ENVISAT - AATSR

CYCLIC REPORT #43

	START	END
DATE	28 NOVEMBER 2005	02 JANUARY 2006
TIME	21:59:29	21:59:29
ORBIT #	19593	20093

prepared by/*préparé par* AATSR DPQC and QWG team

reference/*réference*
issue/*édition* 1
revision/*révision* 0
date of issue/*date d'édition* 17 January 2006
status/*état*
Document type/*type de document* Technical Note
Distribution/*distribution*

A P P R O V A L

Title *titre*	AATSR Cyclic Report – Cycle 43	issue *issue* 1	revision *revision* 0
author *auteur*	Kevin Halsall	date *date*	17 January 2006
approved by *approuvé by*		date *date*	

C H A N G E L O G

reason for change /*raison du changement*	issue/*issue*	revision/*revision*	date/*date*

C H A N G E R E C O R D

Issue: 1 Revision: 0

reason for change/*raison du changement*	page(s)/*page(s)*	paragraph(s)/ *paragraph(s)*

TABLE OF CONTENTS

THE CYCLIC REPORT # 43

1 INTRODUCTION

The AATSR Cyclic Report is distributed by the AATSR DPQC team to keep the AATSR community informed of any modification regarding instrument performances, the data production chain and the results of calibration and validation campaigns at the end of each Envisat cycle, which consists of 501 complete orbits over the course of 35 days.

This document is available online at: http://earth.esa.int/pcs/envisat/aatsr/reports/cyclic/

1.1 Acronyms and Abbreviations

AATSR	Advanced Along Track Scanning Radiometer
CR	Cyclic Report
DDS	Data Dissemination System
DMOP	Detailed Mission Operation Plan
DMS	Data Management System
DPQC	Data Product Quality Control
EN-UNA-YYYY/#	Envisat Unavailability (plus year and number)
ESOC	European Space Operation Centre
HSM	High Speed Multiplexer
IECF	Instrument Engineering and Calibration Facilities
IPF	Instrument Processing Facilities
MPS	Mission Planning Schedule
NRT	Near Real Time
OCM	Orbit Control Manoeuvre
PDS	Payload Data Segment
PMC	Payload Management Computer
SPR	Software Problem Reporting
SW	Software
VISCAL	Visible Calibration

The AATSR list of acronyms and abbreviation is in the following site:
http://envisat.esa.int/dataproducts/aatsr/CNTR5.htm#eph.aatsr.glossary

2 SUMMARY

Cyclic Report: 43
Cycle Start: 28 November 2005, 21:59:29, Orbit #: 19593
Cycle End: 02 January 2006, 21:59:29 Orbit #: 20093

The main activities during the cycle have been as follows:

- **L0 Processor and IPF Version:**

  L0 Processor – no change (5.22)

  Level 1b & Level 2 processor – no change (5.59)

- **Visible channel calibration:**

  The visible calibration data supplied as an aux file (ATS_VC1_AX) continued to be regularly updated throughout the cycle.

- **Out-gassing:**

  There was one period of planned unavailability during this cycle, which was an instrument out-gassing from 16th December 2005 – 19th December 2005.

- **Aux file:**

  A new set of SST retrieval coefficients came into operation within the AATSR processing chain on 09 December 2005. The retrieval coefficients previously in use were based on the same atmospheric spectroscopy as was used for ATSR-1 and ATSR-2, which pre-dated the more recent releases of the HITRAN molecular spectroscopy database. This new set of retrieval coefficients are based on the HITRAN 2000 database.

- **Visible Channel Drift Correction:**

  All AATSR data acquired from 30 November 2005 onwards now contains a systematic correction for visible channel drift.

3 SOFTWARE & AUX FILE VERSION CONFIGURATION

3.1 Software Version

AATSR IPF for Level 1 and Level 2: Version 5.59

3.2 Auxiliary Files

AATSR processing uses the following auxiliary files:

- Browse Product Lookup Data (ATS_BRW_AX)
- L1b Characterisation Data (ATS_CH1_AX)
- Cloud Lookup Table Data (ATS_CL1_AX)
- General Calibration Data (ATS_GC1_AX)
- AATSR Instrument Data (ATS_INS_AX)
- Visible Calibration Coefficients Data (ATS_VC1_AX)
- L1b Processing Configuration Data (ATS_PC1_AX)
- L2 Processing Configuration Data (ATS_PC2_AX)
- SST Retrieval Coefficients Data (ATS_SST_AX)
- LST Land Surface Temperature Coefficients Data (ATS_LST_AX)

The latest filename for each auxiliary file in use in the PDS is as follows:

Product name
ATS_BRW_AXVIEC20020123_072338_20020101_000000_20200101_000000
ATS_CH1_AXVIEC20021114_113144_20020301_000000_20070801_235959
ATS_CL1_AXVIEC20020123_073044_20020101_000000_20200101_000000
ATS_GC1_AXVIEC20020123_073430_20020101_000000_20200101_000000
ATS_INS_AXVIEC20030731_092706_20020301_000000_20070801_235959
See below for VC1 files
ATS_LST_AXVIEC20040311_095537_20020301_000001_20070801_235959
ATS_PC1_AXVIEC20040812_063722_20020301_000000_20070801_235959
ATS_PC2_AXVIEC20020123_074151_20020101_000000_20200101_000000
ATS_SST_AXVIEC20051205_102103_20020101_000000_20200101_000000

Table 3-1 Latest auxiliary files currently in use by the PDS

3.2.1 STATUS OF DAILY VISIBILE CALIBRATION FILES

3.2.1.1 VC1 File Availability

Reflectance channel calibration files were available for all dates, except:

- 29 November 2005*
- 02 December 2005*
- 20 December 2005
- 24 – 26 December 2005*
- 30 – 31 December 2005*
- 01 – 02 January 2006*

*No Level 0 files on the DDS

There were also no VC1 files generated on the dates when the out-gassing was taking place:

- 16th December 2005
- 17th December 2005
- 18th December 2005

During out-gassings and for a period of approx. 3 weeks after out-gassing, the supply of VC1 files once per orbit rather than once per day is recommended for optimum calibration (owing to oscillations in the visible channel signal of the order of 5% over a couple of days, caused by the returning thin layer of condensation). However, the current system is not designed to provide files at this frequency. Therefore, visible channel data will not be optimally calibrated during and for a period of approx. three weeks following out-gassing. Once this period has passed daily files are considered adequate and visible channel calibration returns to normal.

3.2.1.2 Other information on the daily visible calibration files

The long term drift rates of the AATSR visible channels for the period from October 2002 to December 2004 have been analysed, and at the end of the resulting technical note [Visible Channel Long Term Drift Analysis Using Desert Targets (PO-TN-RAL-AT-0542) D. Smith, Issue 1.0, 16 May 2005], the application of a systematic drift correction to AATSR L1b data was recommended.

In response to this report, the AATSR Quality Working Group recommended that the visible channel calibration auxiliary file (ATS_VC1_AX), issued daily to the Envisat PDS, should include a correction for this effect.

As a result, please note that all AATSR data acquired from 30 November 2005 onwards will contain this systematic correction for visible channel drift.

The first VC1 file to contain this correction was:

ATS_VC1_AXVIEC20051129_182740_20051127_190440_20051204_190440

generated on 29 November 2005. All VC1 files generated after this date will include the correction. The filenames of the auxiliary file applied to L1b data can be found in the Data Set Descriptors included in the Specific Product Header of each product.

Data acquired prior to 30 November 2005 does not yet contain this correction. This should be addressed during the second reprocessing of the AATSR data set, planned for spring 2006. In the meantime, users can correct their historical data themselves using the formula given in Section 4 of the above technical note.

3.2.2 STATUS OF OTHER AUXILIARY FILES

The following list highlights any of the other auxiliary files changed during this cycle.

Product name	**Date Introduced**	**Validity Range**	**Reason for Change**
ATS_SST_AXVIEC 20051205_102103_ 20020101_000000_ 20200101_000000	07/12/2005	00:00:00 01/01/2002 – 00:00:00 01/01/2020	The retrieval coefficients previously in use were based on the same atmospheric spectroscopy as was used for ATSR-1 and ATSR-2, which pre-dated the more recent releases of the HITRAN molecular spectroscopy database. This new set of retrieval coefficients are based on the HITRAN 2000 database.

4 PDS STATUS

4.1 Instrument Unavailability

AATSR data were unavailable due to instrument unavailability at the following times during the cycle:

UTC Start	UTC Stop	Reason	Reference	Planned
16th December 2005, 09:35:13	19th December 2005, 16:18:22	OUTGASSING	EN-UNA-2005/0478	YES

4.2 L0 Data Acquisition and L1b Processing Status

The L0 data were available for 99.51% of the time during the cycle.
The L1b data were available for 94.79% of the time during the cycle.

The following L0 and L1b data were missing from this cycle:

NB Missing L0 data are automatically also missing at L1b. Therefore the missing L1b data specifically reported in Table 4-2 represent additional data gaps where the start time does not coincide with L0 data already known to be missing.

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
11-Dec-2005 20:25	11-Dec-2005 21:35	4198	19779	19779
31-Dec-2005 03:57	31-Dec-2005 06:13	8202	20055	20056
31-Dec-2005 06:40	31-Dec-2005 07:18	2305	20057	20057

Table 4-1 ATS_NL__0P missing data during cycle 43

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
30-Nov-2005 21:18	30-Nov-2005 22:24	3956	19622	19622
06-Dec-2005 05:26	06-Dec-2005 06:56	5382	19698	19699
13-Dec-2005 00:33	13-Dec-2005 02:00	5226	19795	19796
14-Dec-2005 00:02	14-Dec-2005 01:30	5275	19809	19810
22-Dec-2005 05:24	22-Dec-2005 06:54	5376	19927	19928
22-Dec-2005 20:53	22-Dec-2005 22:28	5701	19936	19937
23-Dec-2005 12:42	23-Dec-2005 14:10	5280	19946	19947
23-Dec-2005 23:48	24-Dec-2005 01:22	5649	19952	19953
24-Dec-2005 15:29	24-Dec-2005 16:56	5232	19962	19963
24-Dec-2005 21:34	24-Dec-2005 23:11	5793	19965	19966
25-Dec-2005 07:11	25-Dec-2005 08:11	3625	19971	19972
25-Dec-2005 13:15	25-Dec-2005 14:51	5812	19975	19976
25-Dec-2005 19:50	25-Dec-2005 20:54	3836	19979	19979
25-Dec-2005 20:59	25-Dec-2005 22:36	5813	19979	19980

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
25-Dec-2005 22:41	26-Dec-2005 00:21	6006	19980	19981
26-Dec-2005 04:56	26-Dec-2005 07:40	9842	19984	19986
27-Dec-2005 04:26	27-Dec-2005 05:55	5397	19998	19999
28-Dec-2005 10:02	28-Dec-2005 13:12	11429	20016	20018
28-Dec-2005 15:02	28-Dec-2005 16:28	5155	20019	20020
29-Dec-2005 12:53	29-Dec-2005 14:21	5271	20032	20033
30-Dec-2005 15:40	30-Dec-2005 17:05	5156	20048	20049
31-Dec-2005 06:13	31-Dec-2005 06:40	1578	20056	20057
31-Dec-2005 21:09	01-Jan-2006 03:23	22424	20065	20069

Table 4-2 ATS_TOA_1P missing data during cycle 43

4.2.1 ORBITS AFFECTED BY POOR DATA QUALITY

The information reported in Table 4-1 & Table 4-2 does not consider the quality of data, only whether or not it is available.

In the following orbits, the planned out-gassing had a major effect upon the quality of the data:

- 19844-19889

The data from the infrared channels are unavailable for the orbits in question, whilst those from the visible channels are poorly calibrated. For a period of approximately 3 weeks after out-gassing, visible channel data is not optimally calibrated.

4.3 L0 and L1b Backlog Processing Status

The list of data missing during the previous cycle has not changed.

5 DATA QUALITY CONTROL

5.1 Monitoring of Instrument Parameters

5.1.1 JITTER

The average scan-mirror jitter rate during most of this cycle was 0.03 jitters/sec or better.

Note that occasional, short duration periods of higher jitter-rate do occur.

During this period, short bursts of relatively high jitter were detected between orbits 19621 and 19720 between November 30 and December 07.

During this period the jitter rate occasionally reached 0.2 jitters/sec.

Users should check the jitter rate during the period covered by their products by checking the Summary Quality Annotation Data Sets (using EnviView, for example).

5.1.2 SENSOR TEMPERATURE

All sensors maintained their nominal orbital and seasonal ranges in this cycle, except during the out-gassing period from December 16 to 19 when the thermal detectors and the 1.6um detector were uncooled and therefore at ambient temperature.

5.1.3 VISCAL

Reflectance channel calibration files are available for all days except:

- November 29
- December 02, 16-18 (out-gassing), 20, 24-26, 30-31,
- January 01-02

Nominal viscal characteristics were observed throughout the cycle where data were available.

5.1.4 NEΔT

Remained nominal throughout the cycle.

	Hot BB T = 300.91K		Cold BB T = 262.23K	
	Count	**NEΔT (mK)**	**Count**	**NEΔT (mK)**
12µm	1.36	29.1	1.07	31.3
11µm	1.38	28.2	1.03	30.9
3.7µm	2.31	29.2	1.12	70.3

Table 5-1 NEDT data for Cycle 43

5.2 User Rejections

There were no user rejections during this cycle.

5.3 Software Problem Reporting

This section describes the open SPRs, their potential impact on the data quality, and SPRs that have been closed.

5.3.1 EXISTING SPRS THAT ARE STILL OPEN

Unphysical sea surface temperature values in Level 2 AATSR products from PDHS-E at intervals of 480 rows:
Open – The investigation shows that the problem does not happen using the IPF 5.59 with respect to the IPF 5.52 on which the problem was detected. Further information on the changes introduced in V5.59 has been requested.

50 / 17 km Cell Size Anomaly in AST product:
Open – The reason for this effect is understood, but it is proposed that the cell size should stay as-is until further consultation with AATSR users has taken place.

Inconsistent values in AST confidence word, 17 km cell:
Investigation completed - to be corrected with a patch at the next appropriate opportunity.

5.3.2 NEW SPRS SINCE THE LAST CYCLIC REPORT

There are no new SPRs since the last Cyclic Report.

5.3.3 CLOSED SPRS

No SPRs have been closed since the last Cyclic Report.

6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

6.1 Calibration

No additional calibration results were reported during this cycle.

6.2 Validation

Due to issues with the MET Office Buoy analysis routines, there are no validation results to be reported for this cycle.

Cyclic report 44 shall include the results for this cycle, as well as those for the next reporting period.

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.