+ SATU X
x SATU Y
Daily SATU NEA 90th perc. (microrad)
2.5
2.0
1.5
1.0
0.5
0.0
00:00.00
24/03/2011
00:00.00
13/05/2011
00:00.00
02/07/2011
00:00.00
21/08/2011
00:00.00
10/10/2011
00:00.00
29/11/2011
Time