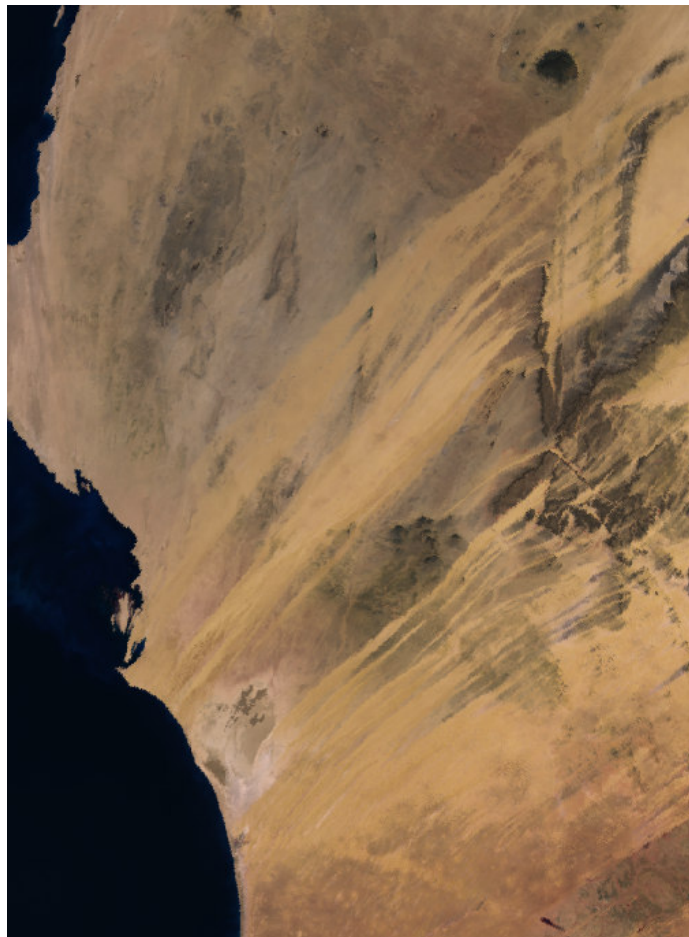


# ENVISAT - AATSR

## CYCLIC REPORT #64

	START	END
DATE	03 DEC 2007	07 JAN 2008
TIME	21:59:29	21:59:29
ORBIT #	30115	30615



Mauritania, 9<sup>th</sup> December 2007 – Daytime visible image showing the deserts of western Mauritania.

prepared by/préparé par	AATSR DPQC and QWG team
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## AATSR CYCLIC REPORT # 64

### 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
APC	Antenna Pointing Controller
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
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
SW	Software
VISCAL	Visible Calibration

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

## 2 SUMMARY

**Cyclic Report:** 64  
**Cycle Start:** 03 Dec 2007, 21:59:29 Orbit #: 30115  
**Cycle End:** 07 Jan 2008, 21:59:29 Orbit #: 30615

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 (6.01)

- **Visible channel calibration:**

The visible calibration data supplied as an aux file (ATS\_VC1\_AX) continued to be regularly updated throughout the cycle.

- **Envisat OCM:**

Due to the execution of an orbit control manoeuvre, during which AATSR is switched to heater mode, data is not available for the period 03 December 2007 22:00:00 to 05 December 2007 08:10:00.

- **AATSR anomaly:**

Following the OCM, AATSR experienced an anomaly during the transition from Heater to Measurement mode. It was subsequently recovered, data are unavailable from 05 December 2007 08:10:00 until 06 December 2007 07:29:00.

- **AATSR unavailability due to Envisat memory maintenance:**

Due to memory maintenance activities on the Envisat platform, AATSR data are unavailable for the period 13 December 2007 06:44:00 to 14 December 2007 08:30:00.

## 3 SOFTWARE & AUX FILE VERSION CONFIGURATION

### 3.1 Software Version

AATSR IPF for Level 1 and Level 2: Version 6.01

### 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_20200101_000000
ATS_CL1_AXNIEC20070223_102348_20010308_120446_20120801_235959
ATS_GC1_AXVIEC20041214_154941_20020301_000000_20200101_000000
ATS_INS_AXVIEC20030731_092706_20020301_000000_20200101_000000
See below for VC1 files
ATS_LST_AXVIEC20040311_095537_20020301_000001_20200101_000000
ATS_PC1_AXVIEC20040812_063722_20020301_000000_20200101_000000
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 VISIBLE CALIBRATION FILES

#### *3.2.1.1 VC1 File Availability*

The daily reflectance channel calibration files were available for all dates, except for the following:

- 4<sup>th</sup> – 6<sup>th</sup> December 2007 (Envisat OCM and AATSR anomaly)
- 14<sup>th</sup> December 2007
- 19<sup>th</sup> December 2007 – 5<sup>th</sup> January 2008\*
- 7<sup>th</sup> January 2008

\*The file transfer link between RAL and the IECF was not operational from 19 Dec; files were delivered manually to the system from 03 Jan. Nevertheless, acceptable reflectance-channels NRT calibration was maintained throughout. Automatic delivery was restored after the end of this cycle. The impact upon consolidated data is under investigation. In the case of any detrimental affects being discovered, this information will be circulated via EOHlp.

The orbital VC1 files continued to be generated from the available L0 data, including the backlog that developed during the link outage.

### 3.2.2 STATUS OF OTHER AUXILIARY FILES

No other 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:

UTC Start	UTC Stop	Reason	Reference	Planned
03-Dec-2007 22:00:00	05-Dec-2007 08:10:00	Envisat OCM	EN-UNA-2007/0258	Yes
05-Dec-2007 08:10:00	06-Dec-2007 07:29:00	AATSR to STANDBY/REFUSE	EN-UNA-2007/0264	No
13-Dec-2007 06:44:00	14-Dec-2007 08:17:00	Envisat Memory Maintenance	EN-UNA-2007/0280	Yes

Table 4-1 Instrument unavailability during cycle 64

### 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	December 3, 2007	30115	30214	206940	153300	0	65.78%	40.44%	40.44%
2	December 10, 2007	30215	30314	91980	22589	0	84.79%	81.06%	81.06%
3	December 17, 2007	30315	30415	0	4169	0	100.00%	99.31%	99.31%
4	December 24, 2007	30416	30515	0	22458	0	100.00%	96.29%	96.29%
5	December 31, 2007	30516	30615	0	0	0	100.00%	100.00%	100.00%

Table 4-2 Instrument and data unavailability weekly summary for cycle 64

The instrument was available for 90.12% of the time during the cycle.

The L0 data were available for 83.42% of the time during the cycle.

The L1b data were available for 83.42% of the time during the cycle.

The following L0 data was missing from this cycle:

NB Missing L0 data are automatically also missing at L1b; there were no additional missing L1b data during this cycle.

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
05-Dec-2007 08:10	06-Dec-2007 07:29	83940	30135	30149
06-Dec-2007 07:29	06-Dec-2007 20:39	47426	30149	30157
07-Dec-2007 05:49	07-Dec-2007 11:55	21934	30162	30166
11-Dec-2007 11:28	11-Dec-2007 13:10	6113	30223	30224
14-Dec-2007 09:54	14-Dec-2007 09:55	4	30265	30265
16-Dec-2007 01:30	16-Dec-2007 06:05	16472	30288	30291
24-Dec-2007 19:35	24-Dec-2007 20:44	4169	30414	30414
28-Dec-2007 03:05	28-Dec-2007 04:21	4539	30461	30462
28-Dec-2007 04:21	28-Dec-2007 04:47	1553	30462	30462
28-Dec-2007 23:43	29-Dec-2007 04:16	16366	30473	30476

Table 4-3 ATS\_NL\_\_OP missing data during cycle 64



#### 4.2.1 ORBITS AFFECTED BY POOR DATA QUALITY

The information reported in Section 0 does not consider the quality of data, only whether or not it is available.

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

- 30169 (7<sup>th</sup> December 2007)
- 30227 (11<sup>th</sup> December 2007)
- 30268 (14<sup>th</sup> December 2007)
- 30270 (14<sup>th</sup> December 2007)
- 30280 (15<sup>th</sup> December 2007)
- 30513 (31<sup>st</sup> December 2007)
- 30568 (4<sup>th</sup> January 2008)
- 30584 (5<sup>th</sup> January 2008)
- 30585 (5<sup>th</sup> January 2008)
- 30611 (7<sup>th</sup> January 2008)

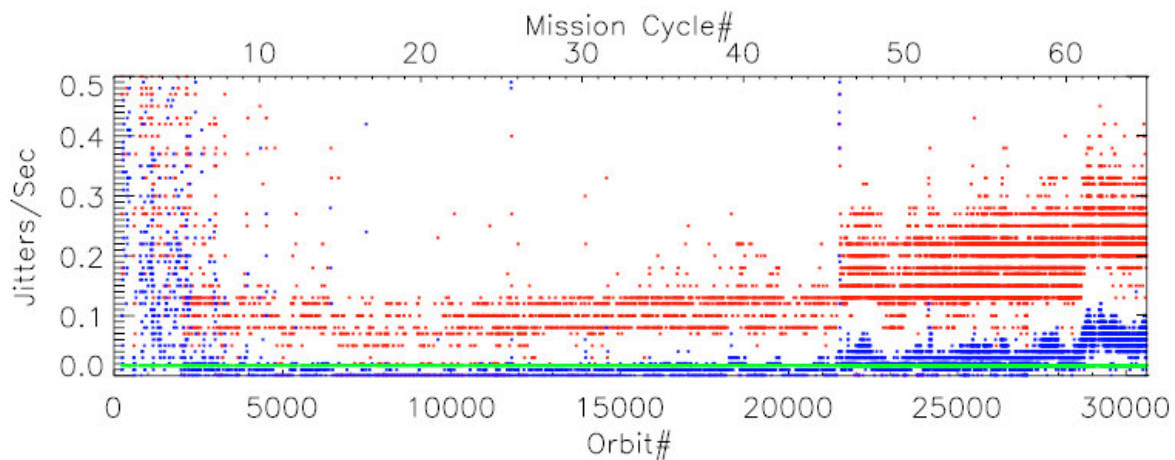
#### **4.3 L0 and L1b Backlog Processing Status**

No data has been retrieved via backlog processing in the cycle.

## 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 some minor deterioration with respect to the previous cycle. There is no significant deterioration in image quality associated with these jitter levels, but this is continually monitored.

#### 5.1.2 SENSOR TEMPERATURE

While in measurement mode, all sensors maintained their nominal orbital and seasonal ranges in this cycle.

### 5.1.3 VISCAL

ATS\_VC1\_AX file generation was off during Envisat OCM and memory maintenance activities between December 03 to Dec 06, and Dec 13 when AATSR was in STANDBY mode. In addition the RAL to IECF secure file transfer link was down between Dec 19 and Jan 04. Prior to the link outage, "daily" or NRT VC1 files were provided, when AATSR was in MEASUREMENT mode, for all days in this cycle except Dec 14. After the link was restored, automatic daily VC1 file deliveries were not restarted until after the end of this cycle. Acceptable reflectance-channels NRT calibration was nevertheless maintained throughout.

The following set of "orbit-by-orbit" VC1 files have been now been delivered, including the backlog that developed during the link outage:

<http://aatsr2.ag.rl.ac.uk/data2/aatsr2/EDS-X/CyclePlots/VC1-64.txt>

### 5.1.4 NE $\Delta$ T

The information for this section is not available for this cycle, and will be published in the next cyclic report (#65).

## 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.

### 5.3.2 NEW SPRS SINCE THE LAST CYCLIC REPORT

No SPRs have been opened since the last Cyclic Report.

### 5.3.3 CLOSED SPRS

No SPRs have been closed since the last Cyclic Report.

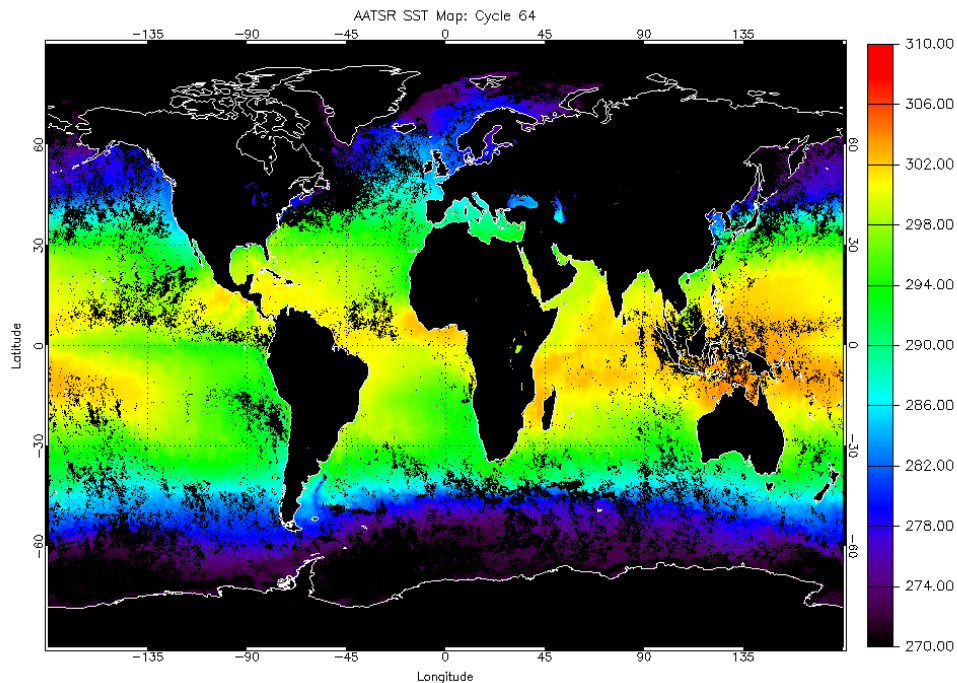
## 6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

### 6.1 Calibration

No additional calibration results were reported during this cycle.

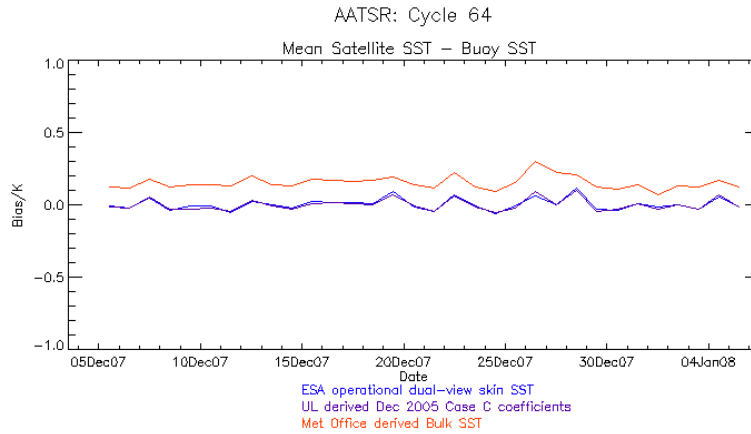
### 6.2 Validation

A monthly mean global dual-view SST plot for Cycle 64 composed from ATS\_AR\_2P 10' data is shown below in Figure 6-1. The monthly mean contains day time and night time data.



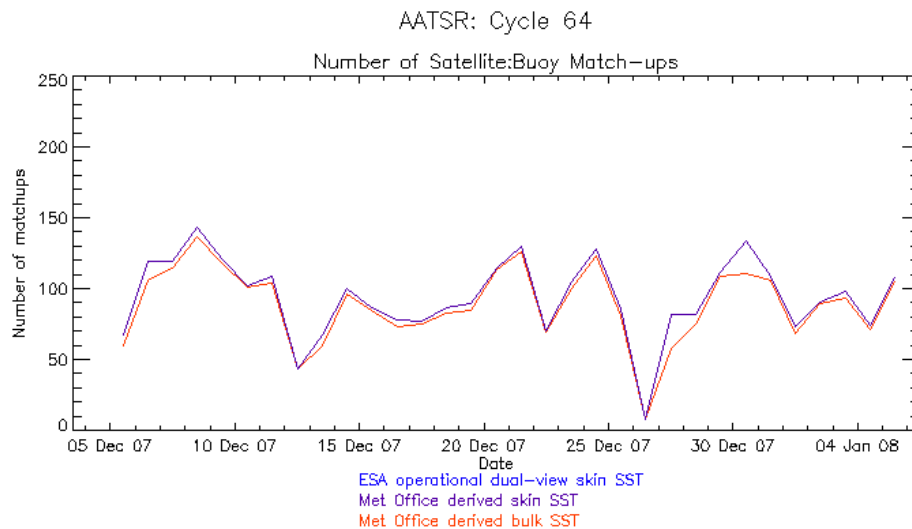
**Figure 6-1: Monthly Global Average dual-view SST for Cycle 64.**

The Met Office has validated the AATSR dual-view SST data using the global network of *in situ* buoy SST data, the results for Cycle 64 being shown in Figure 6-2. The updated SST coefficients released in December 2005 were used in the AATSR SST retrievals.

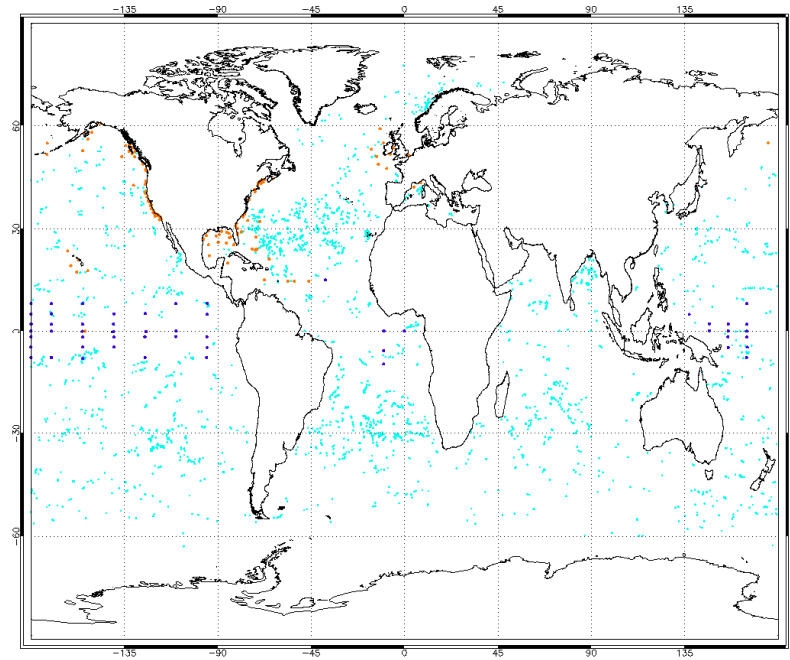


**Figure 6-2: Comparison of daily mean difference between 10' AATSR SST values and in situ buoy SST for Cycle 64. Data provided by the Met Office.**

During cycle 64, there were 1602 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of -0.033 K, standard deviation 0.28 K, and a mean (dual-view bulk SST minus buoy SST) of +0.114 K, standard deviation 0.26 K. A total of 1348 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.029 K, standard deviation 0.33 K, and a mean (dual-view bulk SST minus buoy SST) of +0.175 K, standard deviation 0.32 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.



**Figure 6-3: Plot of daily number of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 64. Data provided by the Met Office.**



**Figure 6-4: Map showing global distribution of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 64. The red dots indicate a match-ups to a moored buoy; the cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.**

A complete update on the status of the instrument validation can be found in Section 1.6.2 of Cyclic Report 28.

## **7      DISCLAIMERS**

No new disclaimers have been issued during this cycle.