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SCIAMACHY Bi-MONTHLY Report: May - June 2006

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"Instrument anomalies" were corrected to "Command errors"	8	Summary

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SCIAMACHY Bi-monthly Report May – June 2006

1 INTRODUCTION

The SCIAMACHY Bi-Monthly report documents the current status and recent changes to the SCIAMACHY instrument, its data processing chain, and its data products.
The Bi-Monthly Report (hereafter BMR) is composed of analysis results obtained by the Product Control Facility, combined with inputs received from the different groups working on SCIAMACHY operation, calibration, product validation and data quality.
The first part of the report is dedicated to Instrument Configuration and Performance. It is composed of contributions from SOST-DLR and SOST-IFE.
The remainder of the report is dedicated to level 1 and level 2 performance assessment and is generated by ESA/ESRIN DPQC with contributions from ESA/ESTEC PLSO and DLR-IMF.

The structure of the report will be in constant evolution through the ENVISAT mission, as experience with SCIAMACHY data and quality control grows.

1.1 Scope

The main objective of the BMR is to give, on a regular basis, the status of SCIAMACHY instrument performance, data acquisition, results of anomaly investigations, calibration activities and validation campaigns. The BMR is composed of the following six sections:

- Summary;
- Instrument Configuration and Performance;
- Data Availability Statistics;
- Level 1 Product Quality Monitoring;
- Level 2 Product Quality Monitoring;
- Validation Activities and Results.

1.2 References

[1] ‘Instrument Operation Manual’, MA-SCIA-0000DO/01, Issue F R2, 16 Dec. 2004
[2] ‘ENVISAT-1 Products Specifications Volume 15: SCIAMACHY Products Specifications’, PO-RS-MDA-GS-2009, Issue 3, Rev: K, Gianni Sotis, 06 May 2006
[3] ‘SCIAMACHY cL0 Statistics, PO-TN-DLR-SH-0012, Issue 1, Rev. 1 14 April 2005’
[4] SCIAMACHY cL0 Statistics 2003, PO-TN-DLR-SH-0013, Issue 1, Rev. 0 14 April 2005
[5] ‘SCIAMACHY Consolidated Level 0: Statistics for the Year 2005’, PO-TN-DLR-SH-0014, Issue 1, Rev. 0 11 July 2006

1.3 Acronyms and Abbreviations

ADC	Analogue to Digital Converter
ADF	Auxiliary Data File
ANX	Ascending Node Crossing
AOCS	Attitude and Orbit Control System
APSM	Aperture Stop Mechanism
ASM	Azimuth Scan Mechanism
ATC	Active Thermal Control
BMR	Bi-Monthly Report
CA	Corrective Action
CCA	Communication Area
CTI	Configurable Transfer Item
DAC	Digital Analogue Converter
DLR-IMF	Deutsches Zentrum fuer Luft- und Raumfahrt
DPQC	Data Processing Quality Control
ESM	Elevation Scan Mechanism
FPN	Fixed Pattern Noise
HK	Housekeeping
ICE	Instrument Control Electronics
ICU	Instrument Control Unit
IECF	Instrument Engineering and Calibration Facilities
IOM	Instrument Operation Manual
LK1	Leakage Current Auxiliary File (SCI_LK1_AX)
LOS	Line of Sight
MCMD	Macro Command
MR	Monthly Report
NCWM	Nadir Calibration Window Mechanism
NDFM	Neutral Density Filter Mechanism
NNDEC	Non-nominal Decontamination
NRT	Near Real Time
OBM	Optical Bench Module
OCR	Operations Change Request
OSDF	Orbit Sequence Definition File
PCF	Product Control Facility
PDHS	Payload Data Handling Station (PDS)
PDHS-E	Payload Data Handling Station – ESRIN
PDHS-K	Payload Data Handling Station – Kiruna
PDS	Payload Data Segment
PE1	Pixel to Pixel/ Etalon Auxiliary File (SCI_PE1_AX)
PLSO	Payload Switch OFF
PMD	Polarization Measurement Device
QUADAS	Quality Analysis of Data from Atmospheric Sounders
SAA	South Atlantic Anomaly

SCIAMACHY	Scanning Imaging Absorption Spectrometer for Atmospheric Chartography
SCICAL	SCIAMACHY Calibration tool
SEU	Single Event Upset
SLS	Spectral Line Source
SMR	Sun Mean Reference
SOST	SCIAMACHY Operations Support Team
SP1	Spectral Calibration Auxiliary File (SCI_SP1_AX)
SU1	Sun Reference Auxiliary File (SCI_SU1_AX)
SZA	Sun Zenith Angle
TC	Thermal Control
TCFoV	Total Clear Field of View
TOA	Top of Atmosphere
TRUE	Tangent height Retrieval by UV-B Exploitation
VCD	Vertical Column Density
WLS	White Light Source

2 SUMMARY

- During the reported period SCIAMACHY measurements were nominal with respect to planning, except for one anomaly and two command errors. The unavailabilities occurred during following orbits:

  - 22139-22163 (25-27 May 2006) instrument anomaly
  - 22167-22172 (27-28 May 2006) command error
  - 22177-22181 (28 May 2006) command error

- Monthly Calibration was executed during Orbits:

  - 21953-21957 (12 May 2006)
  - 22383-22387 (11 Jun 2006)

- Occultations with the moon rising on the night side were executed between orbits:

  - 21862-21948 (06-12 May 2006)
  - 22303-22363 (06-10 Jun 2006)

- No OCR has been implemented.

- No TC adjustment was executed.

- Light Path monitoring:

  - Channel 1&2: degradation in UV for all light paths involving ESM increases with a rate of 0.5-1 % per month. The average throughput loss in channel 1 is between 20 and 20%.
  - Channels 3 small throughput loss (about 2%)
  - Channel 4 small throughput loss continues
  - Channel 5 throughput remains stable
  - Channel 6 throughput remains stable
  - Channel 7 throughput rather stable over time interval
  - Channel 8 throughput remains stable at about 75-80%

- PMD monitoring:

  - UV degradation visible in science channels is also visible in PMD 1 to 3
  - PMD 4 and 7 show a large decrease in throughput which is currently unexplained. (possible explanation: specific detector material)
  - PMD 6 results still under investigation

- The level 1b IPF 6.02 went into operations, starting with following orbits at the different processing centres:

  - 22318 (07 June 2006) at PDHS-K, PDHS-E
  - 21843 (05 May 2006) at D-PAC

- The level 1b IPF 6.01 was activated during the interim period between 22 May 2006 and 07 June 2006. However this IPF version contained a major non compliancy which was corrected with IPF 6.02. Following errors were corrected

  - Polarisation correction factors different from 0
  - Correct order of SMR spectra in Sun Reference ADS
  - Solar mean reference spectra in New Sun Reference Data set with positive sign (was negative in IPF 6.01)

  The recommendation is to not use level 1b products generated with IPF 6.01. Instead the Off-line data IPF 6.02 for the period 22 May 2006 to 07 June 2006 should be used.

- The new calibration software SCICAL became operational with the switch to IPF 6.01/6.02 on day 22 May 2006. In flight ADFs are generated now based on level 0 data input instead of before level 1b with the facility IECF.

- The SciaL1C Calibration and Extraction Software was upgraded to be compatible to SCIAMACHY level 1b version 6.02 data. The SciaL1c tool provided with Enviview is outdated and should not be used with the new IPF 6.02 products.

- Level 2 near real-time processing was stopped on day 08 May 2006. Evolution is currently only foreseen for the level 2 Off-line processor.

- The SCIAMACHY Product Specification was updated to the actual version Volume 15 issue 3/k. This version is in-line with level 1b IPF 6.02 and the level 2 Off-line version 3.00.

3 INSTRUMENT CONFIGURATION AND PERFORMANCE

3.1 In-Flight Status and Performance

Detailed operations, planning and instrument status information can be found on the website of the *SCIAMACHY Operations Support (SOST)* under http://atmos.caf.dlr.de/projects/scops/. These pages are maintained on a daily basis and show the history and actual progress of the SCIAMACHY mission.

3.1.1 Planned Operations and Measurements (SOST-DLR)

The reporting period covers the orbits 21786 (ANX = 01-May-2006, 01:12:03.723) to 22658 (ANX = 30-Jun-2006, 23:14:13.064). One OSDF specified the planning baseline.

Orbit		ANX		OSDF
Start	Stop	Start	Stop	
21786	22658	01-Mar-2006 01:12:03.723	30-Jun-2006 23:14:13.064	MPL_OSD_SHVSH_20060405_010101_00000000_33170001_20060501_011206_20060701_005446

Table 3-1: SCIAMACHY OSDF planning file from May – June 2006

All measurements were nominal, i.e. timelines executed on the dayside of the orbit limb/nadir sequences with wide swath settings. In-flight calibration and monitoring measurements occurred on daily, weekly and monthly timescales according to the mission scenarios. Monthly calibration was scheduled between orbits

- 21953-21957 (12-May-2006)
- 22383-22387 (11-Jun-2006)

The moon was in the limb TCFoV between orbits

- 21862-21991 (06-May-2006 until 15-May-2006)
- 22303-22408 (06-Jun-2006 until 13-Jun-2006)

Occultations with the moon rising on the nightside were executed between orbits

- 21862-21948 (06-May-2006 until 12-May-2006)
- 22303-22363 (06-Jun-2006 until 10-Jun-2006)

No OCR had to be implemented.

3.1.2 Instrument Measurement Status (SOST-DLR)

Final flight status for mission scenarios, states and timelines remained unchanged throughout the reporting period.

3.1.3 Executed Operations and Measurements (SOST-DLR)

Measurements

The OSDF planning file has been scheduled as requested except for three anomalies (see below).

Detector thermal adjustment

No TC adjustment was executed. Thus the TC settings remained unchanged at

- DAC1 = 0.53 W
- DAC2 = 0.70 W
- DAC3 = 0.00 W

It has to be noted however that detector 5 exceeded its upper limit slightly for a while but a TC adjustment had not been found necessary (see chapter 3.1.4/detector temperatures for more details).

APSM/NDFM health checks & PMD ADC cal

In the reporting period 1 APSM/NDFM health check and 2 PMD ADC calibrations were executed. All showed nominal results.

APSM/NDFM			PMD ADC	
Orbit	ANX	Result	Orbit	ANX
22204	30-MAY-2006 07:22:54	ok	22205	30-MAY-2006 08:59:24
n.a.	n.a.	n.a.	22619	28-JUN-2006 07:06:47

Table 3-2: APSM/NDFM health check and PMD ADC calibration

Anomalies

Three anomalies had occurred.

- In orbit 22139 (25-May-2006, 17:56:45 UTC) a transfer to HTR/RF occurred, triggered by a *SDPU_Tx buffer overflow*. Likely cause for this error was a Single Event Upset (SEU). In orbit 22163 (27-May-2006, 09:46:20 UTC) the MPS schedule was resumed.
- Between orbits 22167-22172 (27-May-2006, 16:05:03 UTC - 28-May-2006, 00:28:02 UTC)) SCIAMACHY was operated in MEASUREMENT IDLE (no measurements executed) since in the course of the recovery from the previous SEU the command schedule was not fully uploaded.
- Between orbits 22177-22181 (28-May-2006, 08:51:01 UTC - 28-May-2006, 15:33:26 UTC) SCIAMACHY was operated in MEASUREMENT IDLE (no

measurements executed) since in the course of the recovery from the previous SEU the command schedule was not fully uploaded.

Orbit	Date	Entry - UTC	Level	Entry Type	ID Content/Transition	Mode	Remark
22139	25-MAY-2006	2006.145.17.56.45.836	Instrument	AUTONOMOUS SWITCHING	ID406 / goto HTR/RF	HTR/RF	SDPU Tx_Buffer_Overflow (suspected SEU)
22139	25-MAY-2006	2006.145.18.22.34.133	Instrument	MACROCOMMAND EXECUTION ENTRY	START TIMELINE	HTR/RF	Complementary Failure
22139	25-MAY-2006	2006.145.18.22.34.141	Instrument	COMPLEMENTARY FAILURES	- - -	HTR/RF	Complementary Failure
22139	25-MAY-2006	2006.145.18.22.34.145	Instrument	MACROCOMMAND EXECUTION ENTRY	START TIMELINE	HTR/RF	Complementary Failure
continuous Complementary Failures until 2006.145.03.46.36.499 (6 entries)							
22139	25-MAY-2006	2006.145.18.55.17.285	Instrument	MACROCOMMAND EXECUTION ENTRY	START TIMELINE	HTR/RF	Complementary Failure
22139	25-MAY-2006	2006.145.18.55.17.297	Instrument	COMPLEMENTARY FAILURES	- - -	HTR/RF	Complementary Failure
22139	25-MAY-2006	2006.145.18.55.17.297	Instrument	MACROCOMMAND EXECUTION ENTRY	START TIMELINE	HTR/RF	Complementary Failure
22167	27-MAY-2006	2006.147.16.05.03.000	GS	n.a.	n.a.	IDLE	Recovery Anomaly
22177	28-MAY-2006	2006.148.08.51.01.000	GS	n.a.	n.a.	IDLE	Recovery Anomaly

Table 3-3: Instrument anomalies between May and June 2006

Instrument unavailability

The instrument was unavailable during one instrument and two ground segment anomalies.

Unavailability					
Orbit		UTC		Event	Remark
Start	Stop	Start	Stop		
22139	22163	25-May-2006 17:56:45	27-May-2006 09:46:20	transfer to HTR/RF	SDPU_Tx buffer overflow (SEU)
22167	22172	27-May-2006 16:05:03	28-May-2006 00:28:02	transfer to MEASUREMENT/IDLE	recovery process anomaly
22177	22181	28-May-2006 08:51:01	28-May-2006 15:33:26	transfer to MEASUREMENT/IDLE	recovery process anomaly

Table 3-4: Instrument unavailabilities between May and June

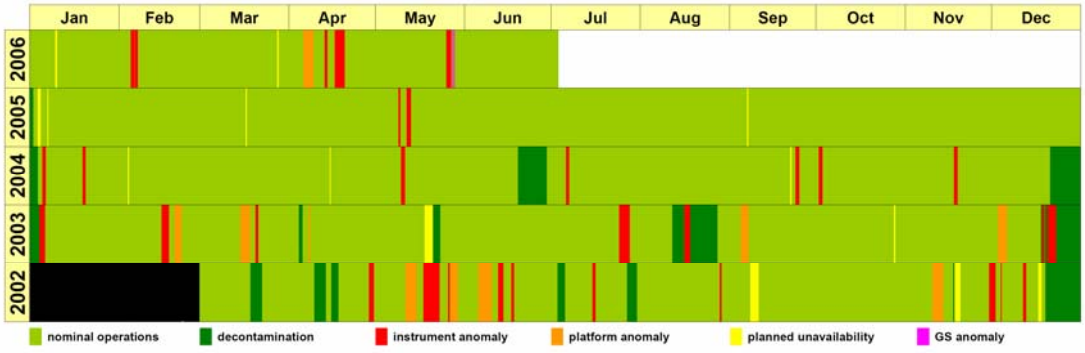


Fig. 3-1: Current instrument availability status including the reporting period

3.1.4 Performance Monitoring - System (SOST-DLR)

Detector temperatures

Detector temperatures are monitored according to the requirements of the IOM *[1]*. It requests to ensure that the average temperature per orbit remains within the specified

limits. For each detector the average temperatures per orbit are determined from HK telemetry parameters. Fig. 3-2 displays the temperatures of all 8 detectors. Colour coding is as on the operational monitoring website, i.e. data from orbits with HK telemetry coverage > 90% are shown in red, for < 90% in green. Minimum/maximum values per orbit are indicated as vertical bars. The temperature limits of each detector are shown as horizontal lines.

In channel 5 average temperatures violated the upper limit during the seasonal maximum between 18-May-2006 and about 25-Jun-2006 by at most 0.1 K. It had been decided not to adjust trim heaters since a violation of this order was declared non-critical from a calibration point of view.

OBM temperatures

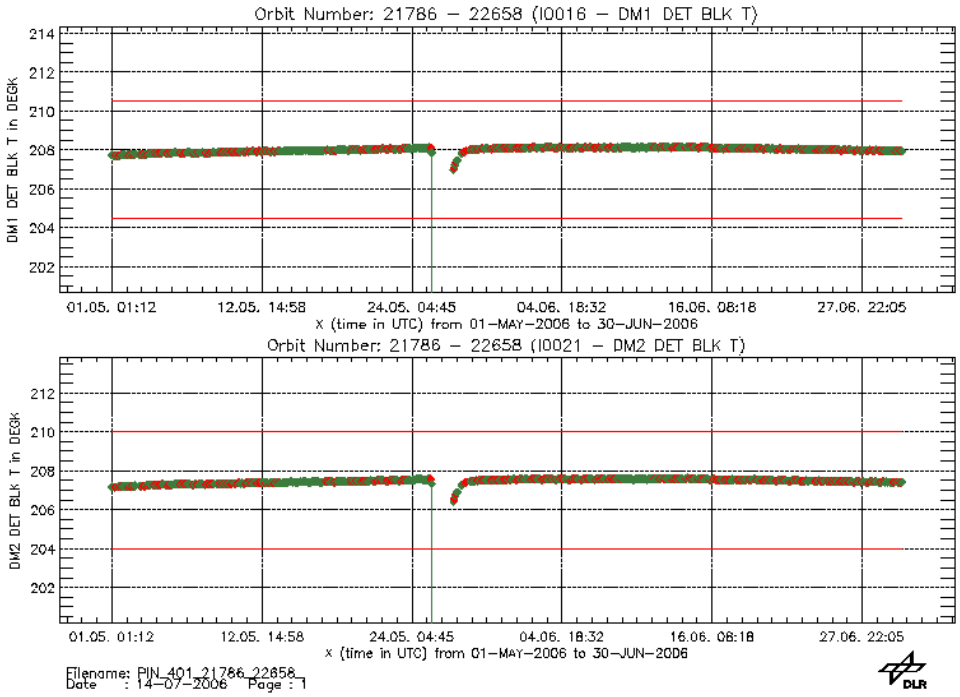
OBM temperatures are monitored according to the requirements of the IOM *[1]*. It requests to ensure that the average temperature per orbit remains within the specified limits. The average OBM temperature per orbit is determined from specific HK telemetry parameters. In addition power readings for the ATC heaters are monitored. Temperatures and ATC heater powers are given in Fig. 3-4 and 3-5. Colour coding is as in Fig. 3-3.

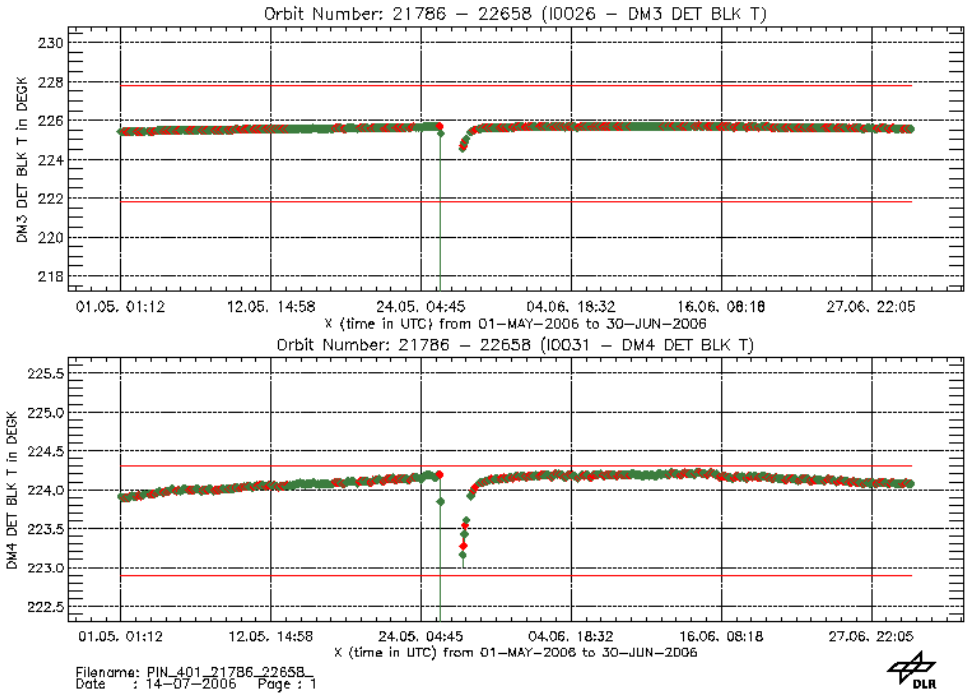
OBM temperatures and ATC heater powers remained within limits except for the time when the platform/instrument anomalies occurred (see above).

PMD ADC status

The status of the PMD ADC is monitored according to the requirements of the IOM *[1]*. It requests to ensure that no glitches occur caused by an SEU.

No PMD ADC glitches have been detected.


Orbit Number: 21786 – 22658 (I0016 – DM1 DET BLK T)
DM1 DET BLK T in DEGK
214
212
210
208
206
204
202
01.05. 01:12
12.05. 14:58
24.05. 04:45
04.06. 18:32
16.06. 08:18
27.06. 22:05
X (time in UTC) from 01-MAY-2006 to 30-JUN-2006
Orbit Number: 21786 – 22658 (I0021 – DM2 DET BLK T)
DM2 DET BLK T in DEGK
212
210
208
206
204
202
01.05. 01:12
12.05. 14:58
24.05. 04:45
04.06. 18:32
16.06. 08:18
27.06. 22:05
X (time in UTC) from 01-MAY-2006 to 30-JUN-2006
Filename: PIN_401_21786_22658
Date : 14-07-2006 Page : 1
DLR


Orbit Number: 21786 – 22658 (I0026 – DM3 DET BLK T)
DM3 DET BLK T in DEGK
230
228
226
224
222
220
218
01.05. 01:12
12.05. 14:58
24.05. 04:45
04.06. 18:32
16.06. 08:18
27.06. 22:05
X (time in UTC) from 01-MAY-2006 to 30-JUN-2006
Orbit Number: 21786 – 22658 (I0031 – DM4 DET BLK T)
DM4 DET BLK T in DEGK
225.5
225.0
224.5
224.0
223.5
223.0
222.5
01.05. 01:12
12.05. 14:58
24.05. 04:45
04.06. 18:32
16.06. 08:18
27.06. 22:05
X (time in UTC) from 01-MAY-2006 to 30-JUN-2006
Filename: PIN_401_21786_22658
Date : 14-07-2006 Page : 1
DLR

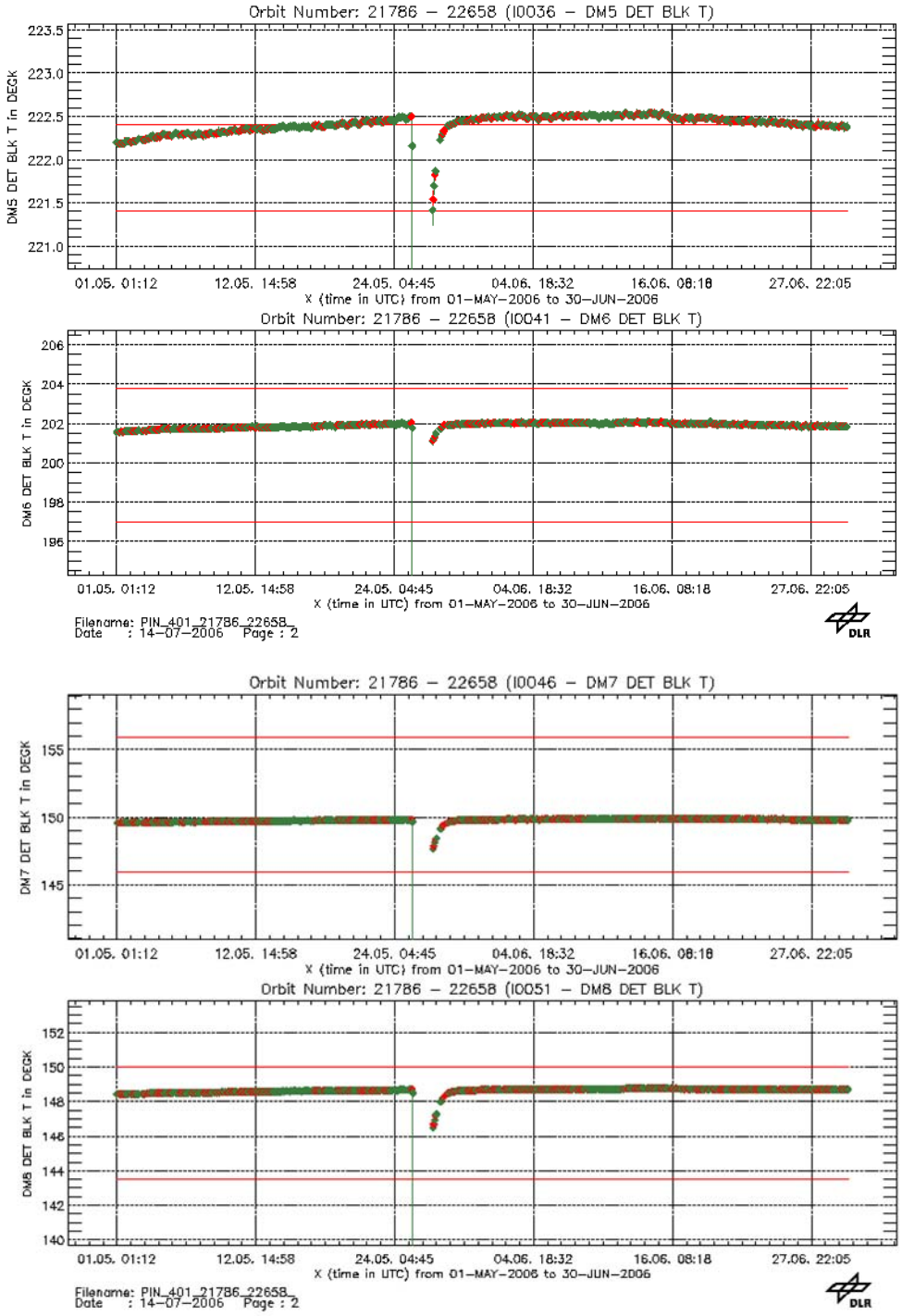


Fig. 3-2: Detector temperatures

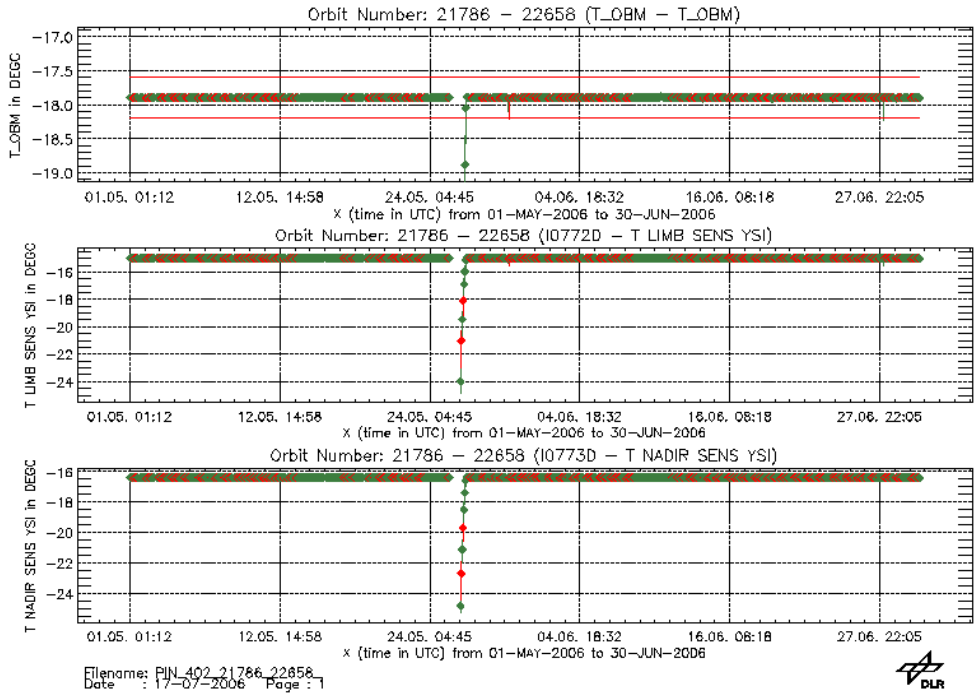


Fig. 3-3: OBM temperatures (top: derived OBM, middle: limb sensor, bottom: nadir sensor)

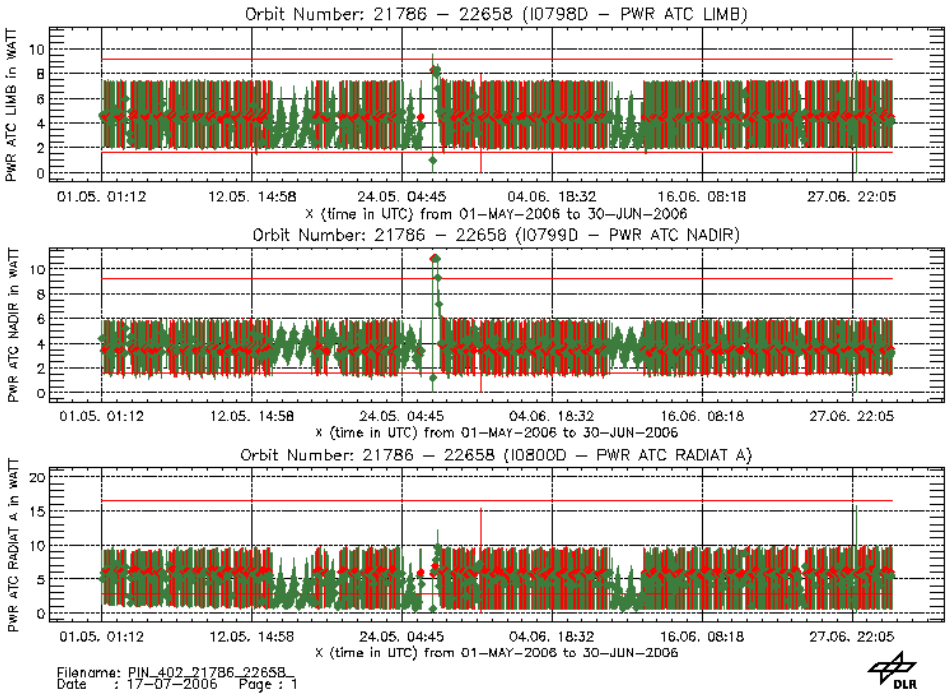


Fig. 3-4: ATC heater power (top: ATC limb, middle: ATC nadir, bottom: ATC Rad A)

LLI status

Life Limited Items are monitored based on analysis of the

- OSDF: This yields a predicted LLI usage.
- Report format: This counts the actual LLI switches or used LLI cycles. No WLS/SLS burning times can be derived thereof.

In addition, the in-flight usage of the cryogenic heat pipe is recorded. This subsystem has a limited number of cycles. Each decontamination increases the accumulated number of cycles by 1.

At the end of the reporting period the fractional usage of the LLI relative to the allowed in-flight budget was

- NDFM: 0.59
- APSM: 0.54
- NCWM (sub-solar port): 0.63
- WLS (switches): 0.12
- WLS (burning time): 0.22
- SLS (switches): 0.04
- SLS (burning time): 0.01

How the relative LLI usage has accumulated since launch can be seen in fig. 3-5. 'EOL' assumes a total mission lifetime of 0.5 years of Commissioning Phase and 4.5 years of routine operations.

Note: In order to prepare for the ENVISAT/SCIAMACHY mission extension it was decided to modify the mission scenarios slightly by reconsidering the usage of the most critical LLIs, i.e. NCWM, APSM and NDFM. As a result, sub-solar measurements will be executed only 2/week. Solar occultations remain at a rate of 1/orbit because it was found acceptable to exceed the currently specified in-flight budgets (based on a safety margin factor of 2) as long as the usage stays below the figures of the lifetests. However it will even take until April 2009 (NDFM) and November 2009 (APSM) that the in-flight budgets are exceeded. The envisaged reduction in sub-solar measurements will be implemented end of 2006.

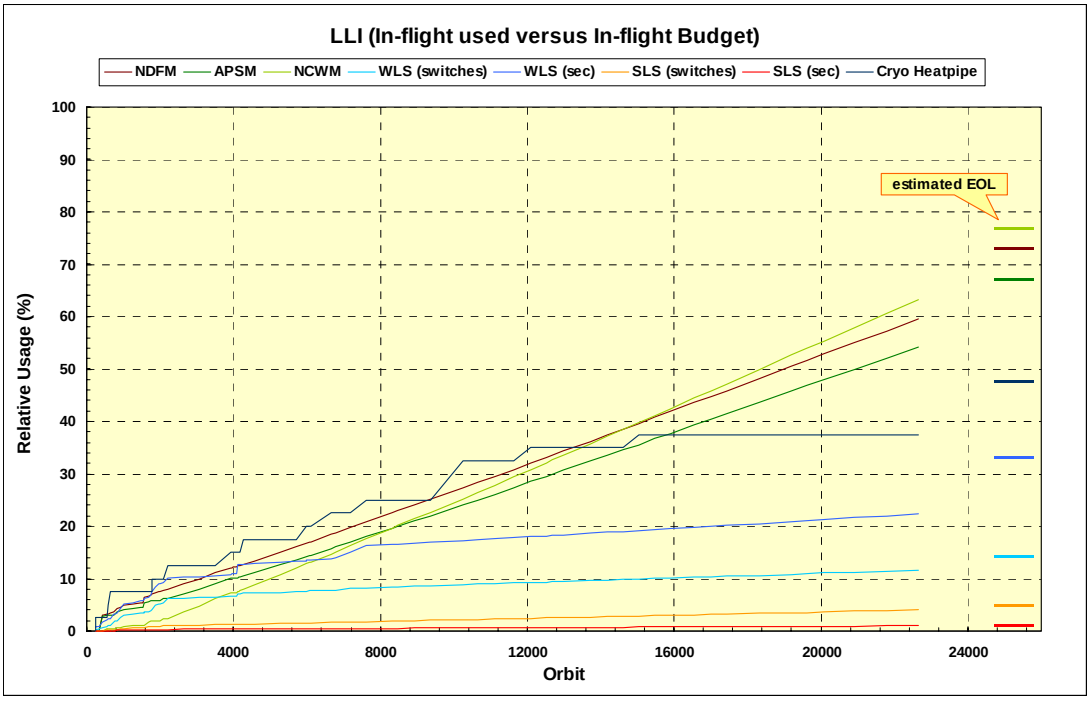


Fig. 3-5: Realtive usage of LLIs. 'EOL' is derived for the currently specified mission lifetime (not yet taking mission extension and modified subsolar measurements into account).

The number of cryogenic heatpipe cycles did not increase (no decontamination). The budget used remained at 38% of the allowed in-flight budget.

Time reference

The times quoted in all planning files refer to the reference orbit. Since the actual orbit differs from the reference orbit (e.g. orbit drift), the times given w.r.t. the reference orbit also do not reflect exactly the actual absolute times of events along the orbit (e.g. ANX, sunrise, sub-solar, moonrise, eclipse). The requirements for orbit maintenance may result in time differences of usually < ±10 sec. In some cases this value may even reach ±1 min, however.
SOST monitors how the reference time deviates from the actual time. This is done by using the predicted time which comes very close to the actual = restituted time. If the predicted times are delayed w.r.t. the reference orbit, then the difference *predicted – reference time* is > 0 sec; in the other case it is < 0 sec.

Fig. 3-6 displays the time difference *predicted – reference*. Orbit manouevres cause distinct discontinuities.

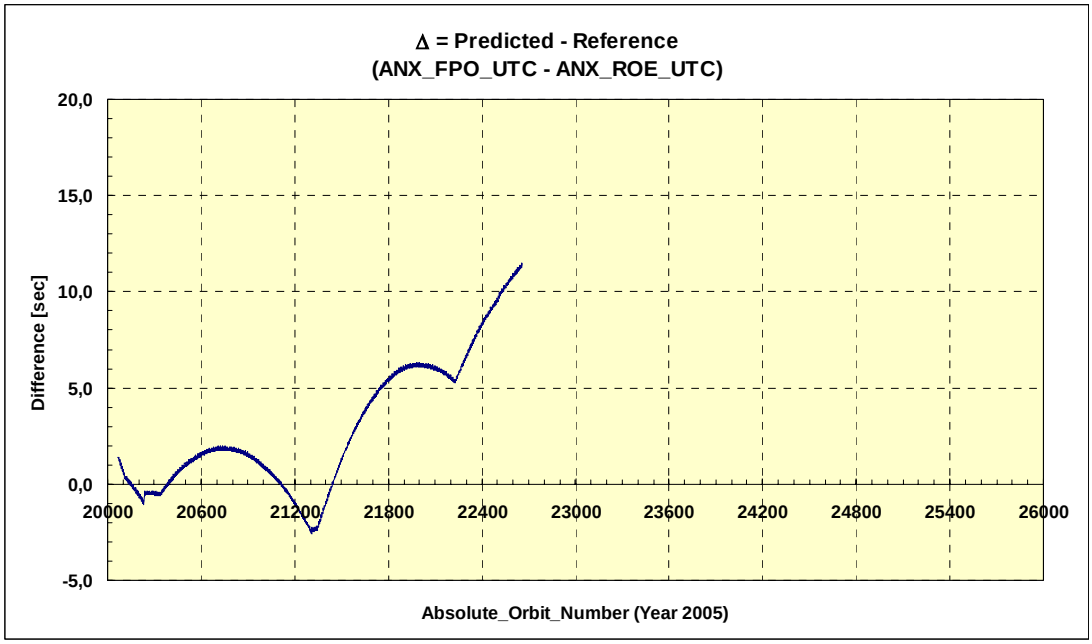


Fig. 3-6: Time difference between predicted and reference time.

3.1.5 Performance Monitoring - Light Path (SOST-IFE)

3.1.5.1 Science Channel Averages

One part of the SOST long-term monitoring activities is the trend analysis of measurements with the internal White Light Source (WLS) and of observations of the unobscured Sun above the atmosphere. In order to monitor the different SCIAMACHY light paths solar measurements are taken in various viewing geometries: In limb/occultation geometry (via ASM and ESM mirrors), in nadir geometry (via the ESM mirror through the subsolar port), and via the so-called calibration light path involving the ASM mirror and the ESM diffuser.
SCIAMACHY long-term monitoring comprises a regular analysis of these measurements.

The plots displayed in Fig. 3.7 show results of these monitoring activities for the time interval May to June 2006.
All measured signals have been averaged over the entire channel and then divided by the corresponding measurement at a reference time (currently 2 August 2002, at about orbit 2200), yielding an effective instrument throughput for the different light paths.
The timing of subsolar measurements before 30 November 2002 (about orbit 3922) did not consider the known yaw misalignment of SCIAMACHY on ENVISAT. Therefore all subsolar measurements after 30 November 2002 have been referred to orbit 4519 (10 March 2003, just after a long decontamination phase).

Note that measurements performed during times of reduced instrument performance (e.g. switch-offs or decontamination periods) have been omitted.

The results presented in Fig. 3.7 are based on the analysis of level 0 data, which have been corrected for dead/bad pixels, dark current (fixed value from August 2002), scan angle dependencies, quantum efficiency changes, and the seasonally varying distance to the Sun. Additional calibration steps have not been performed, like for example a straylight correction. Therefore, variations smaller than about 1% require careful interpretation. Especially, small variations of the throughput signal may be caused by remaining seasonal effects due to the limited calibration of the data.
Furthermore, there exists a systematic offset between the throughput results for the subsolar light path and those for the other viewing geometries. This offset is most prominent in the IR and caused by the specific subsolar scan mode (fast sweep) analysed.

The light path monitoring results presented in this section may be regarded as a first step towards spectrally resolved monitoring factors (m-factors) which will be produced based on fully calibrated data.
Daily updated light path monitoring results can be found on the SOST or IUP web site (http://www.iup.physik.uni-bremen.de/sciamachy/LTM/LTM.html).

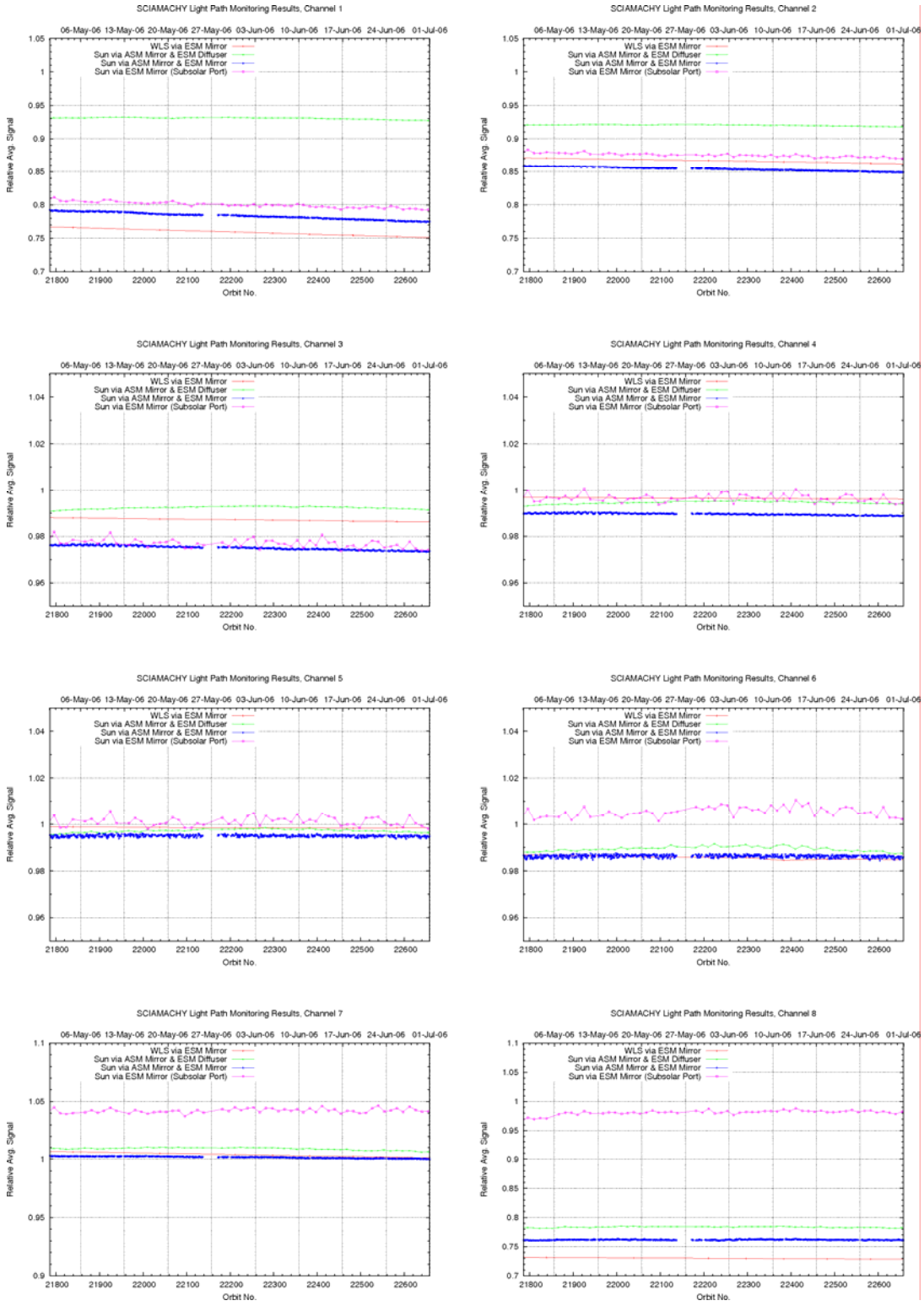


Fig. 3.7: Light path monitoring results May to June 2006.

The following specific features can be identified from the light path monitoring results during the time interval of this report:

- Overall, the instrument throughput changes were as expected.
- The gap in the data on 27 May 2006 results from an instrument switch-down which occurred at this time.
- For all light paths involving the ESM mirror the degradation in the UV (channels 1 & 2) increases with a rate of about 0.5-1% per month, as observed during the previous time interval. The average throughput loss in channel 1 lies currently between 20 and 25%. The calibration light path which involves the ESM diffuser instead of the ESM mirror remains rather stable over the two months covered by this report.
- The overall degradation of channel 3 is very small (about 2%) compared to channels 1 and 2, but is still slowly increasing.
- The small throughput loss in channel 4 continues, but channel 5 and 6 remain very stable on a sub-percent level. The same applies to channels 7 & 8.
- Channel 8 transmission still remains quite stable at about 75-80% (depending on light path; note that the subsolar results are not reliable here because of the scan mode analysed).

3.1.5.2 Spectral light path monitoring results

Fig. 3.8 – 3.11 show results of spectral throughput monitoring performed by SOST-IFE for the different light paths (nadir, limb, calibration, and WLS). These results have been derived from level 0 data analysed in a similar way as for the channel averaged throughput data (but of course without spectral averaging).
Because the variation in spectral direction is very small within two month, Fig. 3.8 – 3.11 show the complete time series from 2 August 2002 to the end of June 2006.

Notes:

- Dates in the graphs refer to UTC noon (12:00).
- The data have been interpolated over dead/bad pixels (using the on-ground list).
- Data from times of reduced instrument performance (like decontaminations or instrument switch-offs) have not been considered. These times are masked out by grey vertical bars.
- All data have been transformed to a daily grid, involving averaging and interpolation.
- Ratios have been performed on a pixel axis without any spectral interpolations. The wavelength axis is just for illustration and gives only approximate values, assuming a linear relation between pixel number and wavelength.
- Depending on the availability of measurement data, features close to large data gaps (especially before and after a decontamination) may be caused by interpolation.
- WLS data have not been corrected for a potential degradation of the lamp. Only the intensity jump after the extended WLS usage in June 2003 has been removed.

- As mentioned before, the timing of subsolar measurements before 30 November 2002 did not consider the known yaw misalignment of SCIAMACHY on ENVISAT. The timing has been corrected in the final flight settings. To take this change into account, all subsolar measurements have been referred to orbit 4519 (10 January 2003).
  Therefore, subsolar results before 30 November 2002 are not reliable.

Since beginning of June 2006 the underlying data for the spectral monitoring are available via the SOST-IFE monitoring web site
http://www.iup.physik.uni-bremen.de/sciamachy/LTM/LTM_spectral/LTM_spectral.html.
As for the plotted results, these data are regularly updated one to two times per month.

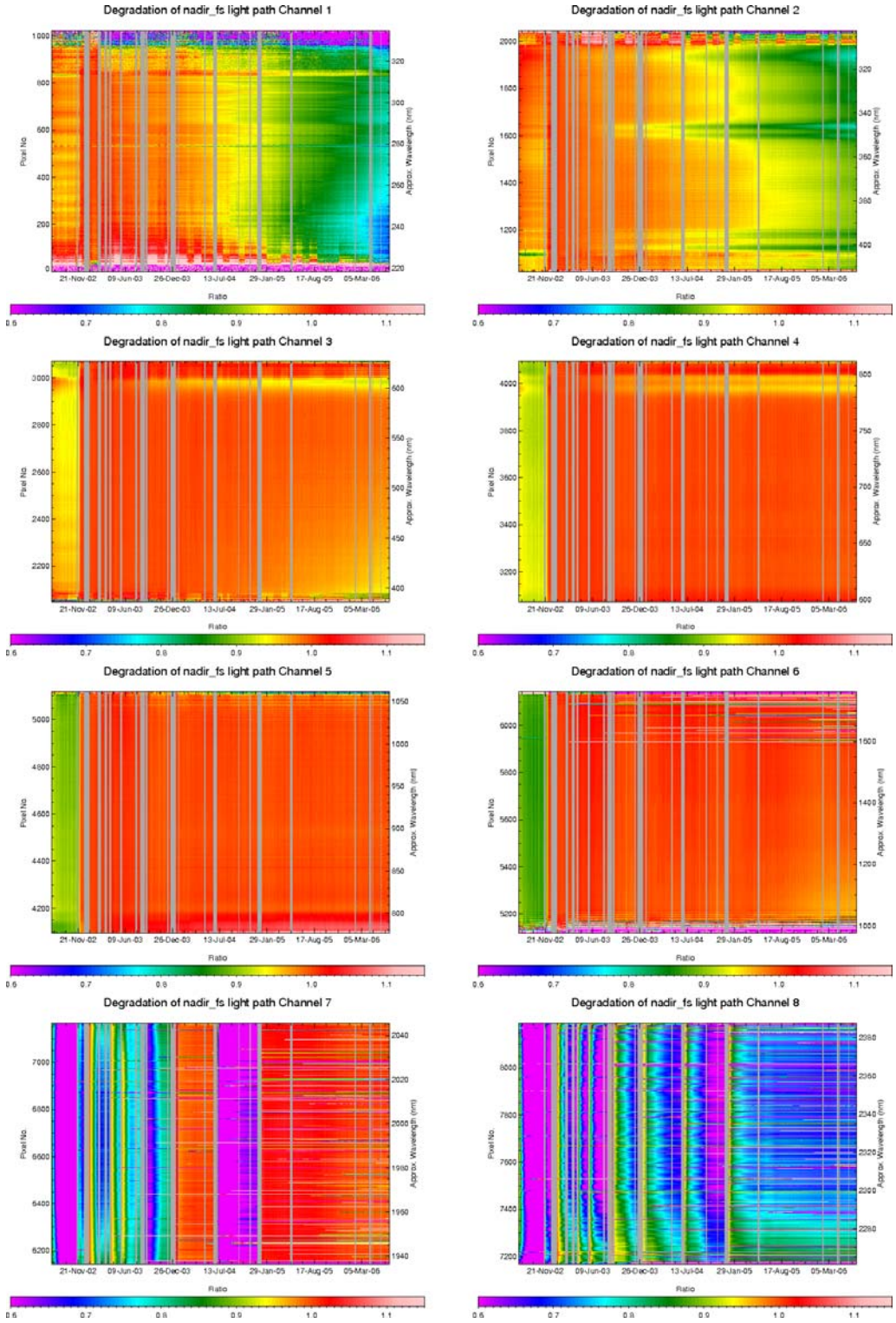


Fig. 3.8: Spectral light path monitoring results August 2002 to June 2006 (nadir light path)

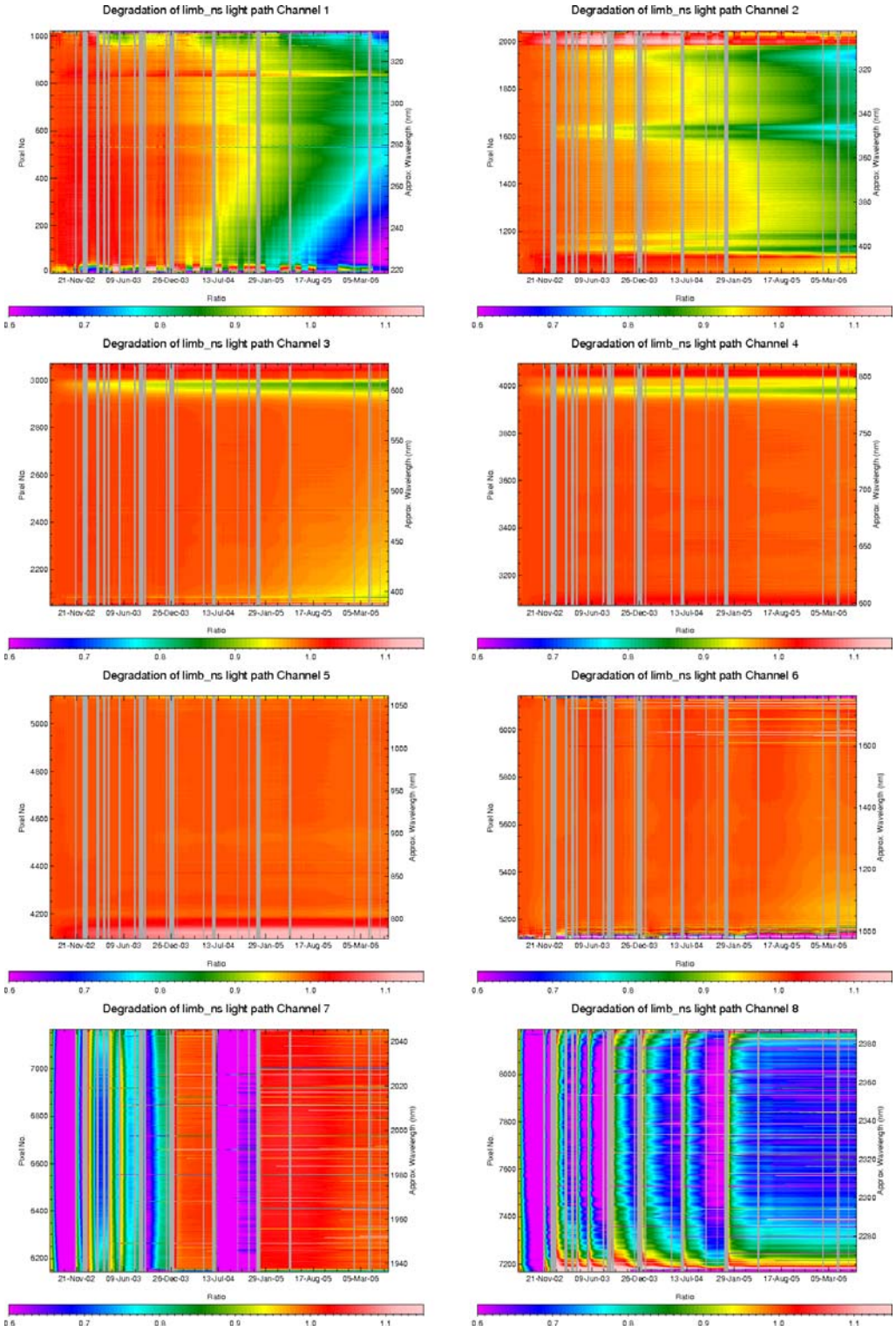


Fig. 3.9: Spectral light path monitoring results August 2002 to June 2006 (limb light path)

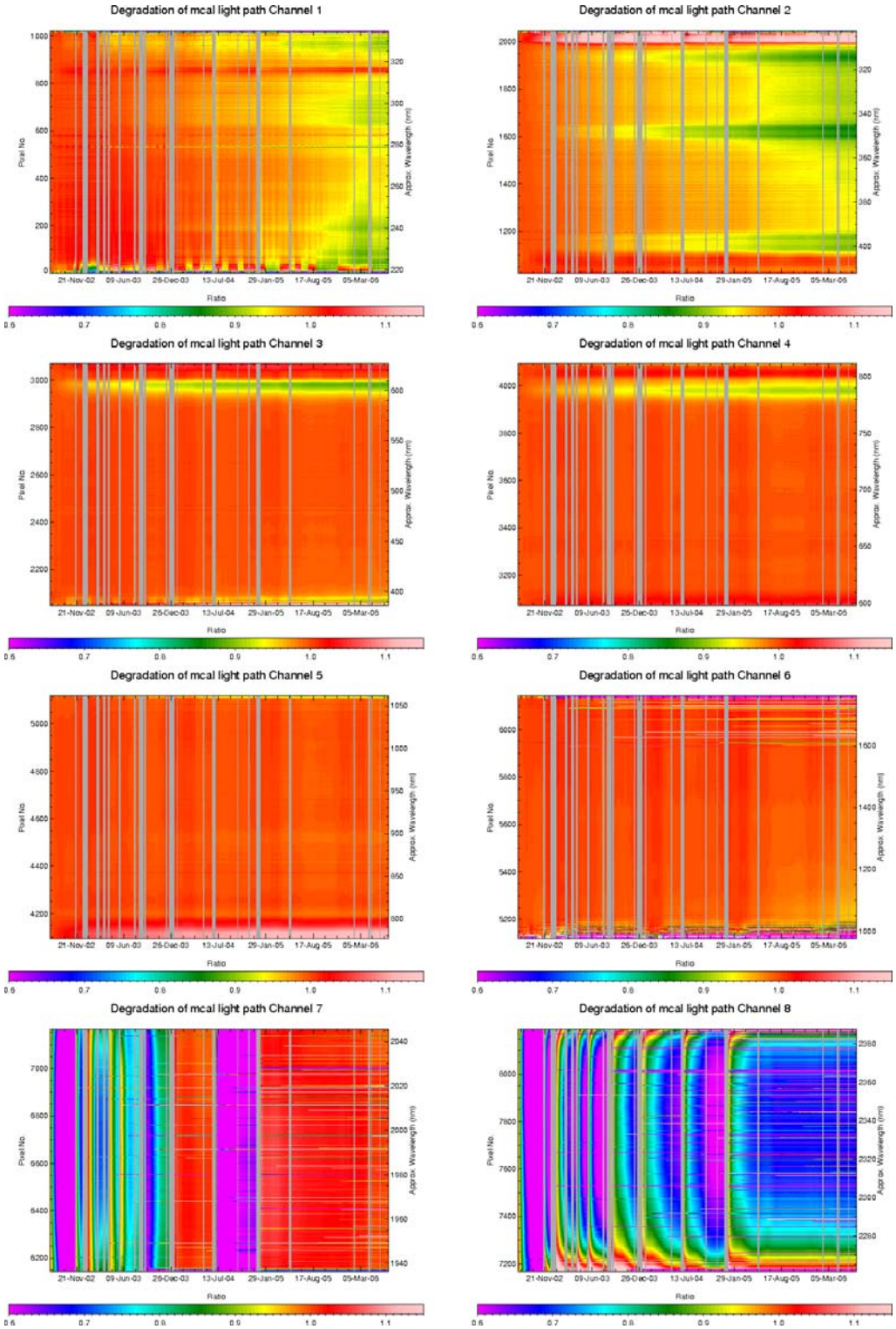


Fig. 3.10: Spectral light path monitoring results August 2002 to June 2006 (calibration light path)

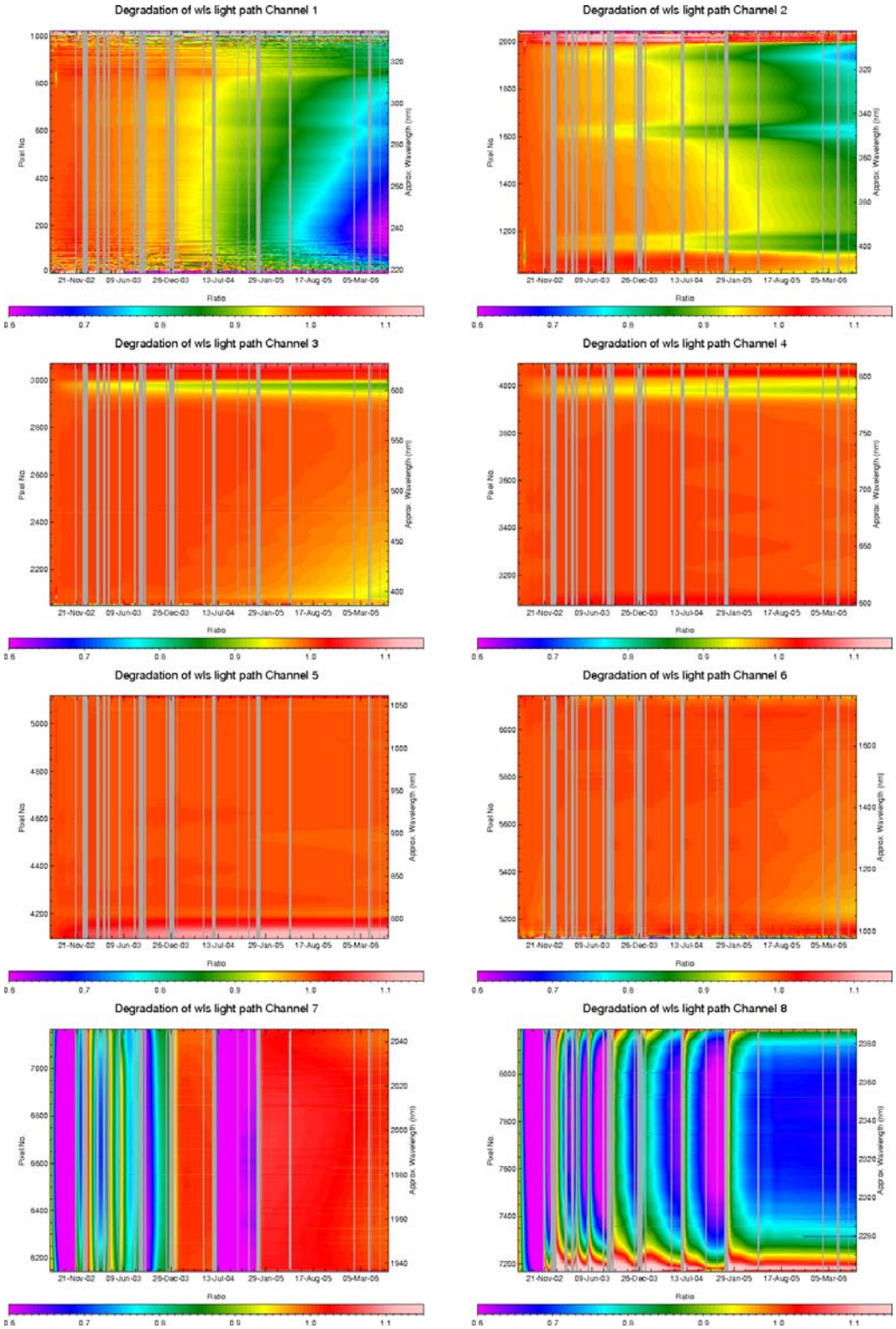


Fig. 3.11: Spectral light path monitoring results August 2002 to June 2006 (WLS light path)

The following main features can be identified in the spectral monitoring plots:

- As expected, the UV degradation generally decreases with increasing wavelength.
- The SCIAMACHY degradation strongly depends on wavelength and is largest at the channel edges and at spectral regions of high polarisation sensitivity (especially visible in channel 2, e.g. the peak around 350 nm).
- The minimum throughput reaches about 60% for the limb and WLS (nadir) light paths at the short wavelength edge of channel 1.
- Also solar activity variation can be seen in the plots, e.g. the intensity change of the solar Mg II Fraunhofer line at about 280 nm.
- The degradation in channel 3 which was already indicated by the channel integrated results is much better visible in the spectrally resolved plots, where the propagation of this effect in time to higher wavelengths can be clearly identified.
- The difference in degradation between the diffuser light path and the other light paths is also visible in the plots; however, the spectral regions where degradation is strongest coincide quite well.
- The spectral plots also show that the relative stability for channels 4 and 5 observed in the integrated data is not present over the whole spectral range; also these channels show variations, but these are restricted to the overlap regions close to the channel edges. However, the spectral results indicate that the slow throughput loss observed in the channel 4 integrated results is mainly restricted to a small region at the upper wavelength edge.
- Channel 6 spectral results confirm the assumption of a slight degradation in this channel which is concentrated at the lower wavelength edge and independent of the overlaid remaining seasonal cycle.
- For channels 7 and 8 the spectral behaviour of the throughput loss is consistent with (broadband) ice absorption features. The effect of the decontaminations is of course also clearly visible in these channels.
- Especially channel 8 shows a large pixel dependence of the throughput variation caused by the different sensitivity of the pixels. This variation is much higher for light paths where the small aperture is involved (i.e. nadir (subsolar) and limb), indicating that the small aperture causes additional effects which need to be considered when applying these results to Earthshine data.
- In general, the WLS data are much smoother than the solar data.

3.1.5.3 PMD monitoring results

The SCIAMACHY PMDs are monitored in a similar way as the science channels, but of course no channel averaging is performed. However, the results presented here are based on the same measurements as the science channel results (but using the PMD low gain signal), and they have been normalized to the same reference times.
For the nadir light path it is not possible to use subsolar fast sweep measurements for PMD monitoring, because these show too large scatter. This is probably caused by a combination of the very time-sensitive measurement type and scan mode and the fact that the PMDs measure a sampled signal, not an integrated one. Therefore, subsolar pointing measurements are used for monitoring of the PMD nadir light path, because the pointing

signal is much more stable. Unfortunately, subsolar pointing measurements are only performed once per month, therefore the temporal sampling is much less than for the other light paths.
This reduced temporal sampling is also the reason that Fig. 3.12 shows the PMD throughput variation for the whole time period between 2 August 2002 and 30 June 2006 (instead of only the two month time interval of this report). Note that a constant dark signal for each of the PMDs has been assumed. To verify this assumption, Fig. 3.12 also shows the variation of the PMD dark signal over time, which is usually quite low.
Note that PMD 7 results are most likely dominated by straylight and not reliable. They are only shown for completeness. Furthermore, WLS data are only available for PMD 1 to 3 because of saturation in the other PMD channels.

Considering the broadband character of the PMDs, the observed PMD throughput changes are (except for PMD 4 and 7) very similar to those of the science channels with the following features:

- The UV degradation apparent in the science channels is also visible in PMD 1 to 3.
- PMD 4 and 7 (which cover the same wavelength interval) show a considerably large decrease in throughput which is still unexplained (but may be related to the specific detector material).
- There are remaining seasonal variations in the data which could up to now not be corrected out. The amplitude of these seasonal variations increases with the wavelength range covered by the PMD. This issue is still unresolved.
- The PMD 6 dark signal shows a strange variation over time which is still under investigation.

A more detailed investigation of the open issues listed above requires a better calibration of the monitoring data which is currently (in the context of m-factor generation) under development, but will probably take some time.

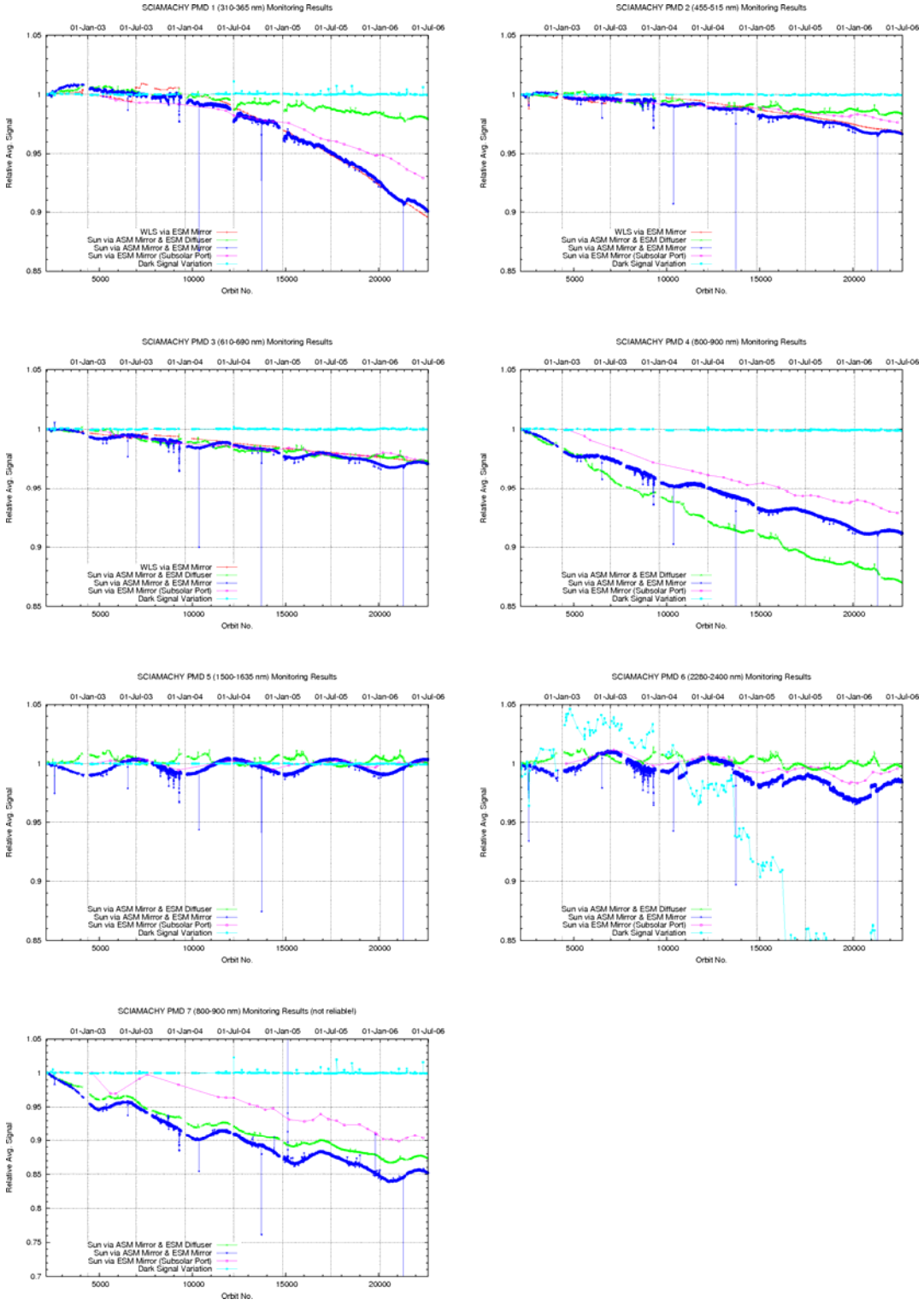


Fig. 3.12: PMD monitoring results August 2002 to June 2006

3.1.6 Problem Report Status (DLR-BO)

No updates on problem report statistics were reported. The last status is as from period July-August 2005:

- Total number of problem reports: 43
- Open problem reports: 5
- New problem reports during the reporting period: 0

4 DATA AVAILABILITY STATISTICS

4.1 Downlink/Acquisition Performance

Problems are known for the Products listed in Tab. 4.1:

Product	Day	Filename	description
SCI_NL__0P	07-JUN-2006	SCI_NL__0PNPDK20060607_072002_000061602048_00221_22319_0815.N1	products have a high number of ISP Errors; the data format is not correct
SCI_NL__0P	18-JUN-2006	SCI_NL__0PNPDK20060618_113237_000060352048_00381_22479_0915.N1	products have a high number of ISP Errors; the data format is not correct

These occurrences of data corruptions are currently under investigation.

4.2 Statistics on unconsolidated data (SCI_NL__0P, SCI_NL__1P)

This paragraph reports the availability of NRT data on a monthly basis. The statistics are based on level 0 data and level 1 data inventoried in the ground segment. Unavailability periods due to instrument anomalies or Satellite switch-offs are excluded. The gaps considered are only interfile gaps.

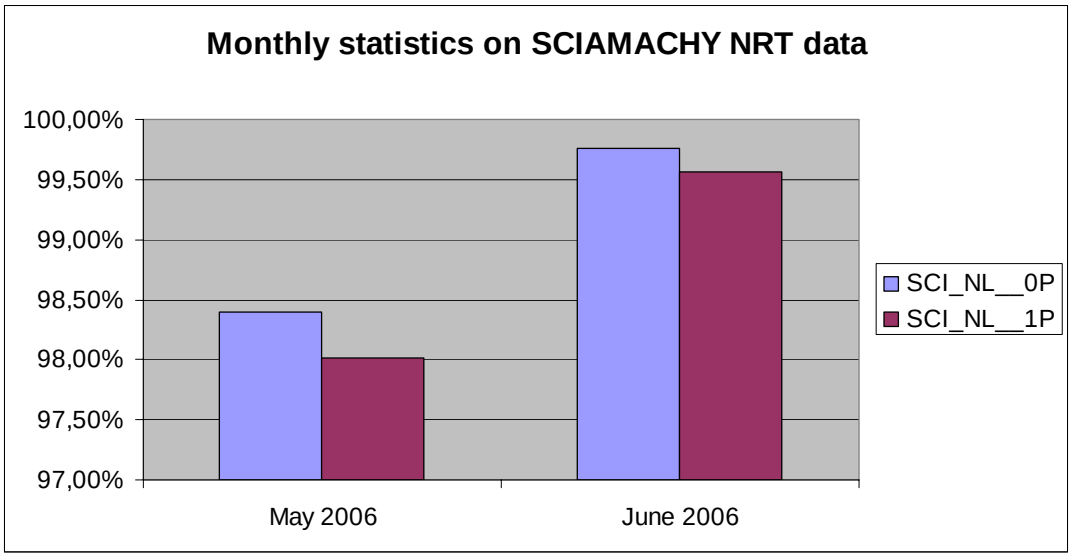


Fig. 4-1: Statistics on available unconsolidated level 0 and level 1 products

4.3 Statistics on consolidated data

Statistics on consolidated data products level 0 and level 1 are currently not available. They will be included again into the next reports.

4.3.1 Anomalies on level 0 consolidated data products

In the past it had been reported by SOST-DLR that the SCIAMACHY consolidated level 0 data contain errors and are not complete. Following specific problems have been identified and are reported in detail in the technical notes *[3]*, *[4]* for years 2003 and 2004 as well as for products of 2005 *[5]*:

- For one orbit there can be more than one consolidated level 0 product. These products may be identical or different in content (disregarding the product type file counter).
- Some orbits are not covered by consolidated level 0 products although SCIAMACHY was operational.
- Some orbits are covered by consolidated level 0 products but the product duration does not comply with the actually planned and executed instrument operations in that particular orbit.
- Some consolidated level 0 products exceed the Reed Solomon correction threshold and are flagged accordingly. The occurrence of Reed Solomon errors is non-uniform.
- Until late October / early November 2003 consolidated level 0 data are hampered by an incorrect orbit number.

More details on consolidated level 0 anomalies can be found on the SOST web page, which contains a catalogue of available level 0 consolidated data and description of errors.
http://atmos.caf.dlr.de/projects/scops/data_availability/availability.html

The errors contained in the consolidated level 0 data have been formally transferred into Observation Anomaly Reports (OAR) towards the ENVISAT ground segment.
As a consequence in the beginning of December 2005 a dedicated meeting was held at ESA to implement a strategy to improve the product quality of consolidated level 0 data and to reprocess erroneous products in the historic data set.
A recovery plan was initiated in order to reprocess erroneous data 2002 - 2004. This activity has been completed.
The reprocessing of anomalous data belonging to year 2005 is currently in progress.
Next step afterwards will be the flagging of duplicate level 0 products in the ENVISAT ground segment inventory.
The overall goal is to achieve a level 0 consolidated data ‘master set’ that will allow data reprocessing of improved data quality.

4.4 Statistics on reprocessed data

The reprocessing of products from the time interval July 2002 to May 2004 (corresponding to cycles 7 -26, each cycle consisting of 501 orbits) with IPF 5.04 has been completed. See also BMR September-October 2005 for details.

5 LEVEL 1 PRODUCT QUALITY MONITORING

5.1 Processor Configuration

5.1.1 Version

The current IPF version used for processing of SCIAMACHY level 1 data is 6.02.
For an interim period, between 22 May 2006 and 07 June 2006, IPF 6.01 was activated.
After identification of a major non compliancy in processor version IPF 6.01, corrective actions were undertaken and IPF 6.01 was replaced by IPF 6.02 on 07 June 2006. The recommendation is to not use level 1b products generated with IPF 6.01. Instead the Off-line data IPF 6.02 for the period 22 May 2006 to 07 June 2006 should be used for scientific analysis.

The corresponding product specification has been updated. The actual version now is Volume 15 issue 3/k *[2]*.

The disclaimer at
http://envisat.esa.int/dataproducts/availability/disclaimers/SCI_NL__1P_Disclaimers.pdf
describes known artefacts as well as major improvements with respect to the previous IPF version.
During the period 13 to 18 May 2006 a number of level 1b IPF 6.02 off-line products were processed with outdated auxiliary files. These occurrences are described in more detail in the disclaimer mentioned above. Appendix B lists the product names of the level 1b data affected. However these products were also removed from the D-PAC ftp server and should not be used. The corresponding orbits were already reprocessed with the correct auxiliary files.

Table 5.1 gives a brief overview of changes implemented with processor versions IPF 6.02, 6.01, 5.04 and 5.01.
In addition here is a summary on the definition of the SZA for Limb/Occultation measurements used in previous and actual IPF.
For IPF versions 4.02, 5.00, 5.01, 5.04, 6.01, 6.02 the SZA is defined with respect to Top of Atmosphere (TOA).
Instead for IPF versions 4.03, 4.01 and earlier versions the SZA is defined with respect to Tangent Height. IPF versions 4.02 and 5.00 however were not used operationally but to generate the validation dataset for the ACVT workshop in 2004.

IPF Version	Description	Proc Centre	Date	Start Orbit
6.02	No algorithm specification changes were implemented, but following non compliances of version 6.01 have	D-PAC	05-MAY-2006	21843
		PDHS-E	07-JUN-2006	22327
		PDHS-K	07-JUN-2006	22318

	been corrected, to get • Polarisation correction factors different from 0 • Correct order of SMR spectra in Sun Reference ADS • Solar mean reference spectra in New Sun Reference Data set with positive sign (was negative in IPF 6.01)			
6.01	• Improved parameterization of the Memory effect for channels 1 to 5 • New correction for the Non-Linearity effect in the infrared channels • Usage of improved key data for the radiometric calibration of all channels • Each solar spectrum is provided in a calibrated and un-calibrated manner for all channels • Orbital dependency of channel 6 to 8 leakage current now considered • Improvement of the pointing accuracy through the usage of the ENVISAT Restituted Attitude auxiliary files for the off-line processing • decontamination flag added to the SPH	D-PAC	No operations activated	-
		PDHS-E	22-MAY-2006	22098
		PDHS-K	22-MAY-2006	22090
5.04	No algorithm specification changes were implemented, but two algorithm	PDHS-K	21-AUG-2004	12942
		LRAC	20-AUG-2004	12750
		PDHS-E	16-AUG-2004	12823

	implementation errors have been corrected. In addition, code adaptations have been performed to resolve performance problems encountered during reprocessing. The list of modifications is as follows: • An incorrect polarisation-ratio calculation has been corrected, to remove radiance discrepancies up to 1% between prototype and operational +++processor. • Memory leaks have been detected and eliminated • Two modifications have been performed to avoid level 1B processing crashes	DPAC	12-AUG-2004	12879
5.01		DPAC	31-MAR-2004	
		PDHS-E PDHS-K LRAC	24-MAR-2004	

Tab. 5-1: Processor Version and main changes

5.1.2 Auxiliary Data Files

For operation of the SCIAMACHY level 1 processor a set of auxiliary files as input is required.
One subset of these auxiliary files usually changes only in correspondence with a new IPF version, namely the Initialisation file (SCI_LI1_AX), the Key Data File (SCI_KD1_AX).
In addition there is the m-factor file (SCI_MF1_AX), which shall describe the degradation of the instrument during its stay in orbit. Note that the m-factor file has not been changed so far.

Another subset of auxiliary files are the In-flight calibration data files which are generated when calibration measurements are included in the set of level 0 data to be processed. Four types of In-flight calibration auxiliary files exist:

- Leakage Current Calibration (SCI_LK1_AX - updated on orbital basis)
- Solar Reference Spectrum (SCI_SU1_AX - updated on daily basis)
- Spectral Calibration Parameters (SCI_SP1_AX - updated on a weekly basis)
- Pixel-to-Pixel Gain and Etalon Parameters (SCI_PE1_AX - updated on a weekly basis)

For the processor versions IPF 5.01 and 5.04 the above in-flight calibration auxiliary files were processed by the IECF based on level 1b data input. SCI_LK1_AX were generated about every orbit, if measurements did not lie in the SAA area or orbit phase constraints occurred. SCI_SU1_AX file were generated every day with a validity time of two weeks. PE1 and SP1 auxiliary files were generated once per month with measurements of the monthly calibration orbits.

With the activation of the new IPF 6.01 and IPF 6.02 the generation of in-flight auxiliary files is based on level 0 data, and a new calibration tool, SCICAL, was set in operation. SCICAL replaces the computation of ADFs that previously was performed by IECF, while IECF remains the interface for operational ADF dissemination, monitoring activities and database for the ADFs. SCICAL therefore can be considered integral part of the ENVISAT ground segment. The installation of SCICAL was performed in agreement with operational implementation procedures such as FAT, OSAT. Before becoming operational the performance of SCICAL was monitored during several months to detect any non compliance or operational problems.
SCICAL provides the advantage that all auxiliary files are generated automatically, SCI_SP1_AX and SCI_PE1_AX files are now updated once per week, using the weekly calibration measurements as input. The fact that the calibration is now based on level 0 data as input further reduces the time effort of full mission re-calibration.

The table in Appendix A gives an overview about the in flight auxiliary files for the reporting period May - June 2006 generated with SCICAL. Note that all ADFs listed in Appendix A are compatible with IPF 6.02.

Table 5-2 lists the actual Key Data File and Initialisation File used with IPF 6.02.

Table 5-2

SCI_LI1_AXVIEC20060523_182643_20020701_000000_20991231_235959
SCI_KD1_AXVIEC20060523_182626_20020301_000000_20991231_235959

Fig. 5.1 shows statistics of the SU1 and LK1 ADFs generated operationally with the IECF. It has to be noted that unavailability periods are excluded from statistics. Generation of SU1 ADFs for May and June 2006 was 100%.
The LK1 ADF statistic is calculated by dividing the number of all LK1 ADFs by number of all available (to SCICAL) level 0 products. The statistics on available LK1 ADFs during May (79.8%) and June 2006 (83.9%) represent a nominal level of ADFs generated. The statistic does not take into account SAA and orbit phase constraints.
With the operation of the new calibration software SCICAL and the new IPF 6.01/6.02 the SAA region was reduced in its size. As a result the number of LK1 ADFs has increased, as can be concluded by the increased percentage of LK1 ADFs. In comparison during March and April 2006, LK1 ADFs lay at about 44-46% when generated with IECF.

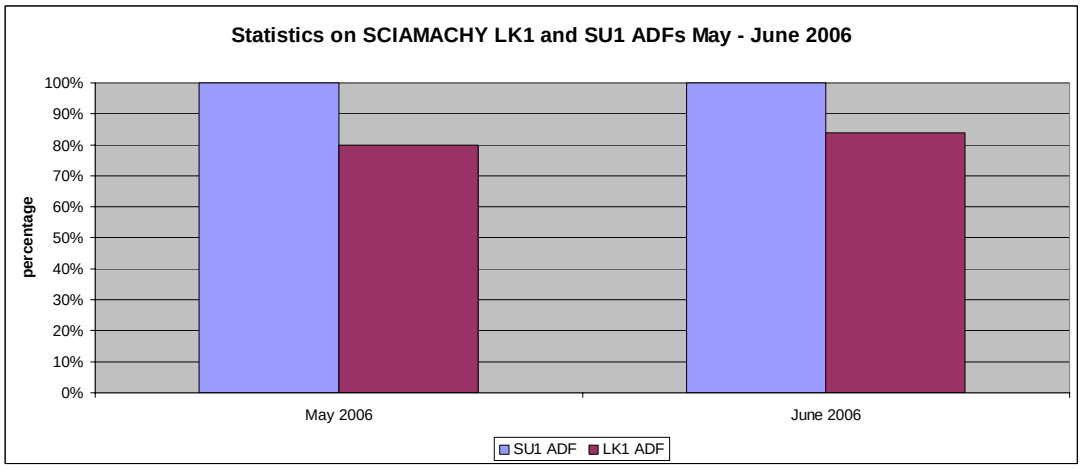


Fig. 5-1: Statistics on LK1 and SU1 processing

5.1.3 Spectral Performance

Future reports will contain analyses of spectral performance.

5.1.4 Radiometric Performance

Future reports will contain analyses of spectral performance.

5.1.5 Other Calibration Results

5.1.5.1 SMR analysis

SCICAL generates daily SU1 Auxiliary Files. Solar spectra obtained from ESM and ASM calibration measurements are provided in a calibrated and un-calibrated way.
The different types of spectra can be recognized by the so called identifier in the solar reference global annotation data set record.
In difference to previous versions, no solar reference spectra from occultation or sub-solar measurements are provided by the GADS, as they turned out to be of no use for trace gas retrievals.
Globally, it is recommended to use an un-calibrated ASM diffuser spectrum (A0) for DOAS type applications.
All retrieval methods requiring absolute calibrated radiance and irradiance are obliged to use the calibrated ESM diffuser spectrum (D0) (see also disclaimer).

Fig. 5-2 to Fig. 5-5 show the ratios of SMR spectra derived from calibrated SMR/ESM (D0) during the months May – June 2006. The ratios were determined by dividing the spectra of the beginning of each month to a set of days during each month. All ratios are not corrected for variation of distance earth/sun.

In detail the spectra used for the ratios of each month are the following:

- **May 2006**
  Reference SMR - 01 May 2006
  SMR used for ratios: 02, 03, 04, 05, 06, 07, 14, 21, 28 May 2006
- **June 2006**
  Reference SMR - 01 June 2006
  SMR used for ratios: 02, 03, 04, 05, 09, 10, 14, 21, 28 June 2006

The overall changes lie between 1 - 2 % during one month for all channels, which is at least partly caused by the increasing distance between sun and earth. In channel 1 around pixel 550 (at 282 nm) some strong features can be noticed, as well as in channel 2 near pixel 840 (near 393 nm). These strong features coincide with the Mg II and Ca Fraunhofer lines respectively. These lines are partially formed in the solar chromosphere and are known to change with solar variability.
The weaker spectral features in channel 2 (e.g. near pixels 550, 650,750), on the other hand, correlate with strong Fraunhofer lines, which are not chromospheric. These features probably arise from small wavelength shifts (order of 1/100 of a pixel).

Generally a spectral feature could have significant impact on the product quality, especially when the affected spectral parts are used for DOAS retrieval.

The large features in the end of channel 6 (channel 6+) and channels 7 and 8 are due to bad pixels (no bad pixel correction applied).
Note that the bad pixel mask used is still from the on ground calibration.
A regular update of the bad pixel mask is implemented starting with IPF 6.02. However a bad pixel correction will not be applied to the SMR spectra, but only to PMD out-of-band factors, in order to enable the user to apply a different mask from the one provided by the ADF.

Fig. 5-6 and Fig. 5-7 show SMR ratios on a long term trend dividing the ESM spectra from days 31-May-2003 and 31-May-2006, respectively 30-Jun-2003 and 30-Jun-2006. The first spectrum available exists for 18-Jul-2002. However to consider sun/earth distance, the ratio was performed with spectra from same calendar days. All SCI_SU1_AX files used were generated with SCICAL.

What can be concluded is that for channels 1-2 an average degradation of about 7% is observed, channels 3 degrades by about 2% and channels 4-6 degrade by less than 1%. The signal in channels 7 and 8 has increased with respect to the SMR of year 2003. This is consistent with the Light Path monitoring at SOST-IFE. The effect is due to ice contamination for the last two channels. Note that a non nominal decontamination was executed during May 2003.

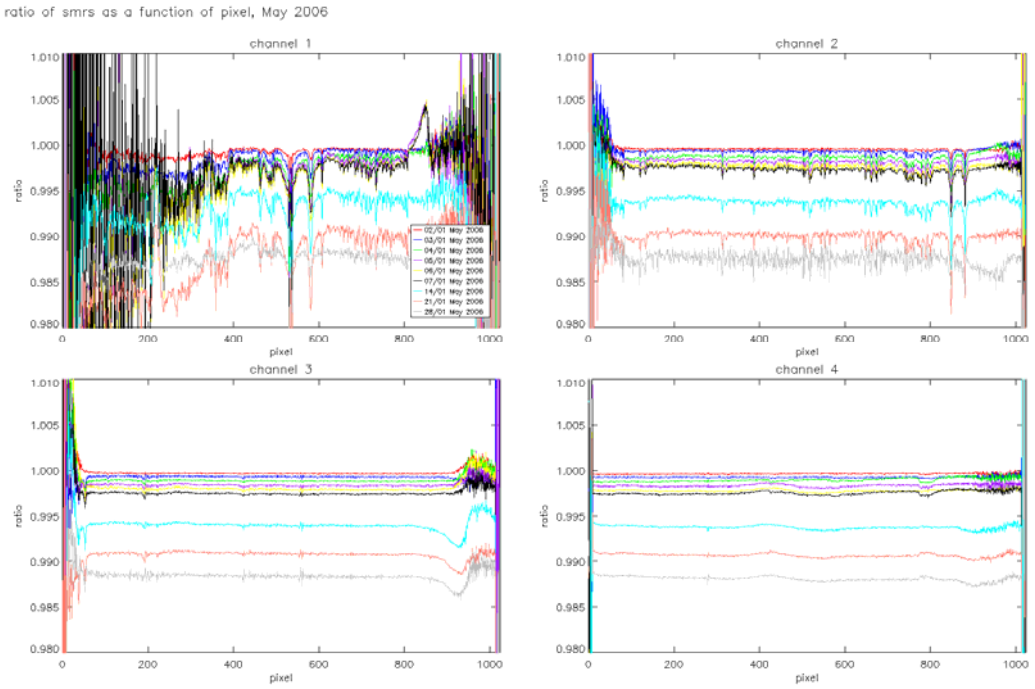


Fig. 5-2: SMR ratios per detector channel 1-4 (changes during May 2006)

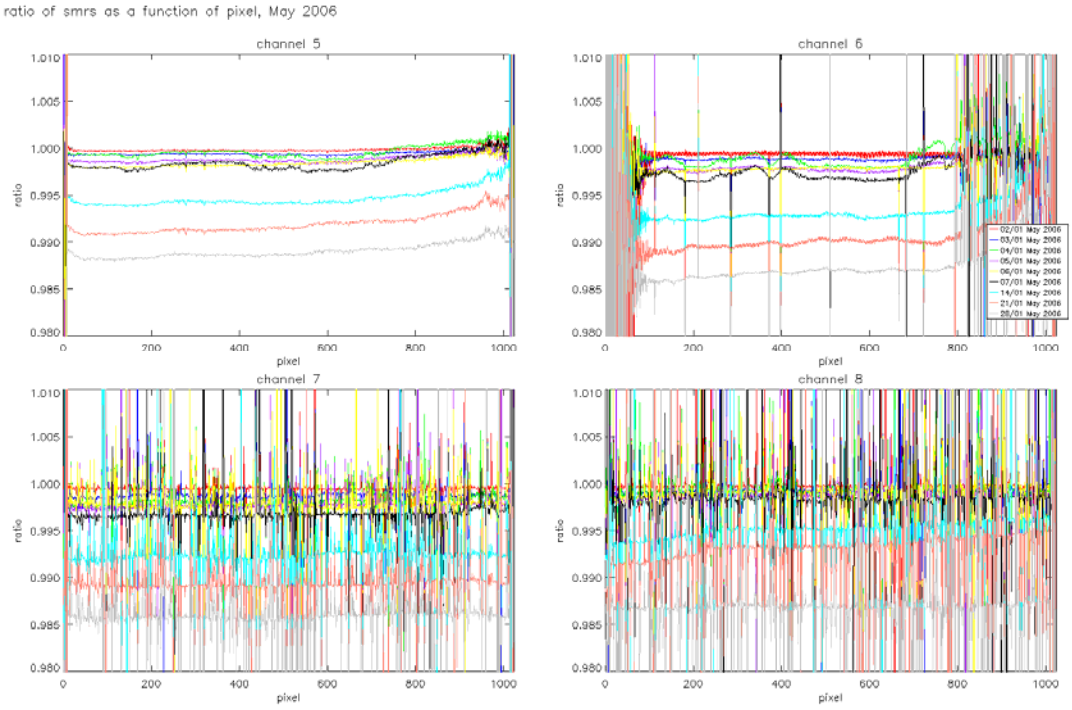


Fig. 5-3: SMR ratios per detector channel 5-8 (changes during May 2006)

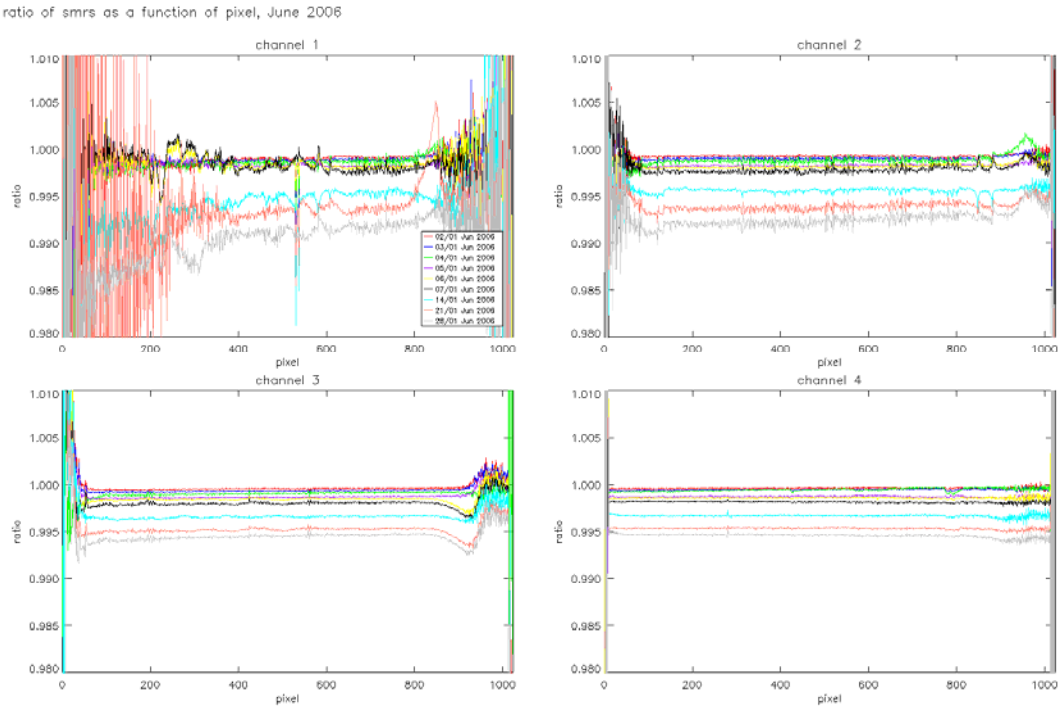


Fig. 5-4: SMR ratios per detector channel 1-4 (changes during June 2006)

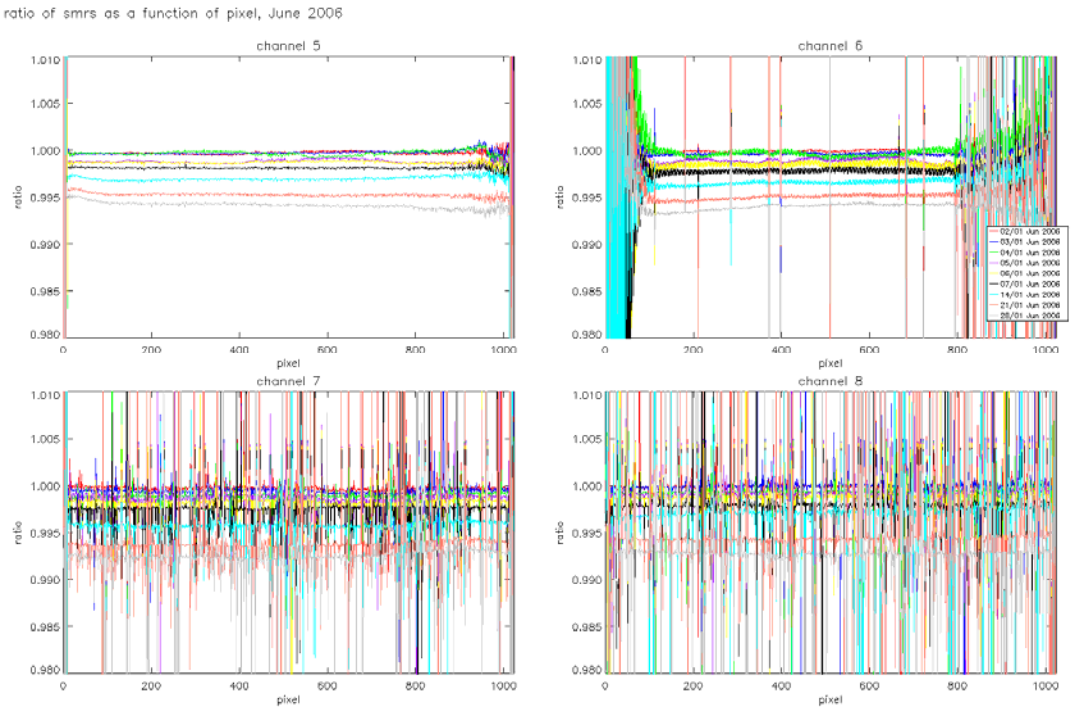


Fig. 5-5: SMR ratios per detector channel 5-8 (changes during June 2006)

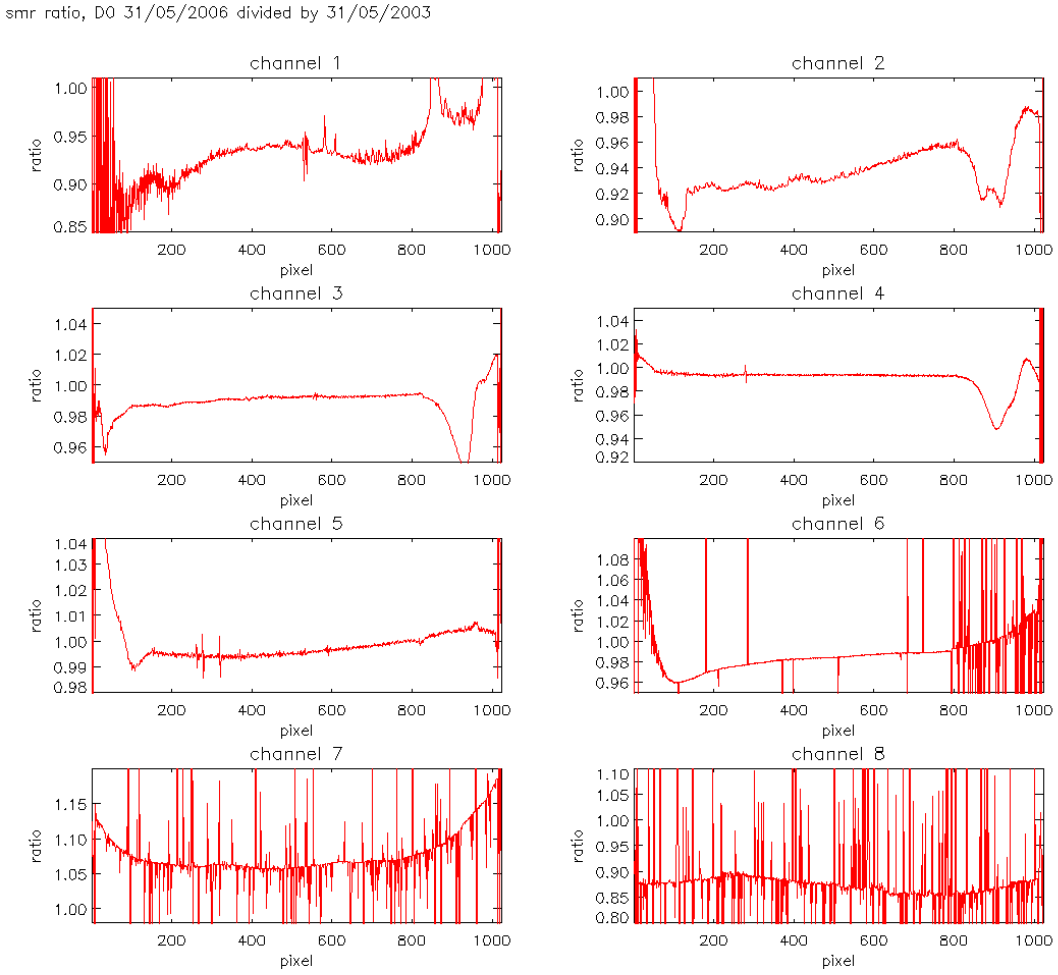


Fig. 5-6: SMR ratios per detector channel on Long Term Trend

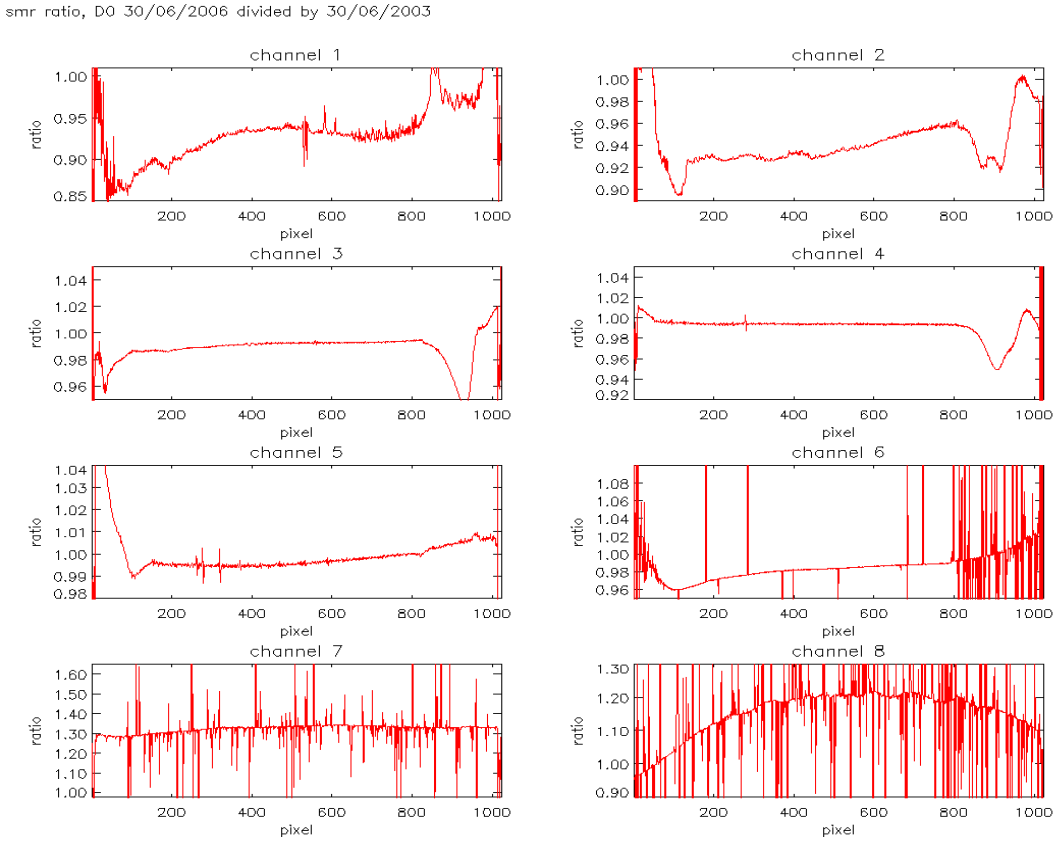


Fig. 5-7: SMR ratios per detector channel on Long Term Trend

5.1.5.2 LK1 analysis

5.1.5.2.1 Leakage Constant part

On an orbital basis a leakage current calibration is performed, if measurement data do not lie in the South Atlantic Anomaly region.
In Fig. 5-8 to Fig. 5-11 the leakage constant part FPN (fixed pattern noise) of the LK1 ADFs are analysed by determining the ratios of the FPN of each month with a time distance of one orbit, one day, one week, two weeks, three weeks and a month.
For channels 1-5 and the first part of channel 6, during up to three weeks nearly no changes can be noticed. Sudden jumps however between the different dark current ratios can be seen for channels 1, 2, 4 and 5 between 2 and 3 weeks. They are very small but above the noise level.
The IR channels show a lot of noise. Note that with the new processor version IPF 6.02, the time dependent part of the leakage current is considered (see 5.1.5.2.2).

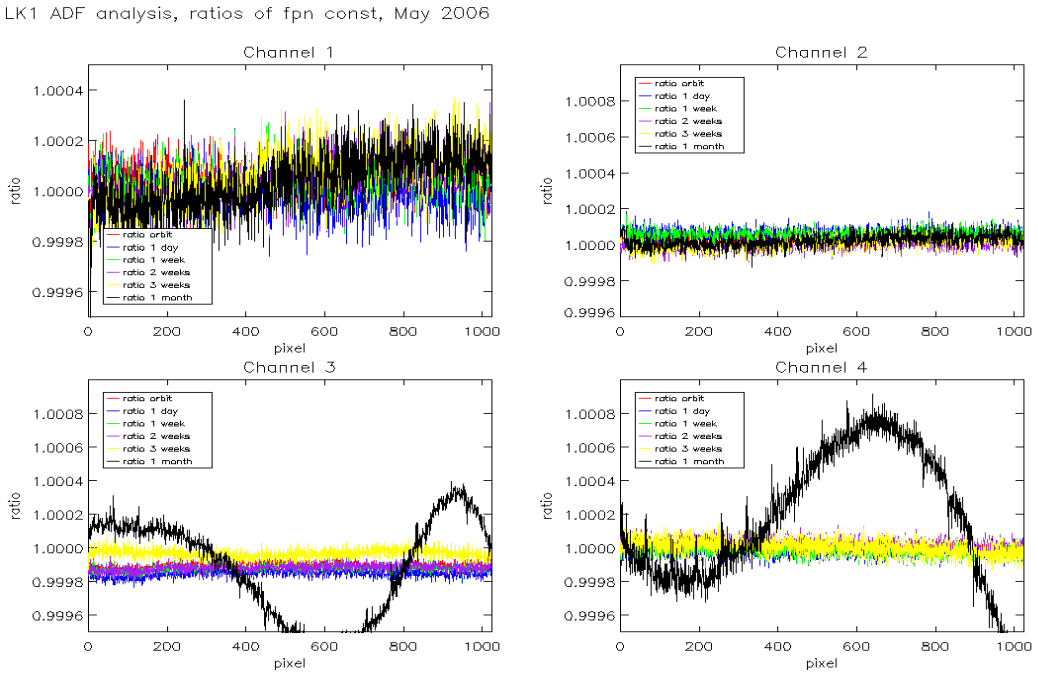


Fig. 5-7: dark current ratios (constant part) channel 1-4 during May 2006, Reference Spectrum used: Orbit 21789, 01-May-2006

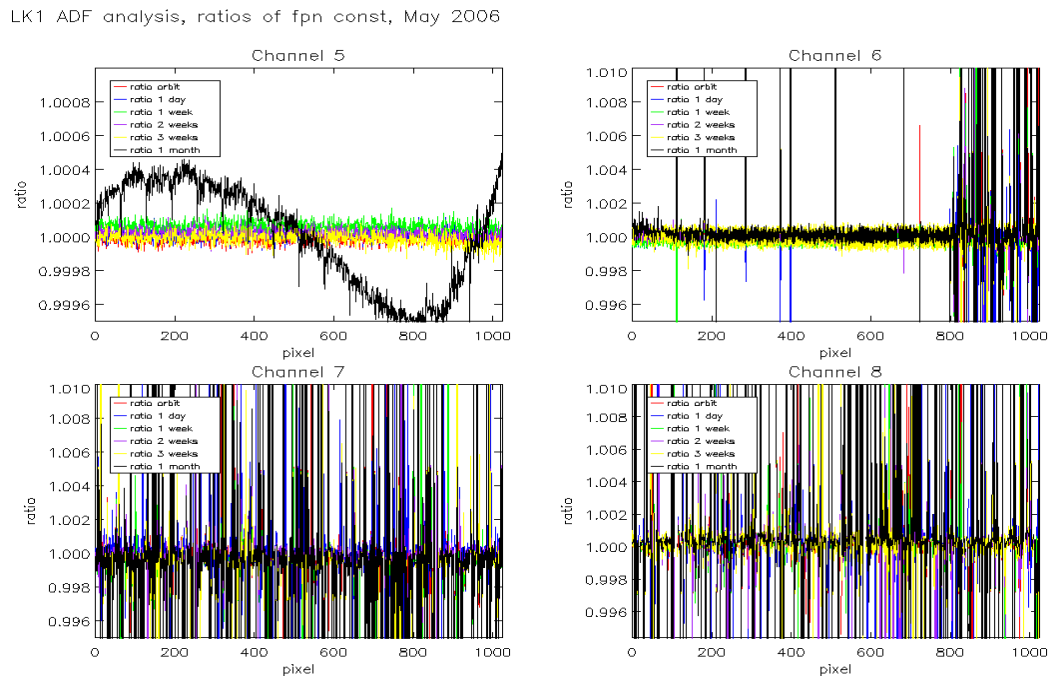


Fig. 5-8: dark current ratios (constant part) channel 5-8 during May 2006, Reference Spectrum used: Orbit 21789, 01-May-2006

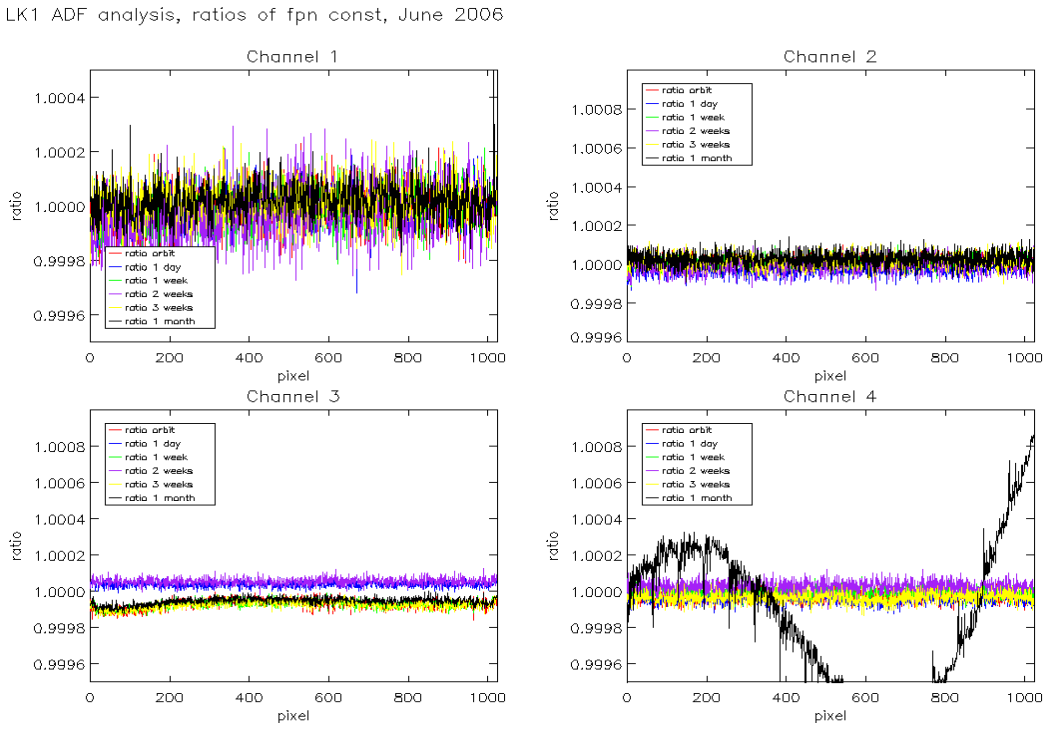


Fig. 5-9: dark current ratios (constant part) channel 1-4 during June 2006, Reference Spectrum used: Orbit 22233, 01-Jun-2006

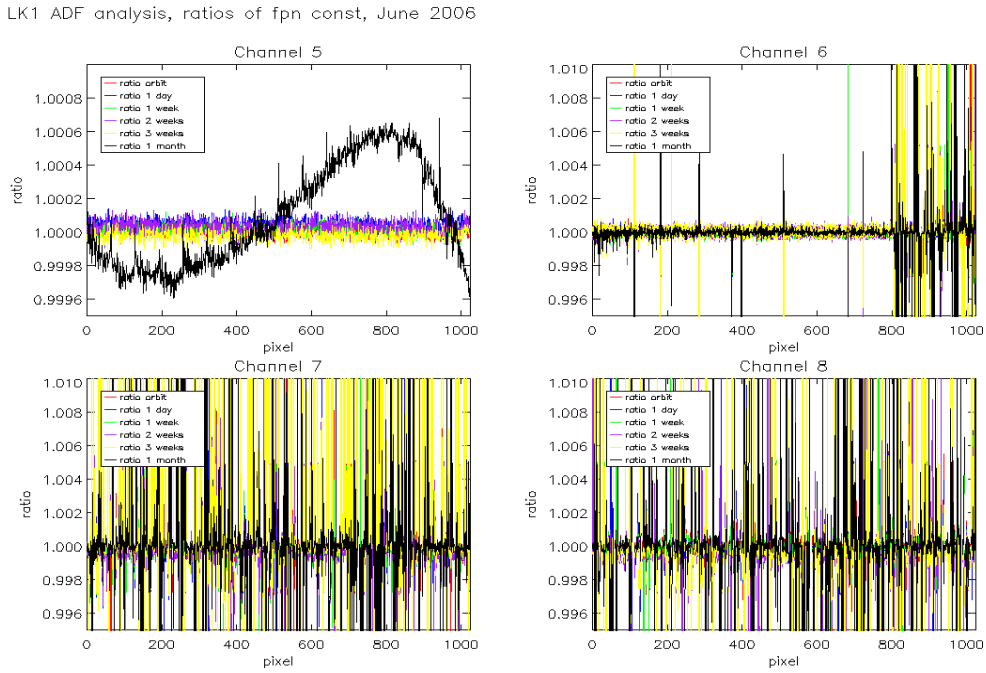


Fig. 5-10: dark current ratios (constant part) channel 5-8 during June 2006, Reference Spectrum used: Orbit 22233, 01-Jun-2006

5.1.5.2.2 Leakage Variable part

With the new IPF 6.01/6.02 the orbital dependency of channel 6 to 8 leakage current is considered.
SCIAMACHY detector channels 6 – 8 have a time dependent leakage dark signal that consists of two components, the leakage current of the detector pixel and second a component due to thermal background that varies along the orbit.

The implementation of the orbital variation of the leakage current is expected to improve retrieval especially in detector channel 8, e.g. for infrared products.

Figure 5-11 shows a first example of the newly included leakage variable part into the SCI_LK1_ADF. The upper picture shows the leakage variation of all pixels in channel 8 in dependency of the orbit phase (12 values between 0 and 1).
As the orbital variation is different for each individual detector pixel, the lower picture shows a selected range of detector pixels and their orbital leakage variation, showing a typical sine curve. Differences between the detector pixels are due to the quality of the pixels. In case of dead pixels, strong outliers are expected.

Future reports will contain further details.

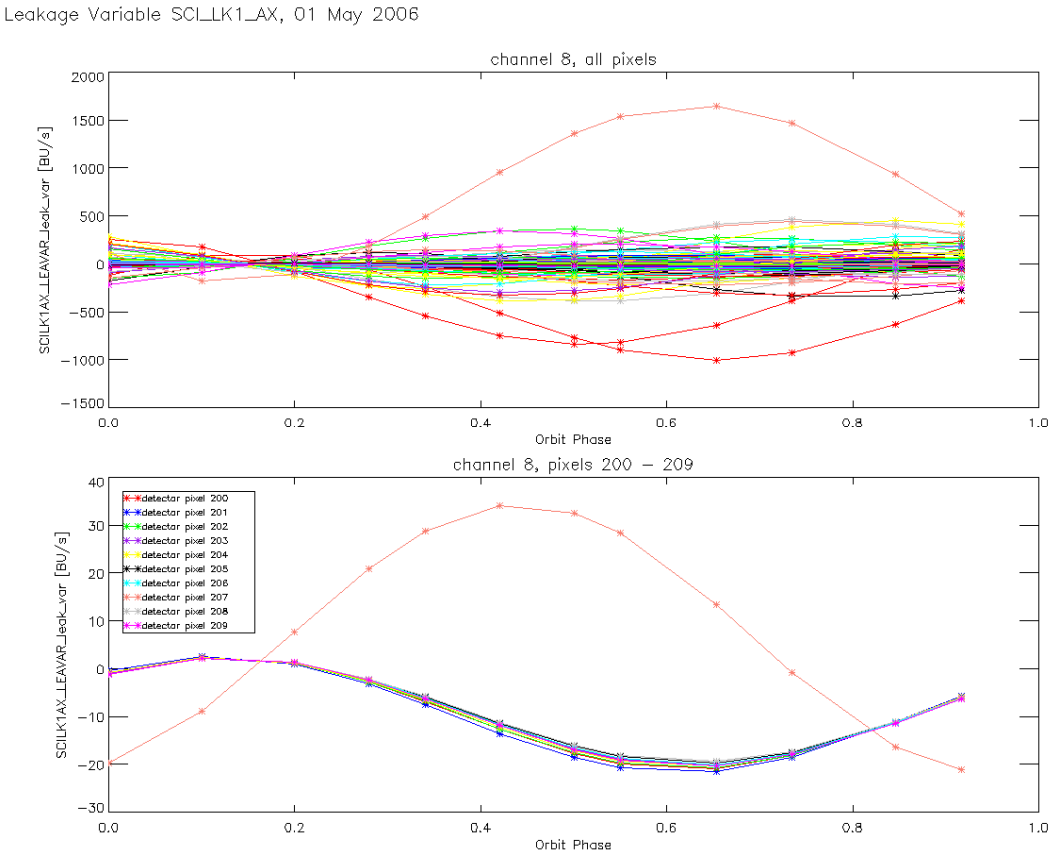


Figure 5-11: Example on leakage variation, SCI_LK1_AX 01 May 2006

5.1.6 Pointing Performance

The new SCIAMACHY processor IPF 6.02 contains the implementation of a limb pointing correction scheme. Results on first products analysed by IFE Bremen were summarised in the previous BMR.
Note, that only operational level 1b Off-line products contain the pointing correction, used for level 2 Off-line processing with version 3.0.
However the following operational problem was identified:
Due to a current shortcoming in the Restituted Attitude auxiliary file, no off-line consolidated Level 1b product for orbits crossing 00:00 UTC can be processed.
Therefore also no corresponding Level 2 Off-Line product can be provided.
Corrective actions are ongoing and the corresponding files, both Level 1b and Level 2, will be processed as soon as possible.

5.2 SciaL1c tool

The SciaL1c tool is an application provided to the users of SCIAMACHY Level 1b products. This application allows to select specific calibrations to apply to Level 1b data, which are in case of SCIAMACHY defined as not fully calibrated Level 0 channel information in combination with calculated calibration data .The generated Level 1c products are suitable for the user's particular applications. This tool had been available with EnviView for IPF version 5.04 (and previous).
SciaL1C Calibration and Extraction Software was upgraded to be compatible with IPF 6.02 data. The SciaL1c tool provided with Enviview is outdated and should not be used with the new IPF 6.02 products.
The tool can be downloaded from
http://earth.esa.int/resources/softwaretools/

6 LEVEL 2 NRT PRODUCT QUALITY MONITORING

6.1 Processor Configuration

6.1.1 Version

Since 08 May 2006 the near real time processing of SCIAMACHY level 2 data has been stopped, evolution is currently restricted to the level 2 Off-line processor (see chapter 7). The last IPF version used was 5.04. The corresponding product specification is *[2]*. The disclaimer at
http://envisat.esa.int/dataproducts/availability/disclaimers/SCI_NL__2P_Disclaimers.pdf
describes known artefacts.

Table 6.1 shows the implementation dates of the IPF at the different PDS processing centres and the main modifications implemented.

IPF Version	Description	Proc Centre	Date	Start Orbit
5.04	No algorithm specification changes were implemented, but two algorithm implementation errors have been corrected. In addition, code adaptations have been performed to resolve performance problems encountered during reprocessing. The list of modifications is as follows: • The incorrect handling of the season index 4 has been corrected. • An incorrect polarisation-ratio calculation has been corrected, to remove radiance discrepancies up to 1% between prototype and operational processor. • Memory leaks have been detected and eliminated • An adaptation has been implemented to allow co-existence with the initialisation file used by the Off-Line processor	PDHS-K	21-AUG-2004	12942
		LRAC	20-AUG-2004	12750
		PDHS-E	16-AUG-2004	12823
		DPAC	12-AUG-2004	12879

5.01	• description for cloud MDS updated • minor changes in MPI and USA climatology description • latitude grids fixed • list of surface types fixed, note about vegetation index added • O_3 FM formula fixed sizes of SCIA FM spectra fixed latitude zones fixed • solar zenith angle grid fixed	DPAC PDHS-E PDHS-K LRAC	31-MAR-2004 24-MAR-2004	

Tab. 6-1: Level 2 Processor Configuration

6.1.2 Auxiliary Data Files

Auxiliary Files being used as input for SCI_NL__2P products are listed in table 6-2. These ADF files are generally not changed.

SCI_FM2_AXVIEC20040309_092553_19990101_000000_20991231_235959
SCI_BL2_AXVIEC20020220_093709_20020101_000000_20200101_000000
SCI_CC2_AXVIEC20020220_094004_20020101_000000_20200101_000000
SCI_CL2_AXVIEC20020220_094214_20020101_000000_20200101_000000
SCI_CS2_AXVIEC20020220_094417_20020101_000000_20200101_000000
SCI_MF2_AXVIEC20040309_093236_19990101_000000_20991231_235959
SCI_PF2_AXVIEC20020220_100450_20020101_000000_20200101_000000
SCI_PR2_AXVIEC20020220_100642_20020101_000000_20200101_000000
SCI_RC2_AXVIEC20020220_100912_20020101_000000_20200101_000000
SCI_UC2_AXVIEC20040309_092027_19990101_000000_20991231_235959
SCI_SF2_AXVIEC20020220_101039_20020101_000000_20200101_000000
SCI_LI2_AXVIEC20040308_170000_20020101_000000_20200101_000000

Tab. 6-2: Level 2 Auxiliary Files

6.2 NO_2 consistency checking

Previous reports contained world map plots of NADIR NO_2 vertical column density (VCD) values averaged over one month. As the generation of near real time level 2 products was stopped, these plots will be generated using level 2 Off-line NADIR products in future. Note that currently no level 2 Off-line data are available for the reporting period.

7 LEVEL 2 OFF-LINE PRODUCT QUALITY MONITORING

7.1 Processor Configuration

7.1.1 Version

In January 2005 the SCIAMACHY level 2 Off-line product SCI_OL__2P was released, data are generated with processor version 2.5.
The corresponding product specification is PO-RS-MDA-GS-2009_15_3H.
The disclaimer at
http://envisat.esa.int/dataproducts/availability/disclaimers/SCI_OL__2P_Disclaimers.pdf
describes known artefacts.
SCI_OL__2P products contain geo-located vertical column amounts of O_3, NO_2 Nadir measurements, as well as stratospheric Limb profiles of O_3, NO_2. Additionally the fractional cloud coverage is derived and provided as product to the user.

A major upgrade of the level 1b to level 2 Off-line processor to version 3.0 is currently in progress. The FAT took place 26-27 April 2006 with this up-coming version.
Level 2 Off-line processing with version 2.5 was stopped with orbit 21803, 02 May 2006.
After the official release (early August 2006) of the level 2 Off-line processor level 2 data will be processed in backlog starting with orbit 21824, 03 May 2006.
The product specification corresponding to the level 2 off-line processor 3.00 is Volume 15, issue 3/k *[2]*.

7.1.2 Auxiliary Data Files

Input for level 2 Off-line processing version 2.5 is the Initialization File SCI_IN_AXNPDE20041221_112322_000000000000_000000 _000000_0000.N1,
that usually is changed only in case of a processor upgrade.

7.1.3 Monitoring results

In future reports results on Limb and Nadir products will be presented here.

8 VALIDATION ACTIVITIES AND RESULTS

8.1 SCIAMACHY-ECMWF Comparisons using SCI_RV__2P

Previous reports contained ECMWF data analysis results on level 2 Ozone data from SCI_RV__2P products. These products had been generated based on level 2 near real-time data. As the generation of level 2 near real-time data has been deactivated with the new level 1b processor IPF 6.01/IPF 6.02, also SCI_RV__2P data are not available any more.
This paragraph therefore will be left out in future BMR.

8.2 Statistics from Inter comparison with External Data

Future reports will contain information on this issue.

APPENDIX A LIST OF OPERATIONAL ADFS FOR THE PERIOD MAY – JUNE 2006

Type	ADF Name
PE1_AX	SCI_PE1_AXVIEC20060524_142726_20060504_181943_20990101_000000
	SCI_PE1_AXVIEC20060524_142826_20060518_173736_20990101_000000
	SCI_PE1_AXVIEC20060603_041052_20060530_180406_20990101_000000
	SCI_PE1_AXVIEC20060608_161025_20060605_181414_20990101_000000
	SCI_PE1_AXVIEC20060615_041034_20060611_182513_20990101_000000
	SCI_PE1_AXVIEC20060621_101025_20060618_180629_20990101_000000
	SCI_PE1_AXVIEC20060628_101039_20060625_174308_20990101_000000
SP1_AX	SCI_SP1_AXVIEC20060524_144635_20060504_164341_20060802_200155
	SCI_SP1_AXVIEC20060524_144746_20060512_155015_20060810_220108
	SCI_SP1_AXVIEC20060524_144855_20060518_160218_20060816_192044
	SCI_SP1_AXVIEC20060603_042031_20060530_180406_20060828_194306
	SCI_SP1_AXVIEC20060608_162319_20060605_163801_20060903_195627
	SCI_SP1_AXVIEC20060621_102025_20060618_162811_20060916_194421
	SCI_SP1_AXVIEC20060628_102036_20060625_160802_20060923_192520
	SCI_SP1_AXVIEC20060706_102031_20060611_164825_20060909_225706
SU1_AX	SCI_SU1_AXVIEC20060524_180216_20060511_161843_20060526_194010
	SCI_SU1_AXVIEC20060524_180218_20060510_165024_20060525_201055
	SCI_SU1_AXVIEC20060524_180335_20060512_155015_20060527_173112
	SCI_SU1_AXVIEC20060524_180338_20060513_165609_20060528_201628
	SCI_SU1_AXVIEC20060524_180419_20060514_162729_20060529_194556
	SCI_SU1_AXVIEC20060524_180518_20060515_155752_20060530_191306
	SCI_SU1_AXVIEC20060524_180608_20060516_170335_20060531_202257
	SCI_SU1_AXVIEC20060524_180742_20060517_163154_20060601_195116
	SCI_SU1_AXVIEC20060524_180951_20060518_160218_20060602_192044
	SCI_SU1_AXVIEC20060524_181204_20060520_163837_20060604_195555
	SCI_SU1_AXVIEC20060524_181205_20060519_153350_20060603_184904
	SCI_SU1_AXVIEC20060524_181237_20060521_160805_20060605_192523
	SCI_SU1_AXVIEC20060526_043240_20060522_153925_20060606_185438
	SCI_SU1_AXVIEC20060530_163547_20060501_163347_20060516_195516
	SCI_SU1_AXVIEC20060530_163918_20060502_160723_20060517_192334
	SCI_SU1_AXVIEC20060530_163919_20060503_153638_20060518_185153
	SCI_SU1_AXVIEC20060530_164451_20060506_154005_20060521_185724
	SCI_SU1_AXVIEC20060530_165735_20060508_161418_20060523_193546
	SCI_SU1_AXVIEC20060530_170253_20060509_154742_20060524_190256
	SCI_SU1_AXVIEC20060531_043140_20060523_164616_20060607_200430
	SCI_SU1_AXVIEC20060531_043235_20060524_161532_20060608_193154
	SCI_SU1_AXVIEC20060531_043341_20060525_154256_20060609_172114
	SCI_SU1_AXVIEC20060531_122053_20060504_164341_20060519_200155
	SCI_SU1_AXVIEC20060531_122159_20060505_161051_20060520_174802
	SCI_SU1_AXVIEC20060531_122319_20060507_164655_20060522_200523
	SCI_SU1_AXVIEC20060602_043202_20060528_154736_20060612_190454
	SCI_SU1_AXVIEC20060603_043142_20060529_165824_20060613_201445
	SCI_SU1_AXVIEC20060603_043230_20060530_162644_20060614_180502

	SCI_SU1_AXVIEC20060603_043335_20060531_155504_20060615_191331 SCI_SU1_AXVIEC20060604_043155_20060601_170305_20060616_201818 SCI_SU1_AXVIEC20060605_043146_20060602_162921_20060617_194639 SCI_SU1_AXVIEC20060606_043246_20060603_155947_20060618_191704 SCI_SU1_AXVIEC20060607_043157_20060604_153012_20060619_184634 SCI_SU1_AXVIEC20060608_163204_20060605_163801_20060620_195627 SCI_SU1_AXVIEC20060609_043238_20060606_160622_20060621_192340 SCI_SU1_AXVIEC20060611_043129_20060608_164136_20060623_195854 SCI_SU1_AXVIEC20060612_103120_20060609_161202_20060624_192824 SCI_SU1_AXVIEC20060616_103144_20060613_154713_20060628_190431 SCI_SU1_AXVIEC20060618_223334_20060615_162337_20060630_194055 SCI_SU1_AXVIEC20060619_103121_20060616_155255_20060701_190809 SCI_SU1_AXVIEC20060621_103137_20060618_162811_20060703_194421 SCI_SU1_AXVIEC20060622_223247_20060619_155729_20060704_191147 SCI_SU1_AXVIEC20060625_223219_20060622_160326_20060707_191936 SCI_SU1_AXVIEC20060626_043249_20060623_153449_20060708_184907 SCI_SU1_AXVIEC20060627_043354_20060624_163939_20060709_195657 SCI_SU1_AXVIEC20060627_164259_20060607_153552_20060622_185201 SCI_SU1_AXVIEC20060627_164710_20060611_164825_20060626_225706 SCI_SU1_AXVIEC20060627_164855_20060612_161743_20060627_193501 SCI_SU1_AXVIEC20060627_164904_20060614_165515_20060629_201329 SCI_SU1_AXVIEC20060627_165015_20060617_165840_20060702_201707 SCI_SU1_AXVIEC20060627_165050_20060620_170532_20060705_184242 SCI_SU1_AXVIEC20060627_165136_20060621_163559_20060706_195221 SCI_SU1_AXVIEC20060628_095747_20060610_154132_20060625_185741 SCI_SU1_AXVIEC20060628_103205_20060625_160802_20060710_192520 SCI_SU1_AXVIEC20060701_043156_20060628_161456_20060713_193311 SCI_SU1_AXVIEC20060702_043220_20060629_154524_20060714_190134 SCI_SU1_AXVIEC20060704_043218_20060630_165206_20060715_200721 SCI_SU1_AXVIEC20060706_103147_20060626_153829_20060711_185235 SCI_SU1_AXVIEC20060706_103254_20060627_164633_20060712_200351
LK1_AX	SCI_LK1_AXVIEC20060606_111741_20060501_035235_20060630_053324 SCI_LK1_AXVIEC20060606_111843_20060501_053324_20060630_071347 SCI_LK1_AXVIEC20060606_111942_20060501_071347_20060630_082220 SCI_LK1_AXVIEC20060606_112047_20060501_082220_20060630_100352 SCI_LK1_AXVIEC20060606_112149_20060501_100256_20060630_114331 SCI_LK1_AXVIEC20060606_112254_20060501_114235_20060630_132202 SCI_LK1_AXVIEC20060606_112357_20060501_132054_20060630_150034 SCI_LK1_AXVIEC20060606_112501_20060501_150034_20060630_163456 SCI_LK1_AXVIEC20060606_112605_20060501_163347_20060630_181521 SCI_LK1_AXVIEC20060606_112709_20060501_181412_20060630_195516 SCI_LK1_AXVIEC20060606_112811_20060501_210027_20060630_224726 SCI_LK1_AXVIEC20060606_112915_20060501_224519_20060701_002718 SCI_LK1_AXVIEC20060603_044112_20060502_031958_20060701_050238 SCI_LK1_AXVIEC20060602_224659_20060502_050238_20060701_064314 SCI_LK1_AXVIEC20060602_224735_20060502_064314_20060701_075039 SCI_LK1_AXVIEC20060605_095833_20060502_075039_20060701_093210 SCI_LK1_AXVIEC20060602_224851_20060502_093210_20060701_111258 SCI_LK1_AXVIEC20060602_224936_20060502_111150_20060701_125117 SCI_LK1_AXVIEC20060602_225054_20060502_125117_20060701_143001 SCI_LK1_AXVIEC20060602_225202_20060502_142852_20060701_160819

	SCI_LK1_AXVIEC20060602_225931_20060502_143001_20060701_160819
	SCI_LK1_AXVIEC20060602_225247_20060502_160723_20060701_174339
	SCI_LK1_AXVIEC20060602_225350_20060502_174231_20060701_192334
	SCI_LK1_AXVIEC20060602_225503_20060502_192238_20060701_210257
	SCI_LK1_AXVIEC20060602_225613_20060502_221337_20060701_235620
	SCI_LK1_AXVIEC20060602_225720_20060503_024817_20060702_043057
	SCI_LK1_AXVIEC20060602_230219_20060503_061133_20060702_072006
	SCI_LK1_AXVIEC20060602_230336_20060503_071857_20060702_090137
	SCI_LK1_AXVIEC20060602_230506_20060503_090029_20060702_104117
	SCI_LK1_AXVIEC20060602_230641_20060503_104009_20060702_121936
	SCI_LK1_AXVIEC20060602_230813_20060503_121840_20060702_135915
	SCI_LK1_AXVIEC20060602_231021_20060503_135915_20060702_153638
	SCI_LK1_AXVIEC20060602_231315_20060503_153638_20060702_171458
	SCI_LK1_AXVIEC20060602_232618_20060503_171254_20060702_185153
	SCI_LK1_AXVIEC20060602_232638_20060503_185057_20060702_203320
	SCI_LK1_AXVIEC20060602_232149_20060503_214154_20060702_232521
	SCI_LK1_AXVIEC20060602_232837_20060504_021731_20060703_035916
	SCI_LK1_AXVIEC20060602_232251_20060504_053843_20060703_072136
	SCI_LK1_AXVIEC20060602_233017_20060504_072027_20060703_082752
	SCI_LK1_AXVIEC20060602_232300_20060504_082752_20060703_101032
	SCI_LK1_AXVIEC20060605_095906_20060504_100936_20060703_114754
	SCI_LK1_AXVIEC20060602_233405_20060504_114754_20060703_132843
	SCI_LK1_AXVIEC20060602_233612_20060504_132734_20060703_150701
	SCI_LK1_AXVIEC20060605_095928_20060504_150605_20060703_164436
	SCI_LK1_AXVIEC20060602_233720_20060504_164341_20060703_182039
	SCI_LK1_AXVIEC20060602_234438_20060504_181943_20060703_200155
	SCI_LK1_AXVIEC20060602_234454_20060504_210724_20060703_225507
	SCI_LK1_AXVIEC20060602_234537_20060505_003417_20060704_021110
	SCI_LK1_AXVIEC20060602_234522_20060505_050701_20060704_064846
	SCI_LK1_AXVIEC20060605_100008_20060505_064846_20060704_075706
	SCI_LK1_AXVIEC20060602_235237_20060505_075610_20060704_093850
	SCI_LK1_AXVIEC20060602_235159_20060505_093850_20060704_111613
	SCI_LK1_AXVIEC20060605_100029_20060505_111613_20060704_125701
	SCI_LK1_AXVIEC20060602_235329_20060505_125701_20060704_143520
	SCI_LK1_AXVIEC20060602_235351_20060505_143520_20060704_161255
	SCI_LK1_AXVIEC20060602_235914_20060505_161051_20060704_174802
	SCI_LK1_AXVIEC20060602_235727_20060505_210733_20060704_222157
	SCI_LK1_AXVIEC20060602_164527_20060506_000148_20060705_014056
	SCI_LK1_AXVIEC20060602_164529_20060506_043520_20060705_061813
	SCI_LK1_AXVIEC20060602_164603_20060506_061704_20060705_072525
	SCI_LK1_AXVIEC20060602_164700_20060506_072525_20060705_090709
	SCI_LK1_AXVIEC20060602_164804_20060506_090601_20060705_104636
	SCI_LK1_AXVIEC20060602_164919_20060506_104540_20060705_122507
	SCI_LK1_AXVIEC20060602_165023_20060506_122507_20060705_140447
	SCI_LK1_AXVIEC20060602_165127_20060506_140339_20060705_154114
	SCI_LK1_AXVIEC20060602_165222_20060506_154005_20060705_171717
	SCI_LK1_AXVIEC20060602_165326_20060506_171525_20060705_185724
	SCI_LK1_AXVIEC20060602_165430_20060506_185628_20060705_203648
	SCI_LK1_AXVIEC20060602_165537_20060506_203552_20060705_215015
	SCI_LK1_AXVIEC20060602_165638_20060506_233053_20060706_011210
	SCI_LK1_AXVIEC20060602_165748_20060507_040339_20060706_054523

	SCI_LK1_AXVIEC20060602_165849_20060507_054523_20060706_072803
	SCI_LK1_AXVIEC20060602_165952_20060507_072803_20060706_083215
	SCI_LK1_AXVIEC20060602_170055_20060507_083119_20060706_101359
	SCI_LK1_AXVIEC20060602_170200_20060507_101251_20060706_115435
	SCI_LK1_AXVIEC20060602_170303_20060507_115326_20060706_133306
	SCI_LK1_AXVIEC20060602_170406_20060507_133157_20060706_151029
	SCI_LK1_AXVIEC20060602_170509_20060507_151029_20060706_164900
	SCI_LK1_AXVIEC20060602_170611_20060507_164655_20060706_182719
	SCI_LK1_AXVIEC20060602_170715_20060507_182611_20060706_200523
	SCI_LK1_AXVIEC20060602_170820_20060507_200331_20060706_211833
	SCI_LK1_AXVIEC20060602_170922_20060507_225823_20060707_003944
	SCI_LK1_AXVIEC20060602_171025_20060508_033158_20060707_051342
	SCI_LK1_AXVIEC20060602_171136_20060508_051342_20060707_065514
	SCI_LK1_AXVIEC20060602_171236_20060508_065418_20060707_080238
	SCI_LK1_AXVIEC20060602_171343_20060508_080143_20060707_094518
	SCI_LK1_AXVIEC20060602_171446_20060508_094423_20060707_112254
	SCI_LK1_AXVIEC20060602_171551_20060508_112145_20060707_130221
	SCI_LK1_AXVIEC20060602_171657_20060508_161418_20060707_175538
	SCI_LK1_AXVIEC20060602_171807_20060508_175430_20060707_193546
	SCI_LK1_AXVIEC20060602_171913_20060508_193437_20060707_204522
	SCI_LK1_AXVIEC20060602_104117_20060509_025921_20060708_044201
	SCI_LK1_AXVIEC20060602_104217_20060509_062333_20060708_073057
	SCI_LK1_AXVIEC20060602_104323_20060509_091242_20060708_105209
	SCI_LK1_AXVIEC20060602_104434_20060509_105113_20060708_123040
	SCI_LK1_AXVIEC20060602_104541_20060509_123040_20060708_140911
	SCI_LK1_AXVIEC20060602_104649_20060509_140911_20060708_154742
	SCI_LK1_AXVIEC20060602_104756_20060509_154742_20060708_172153
	SCI_LK1_AXVIEC20060602_104903_20060509_172057_20060708_190256
	SCI_LK1_AXVIEC20060602_105008_20060509_190200_20060708_204316
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	SCI_LK1_AXVIEC20060623_152517_20060618_052433_20060817_070604
	SCI_LK1_AXVIEC20060621_025207_20060618_070456_20060817_081329
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	SCI_LK1_AXVIEC20060621_025439_20060618_095501_20060817_113345
	SCI_LK1_AXVIEC20060623_152529_20060618_131312_20060817_145144
	SCI_LK1_AXVIEC20060621_130210_20060618_145048_20060817_162907

	SCI_LK1_AXVIEC20060621_130314_20060618_162811_20060817_180725 SCI_LK1_AXVIEC20060621_130414_20060618_180629_20060817_194421 SCI_LK1_AXVIEC20060621_130125_20060618_194325_20060817_205244 SCI_LK1_AXVIEC20060621_130511_20060618_205120_20060817_223859 SCI_LK1_AXVIEC20060621_130616_20060618_223736_20060818_001948 SCI_LK1_AXVIEC20060622_011327_20060619_031206_20060818_045255 SCI_LK1_AXVIEC20060622_011341_20060619_045146_20060818_063318 SCI_LK1_AXVIEC20060622_011404_20060619_063318_20060818_074300 SCI_LK1_AXVIEC20060622_011513_20060619_074152_20060818_092432 SCI_LK1_AXVIEC20060622_011551_20060619_092324_20060818_110304 SCI_LK1_AXVIEC20060622_070344_20060619_110304_20060818_124231 SCI_LK1_AXVIEC20060623_070328_20060619_110304_20060818_124231 SCI_LK1_AXVIEC20060622_070454_20060619_124231_20060818_142115 SCI_LK1_AXVIEC20060622_070557_20060619_142006_20060818_155838 SCI_LK1_AXVIEC20060623_070429_20060619_142006_20060818_155838 SCI_LK1_AXVIEC20060623_070538_20060619_155729_20060818_173548 SCI_LK1_AXVIEC20060623_070642_20060619_155729_20060818_173548 SCI_LK1_AXVIEC20060623_070750_20060619_173343_20060818_191147 SCI_LK1_AXVIEC20060623_070857_20060619_173343_20060818_191147 SCI_LK1_AXVIEC20060623_070959_20060619_190955_20060818_205521 SCI_LK1_AXVIEC20060622_070155_20060619_205412_20060818_220722 SCI_LK1_AXVIEC20060622_070237_20060619_220559_20060818_234928 SCI_LK1_AXVIEC20060622_070716_20060619_234811_20060819_012710 SCI_LK1_AXVIEC20060623_070142_20060620_023933_20060819_042117 SCI_LK1_AXVIEC20060623_070224_20060620_042117_20060819_060249 SCI_LK1_AXVIEC20060623_071114_20060620_060141_20060819_071014 SCI_LK1_AXVIEC20060623_071217_20060620_071014_20060819_085255 SCI_LK1_AXVIEC20060623_071320_20060620_085146_20060819_103126 SCI_LK1_AXVIEC20060623_071428_20060620_103030_20060819_121053 SCI_LK1_AXVIEC20060623_071541_20060620_121053_20060819_134937 SCI_LK1_AXVIEC20060624_011330_20060620_152756_20060819_170640 SCI_LK1_AXVIEC20060624_010814_20060620_170532_20060819_184242 SCI_LK1_AXVIEC20060627_112256_20060620_170532_20060819_184242 SCI_LK1_AXVIEC20060624_010811_20060620_184037_20060819_202359 SCI_LK1_AXVIEC20060624_010946_20060620_213301_20060819_231751 SCI_LK1_AXVIEC20060624_011113_20060620_231634_20060820_005657 SCI_LK1_AXVIEC20060624_011137_20060621_020851_20060820_035036 SCI_LK1_AXVIEC20060624_011159_20060621_034940_20060820_053112 SCI_LK1_AXVIEC20060624_011226_20060621_053003_20060820_071256 SCI_LK1_AXVIEC20060624_011628_20060621_071148_20060820_082009 SCI_LK1_AXVIEC20060624_011734_20060621_081913_20060820_100057 SCI_LK1_AXVIEC20060624_012126_20060621_100057_20060820_114120 SCI_LK1_AXVIEC20060624_012138_20060621_114025_20060820_131856 SCI_LK1_AXVIEC20060624_012222_20060621_131856_20060820_145823 SCI_LK1_AXVIEC20060624_012311_20060621_145727_20060820_163559 SCI_LK1_AXVIEC20060624_012351_20060621_163559_20060820_181309 SCI_LK1_AXVIEC20060625_012412_20060621_163559_20060820_181309 SCI_LK1_AXVIEC20060624_012519_20060621_181200_20060820_195221 SCI_LK1_AXVIEC20060625_012440_20060621_181200_20060820_195221 SCI_LK1_AXVIEC20060624_190116_20060621_195017_20060820_205917 SCI_LK1_AXVIEC20060624_190222_20060621_205756_20060820_224614

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	SCI_LK1_AXVIEC20060628_071902_20060625_032239_20060824_050519
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	SCI_LK1_AXVIEC20060628_072128_20060625_050423_20060824_064555
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	SCI_LK1_AXVIEC20060702_020633_20060629_185930_20060828_204046
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	SCI_LK1_AXVIEC20060703_011544_20060630_040751_20060829_054827
	SCI_LK1_AXVIEC20060703_011705_20060630_054731_20060829_065648

	SCI_LK1_AXVIEC20060703_012154_20060630_065648_20060829_083833 SCI_LK1_AXVIEC20060703_012519_20060630_083737_20060829_101800 SCI_LK1_AXVIEC20060703_012617_20060630_101704_20060829_115644 SCI_LK1_AXVIEC20060703_012738_20060630_115536_20060829_133503 SCI_LK1_AXVIEC20060703_012825_20060630_133503_20060829_151347 SCI_LK1_AXVIEC20060703_012852_20060630_151239_20060829_165206 SCI_LK1_AXVIEC20060704_021335_20060630_165206_20060829_182822 SCI_LK1_AXVIEC20060704_070122_20060630_182726_20060829_200721 SCI_LK1_AXVIEC20060703_070113_20060630_200529_20060829_212057 SCI_LK1_AXVIEC20060703_070220_20060630_212013_20060829_230041 SCI_LK1_AXVIEC20060703_070332_20060630_230041_20060830_004209

APPENDIX B LEVEL 1B OFF-LINE PRODUCTS PROCESSED WITH OUTDATED AUXILIARY FILES

SCI_NL__1PPDPA20060512_002620_000060362047_00346_21943_1007.N1
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SCI_NL__1PPDPA20060512_102954_000060362047_00352_21949_0999.N1
SCI_NL__1PPDPA20060512_121034_000060272047_00353_21950_1025.N1
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SCI_NL__1PPDPA20060515_090027_000057382047_00394_21991_0106.N1
SCI_NL__1PPDPA20060515_103609_000060762047_00395_21992_0105.N1
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SCI_NL__1PPDPA20060517_143928_000057362047_00426_22023_0189.N1
SCI_NL__1PPDPA20060518_104636_000057362047_00438_22035_0073.N1
SCI_NL__1PPDPA20060518_154328_000060762047_00441_22038_0078.N1