ENVISAT - AATSR

CYCLIC REPORT #87

	START	END
DATE	15TH FEBRUARY 2010	22ND MARCH 2010
TIME	21:59:29	21:59:29
ORBIT #	41638	42138
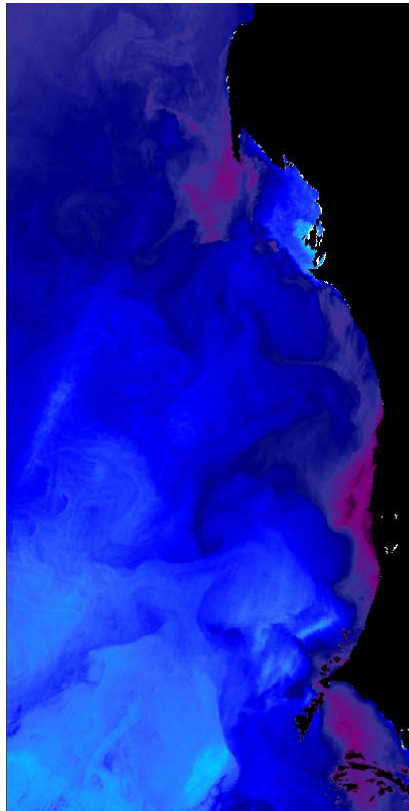
This nadir 11µm brightness temperature image from orbit 41803, acquired on the 27th February 2010, reveals the sea surface eddies just off the coast of western Africa. The sea surface temperatures range from 291K (purple) to 297.7K (light blue).

A P P R O V A L

Title *titre*	AATSR Cyclic Report – Cycle 87	issue *issue*	1	revision *revision*	0

author *auteur*	Sophie Cowie	date *date*	26 January 2010

approved by *approuvé par*		date *date*	

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

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T A B L E   O F   C O N T E N T S

AATSR CYCLIC REPORT # 87

1 INTRODUCTION

The AATSR Cyclic Report is distributed by the AATSR IDEAS 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
APC	Antenna Pointing Controller
CR	Cyclic Report
DDS	Data Dissemination System
DMOP	Detailed Mission Operation Plan
DMS	Data Management System
EN-UNA-YYYY/#	Envisat Unavailability (plus year and number)
ESOC	European Space Operation Centre
HSM	High Speed Multiplexer
IDEAS	Instrument Data quality Evaluation and Analysis Service
IECF	Instrument Engineering and Calibration Facilities
IPF	Instrument Processing Facilities
LUT	Look Up Table
MPS	Mission Planning Schedule
NRT	Near Real Time
OCM	Orbit Control Manoeuvre
OBDH	On-board Data Handling
PDS	Payload Data Segment
PMC	Payload Management Computer
RAL	Rutherford Appleton Laboratory
SPR	Software Problem Reporting
SSR	Solid State Recorder
SW	Software
VISCAL	Visible Calibration

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

2 SUMMARY

Cyclic Report: 87

Cycle Start: 15th February 2010, 21:59:29   Orbit #: 41638

Cycle End: 22nd March 2010, 21:59:29   Orbit #: 42138

The main activities during the cycle have been as follows:

- **ENVISAT Orbit Control Manoeuvre (OCM)**

  AATSR was unavailable from 15th February 2010 22:04:51 to 16th February 2010 06:59:52 UTC due to a planned OCM.

- **NRT Dissemination Delay**

  NRT dissemination was delayed on the following occasions during the cycle:

  - An anomaly preventing the nominal generation and dissemination of Envisat Near Real Time (NRT) data towards the PDHS-E (ESRIN) occurred on the 23rd February 2010 at ESRIN due to hardware failure. All backlogs were recovered.

3 SOFTWARE & AUX FILE VERSION CONFIGURATION

3.1 Software Version

AATSR IPF for Level 1 and Level 2:   Version 6.02L02

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_AXVIEC20070720_093530_20020301_000000_20200101_000000
ATS_CL1_AXNIEC20070223_102348_20010308_120446_20120801_235959
ATS_GC1_AXVIEC20070720_093834_20020301_000000_20200101_000000
ATS_INS_AXVIEC20070720_094014_20020301_000000_20200101_000000
See below for VC1 files
ATS_LST_AXVIEC20070720_094144_20020301_000001_20200101_000000
ATS_PC1_AXVIEC20070720_094312_20020301_000000_20200101_000000
ATS_PC2_AXVIEC20020123_074151_20020101_000000_20200101_000000
ATS_SST_AXVIEC20051205_102103_20020101_000000_20200101_000000

Table 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

The daily reflectance channel calibration files were available for all dates during this cycle.

3.2.2 STATUS OF OTHER AUXILIARY FILES

No auxiliary files changed during this cycle.

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
15/02/2010 22:04	16/02/2010 06:59	OCM	EN-UNA-2010/0047	Yes

Table 2 Instrument unavailability during cycle 87

4.2 L0 Data Acquisition and L1b Processing Status

#	Week		Orbit		Availability (s)			Availability (%)		
	Dates		Start	Stop	Inst Unav	L0 gaps	L1 gaps	Instrument	L0	L1
1	February 15, 2010		41638	41737	32101	0	0	94.69%	94.69%	94.69%
2	February 22, 2010		41738	41837	2052	0	0	99.66%	99.66%	99.66%
3	March 1, 2010		41838	41938	0	0	0	100.00%	100.00%	100.00%
4	March 8, 2010		41939	42038	0	0	0	100.00%	100.00%	100.00%
5	March 15, 2010		42039	42138	0	0	0	100.00%	100.00%	100.00%

Table 3 Instrument and data unavailability weekly summary for cycle 87

The instrument was available for 98.97% of the time during the cycle.
The L0 data were available for 98.87% of the time during the cycle.
The L1b data were available for 98.97% of the time during the cycle.

The following L0 data was missing from this cycle:

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
15/02/2010 22:04	16/02/2010 06:59	32101	41638	41643
24/02/2010 15:19	24/02/2010 15:53	2052	41762	41762

Table 4 ATS_NL__0P missing data during cycle 87

No L1 data was missing from this cycle that was not associated with the missing L0 data reported above.

4.2.1 ORBITS AFFECTED BY POOR DATA QUALITY

During this cycle, the following orbits contained frames suffering from bad/missing telemetry:

- 41719   (21st Feb 2010)
- 41731   (22nd Feb 2010)

4.3   L0 and L1b Backlog Processing Status

There is no update available on the status of backlog processing.

5   DATA QUALITY CONTROL

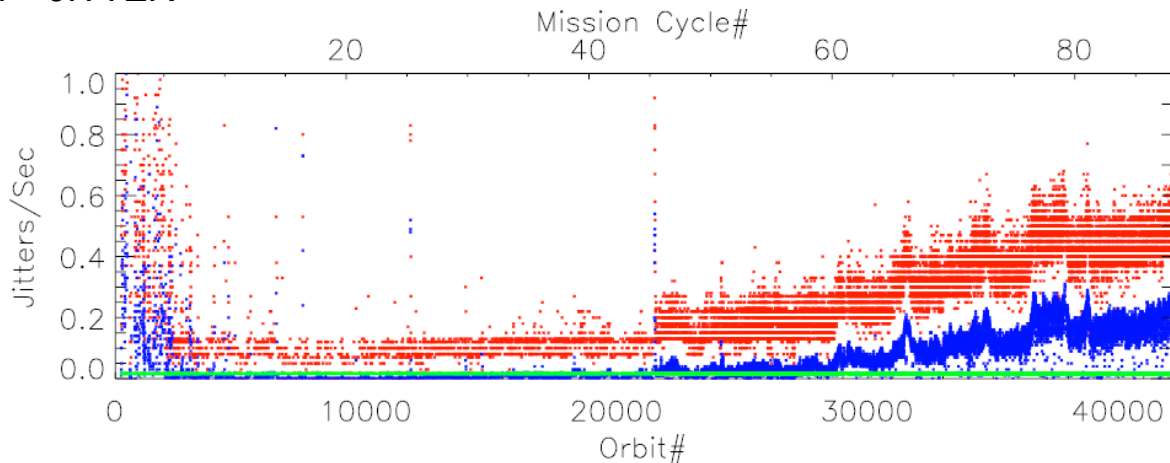## *5.1   Monitoring of Instrument Parameters*

5.1.1   JITTER

Figure 5-1 Jitter trend from mission start

The plot shows the jitter-trend since the start of the mission, against both orbit-number and cycle-number. The mean jitter-rate (per-orbit) is shown in blue and the maximum rate per orbit in red. The green horizontal line shows the nominal mean jitter-level achieved for much of the mission. The Jitter plot shows no significant rate-change with respect to the previous cycle.

5.1.2   SENSOR TEMPERATURE

The detector temperature plots for cycle 86 can be found at:

http://aatsr2.ag.rl.ac.uk/data2/aatsr2/EDS-X/CyclePlots/DetTemps87.pdf

While in measurement mode, all sensors maintained their nominal orbital and seasonal ranges in this cycle. The detector temperatures have remained nominal.

5.1.3   VISCAL

NRT calibration quality for AATSR reflectance channels has been maintained throughout this cycle.

In addition, the following set of "orbital" VC1 files was delivered:
http://aatsr2.ag.rl.ac.uk/data2/aatsr2/EDS-X/CyclePlots/VC1-87.txt

5.1.4   NEΔT

	Hot BB T = 300.07K		**Cold BB** T = 260.88K	
	Count	**NEΔT (mK)**	**Count**	**NEΔT (mK)**
12µm	1.6	33.9	1.2	35.4
11µm	1.52	31.2	1.11	34
3.7µm	2.43	30.6	1.17	75.1

Table 5 NEΔT data for 13th Feb 2010

	Hot BB T = 301.36K		**Cold BB** T = 262.66K	
	Count	**NEΔT (mK)**	**Count**	**NEΔT (mK)**
12µm	1.64	34.4	1.22	35.5
11µm	1.58	32.1	1.15	34.4
3.7µm	2.53	31.9	1.21	74.9

Table 6 NEΔT data for 10th Jan 2010

	Hot BB T = 302.26K		**Cold BB** T = 263.77K	
	Count	**NEΔT (mK)**	**Count**	**NEΔT (mK)**
12µm	1.61	33.5	1.22	34.9
11µm	1.57	31.7	1.14	33.9
3.7µm	2.56	32.1	1.23	74.3

Table 7 NEΔT data for 6th Dec 2009

	Hot BB T = 301.87K		**Cold BB** T = 263.09K	
	Count	**NEΔT (mK)**	**Count**	**NEΔT (mK)**
12µm	1.66	34.6	1.24	35.8
11µm	1.59	32.2	1.15	34.3
3.7µm	2.56	32.2	1.22	74.9

Table 8 NEΔT data for 1st Nov 2009

The data shows that the instrument has remained stable for the last 4 cycles.

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

The following SPRs are still open:

Inconsistent values in AST Confidence word, 17 and 50km cells
NA-PR-07-02946
The AST confidence word may be incorrectly set for records where the nadir or dual view SST retrieval was invalid, indicating that the 3.7 micron channel was used (although this has no meaning in this instance). Although the wrongly set flags may be ignored as far as the 17km cell is concerned, they present a problem since they may propagate into the confidence word for the 50km cell. The problem does not occur for daytime (descending) arcs where the retrievals are valid for both views.
Note: this PR has been migrated to a new PR (IDEAS-PR-09-04805) on the current Linux IPF version. A fix has been introduced to the IPF to resolve this issue and testing is currently underway to confirm the problem has been resolved.

AATSR Consolidated Products
NA-PR-08-03952
The AATSR Flight Operations and Data Plan (FODP), PO-PL-ESA-AT-0152, Issue 2 Revision 5 dated 22 November 2001 defines the meaning of "consolidated" in Appendix B.1 as follows: "… time-ordered, no overlap nor data gap except when the instrument is not operated …", and for Level 0 there should be sufficient overlap only so that the higher level products can be chopped "… ANX to ANX …". The FODP is part of the high level agreement between ESA and Defra and so can be taken as the definitive requirement for AATSR products.

Update to AATSR Child product generation requirements
NA-PR-08-04015
The 'Child Product Generation Requirements' on pages 520-521 of the document 'PDS Technical Specification for Maintenance and Evolution' (PO-RF-CSF-GS-20437) currently reads:
"For time extraction, for each data set in the parent product, the time stamp of the DSRs shall be compared to that of the requested start time (t0) segment. The first DSR extracted from each data set to form the new child data set is the one with a time stamp immediately preceding or equal to t0. The last DSR extracted from each DS is the one immediately preceding t1."
To ensure that a sufficient number of Auxiliary Data Set Records are present in AATSR child products, the requirement should be changed to read as follows:
"For time extraction, for each data set in the parent product, the time stamp of the DSRs shall be compared to that of the requested start time (t0) segment. The first DSR extracted from each data set to form the new child data set is the one with a time stamp immediately preceding or equal to t0. The last DSR extracted from each DS is the one immediately preceding t1.

For AATSR data, the last ADS DSR extracted from each DS is the one whose time label is equal to or greater than t1 provided such a DSR exists, otherwise the last ADS DSR in the product."

5.3.2   NEW SPRS SINCE THE LAST CYCLIC REPORT

No new SPRs have been opened since the last Cyclic Report

5.3.3   CLOSED SPRS

No new SPRs have been closed since the last Cyclic Report

5.4   Monthly Level 3 Product

Monthly plots for February 2010 are unavailable for this report but will be included in the next cyclic report for cycle #88. These will consist of 428 products taken from orbits 41424 to 41823.

6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

6.1 Calibration

No calibration results were reported during this cycle.

6.2 Validation

The Met Office has validated the AATSR dual-view SST data using the global network of *in situ* drifting buoy SST data, the results for Cycle 87 being shown in Figure 6-1. The updated SST coefficients released in December 2005 were used in the AATSR SST retrievals.
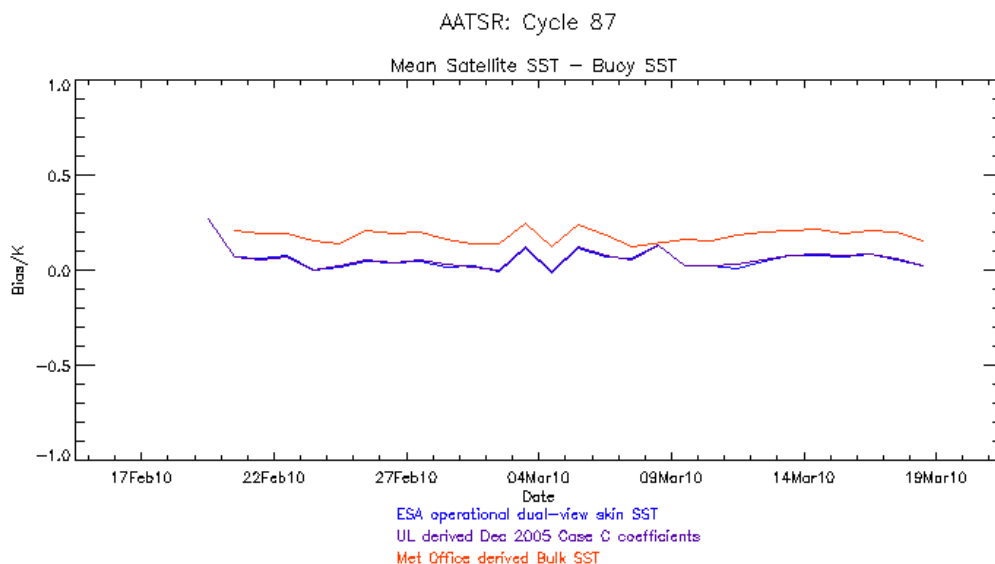

Figure 6-1 - Comparison of daily mean difference between 10′ AATSR SST values and in situ drifting buoy SST for Cycle 87. Data provided by the Met Office.

During cycle 87, there were 1523 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.024 K, standard deviation 0.24 K, and a mean (dual-view bulk SST minus buoy SST) of +0.147 K, standard deviation 0.23 K. A total of 1422 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.084 K, standard deviation 0.30 K, and a mean (dual-view bulk SST minus buoy SST) of +0.223 K, standard deviation 0.30 K. As these data are comparisons of a single point buoy measurement against a much larger spatially averaged value they are not a true indicator of AATSR's accuracy and are used to show consistency of data quality between cycles.

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A processing fault means validation data is not yet available for the entire cycle at the date this report is generated.
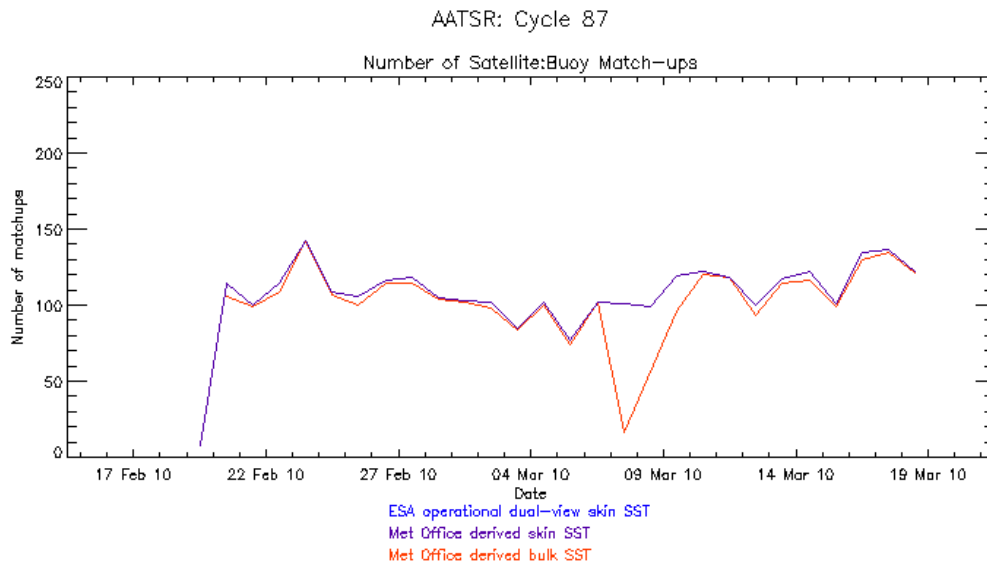
Figure 6-2 - Plot of daily number of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 87. Data provided by the Met Office.
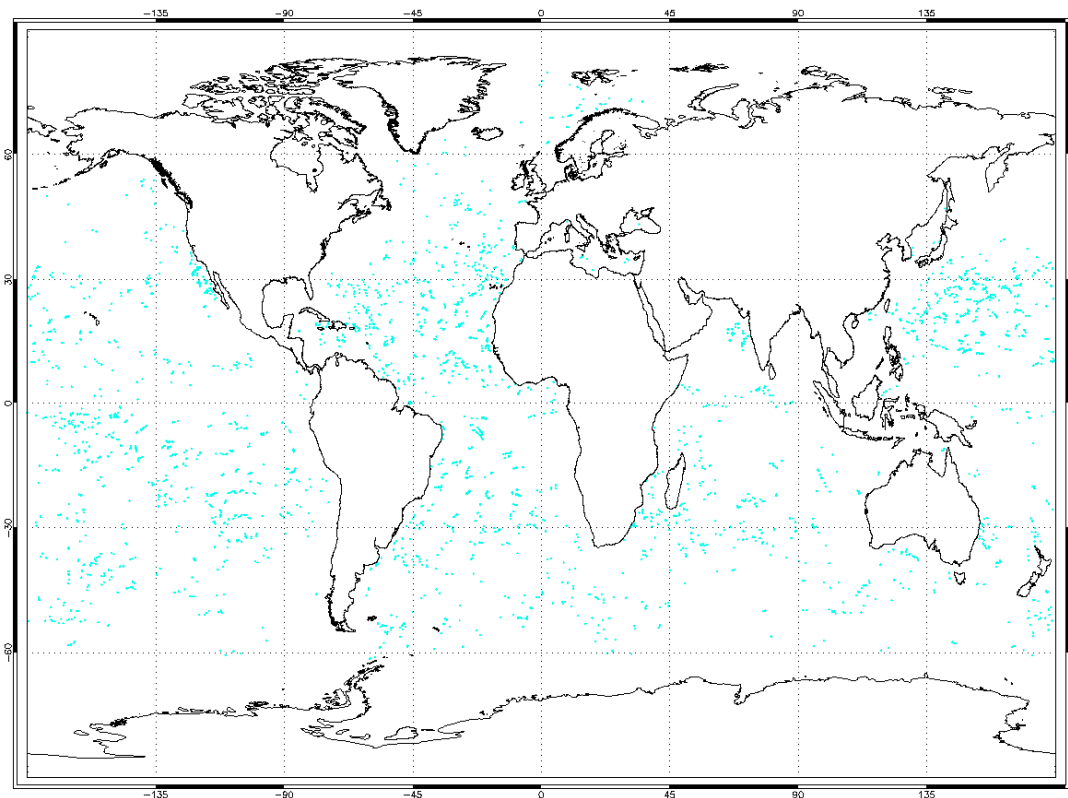

Figure 6-3 - Map showing global distribution of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 87. The cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.