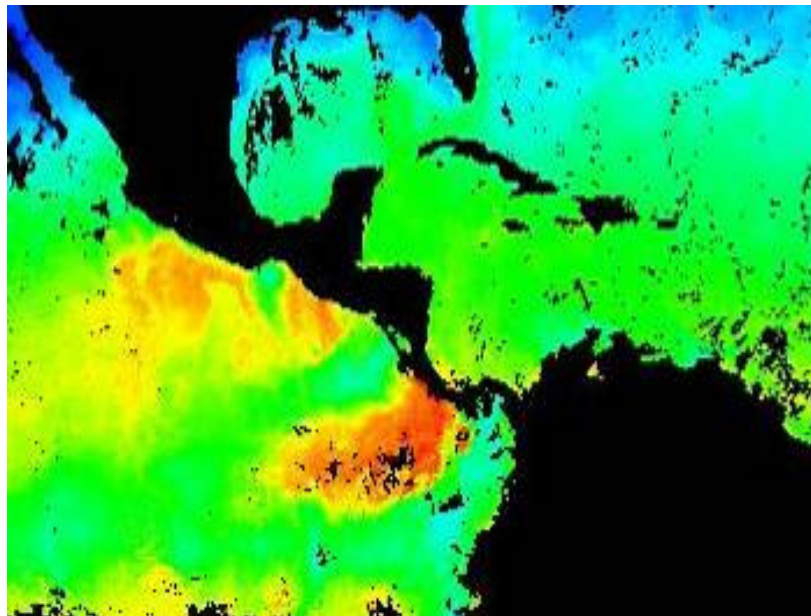

ENVISAT - AATSR

CYCLIC REPORT #77

	START	END
<i>DATE</i>	<i>02 MARCH 2009</i>	<i>06 APRIL 2009</i>
<i>TIME</i>	<i>21:59:29</i>	<i>21:59:29</i>
<i>ORBIT #</i>	<i>36628</i>	<i>37128</i>



Extract from level 3 product showing the monthly average Dual View SST from March 2009.
Further details are available in section 5.4.

prepared by/préparé par	AATSR IDEAS and QWG team
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A P P R O V A L

Title <i>titre</i>	AATSR Cyclic Report – Cycle 77	issue 1 <i>issue</i>	revision 1 <i>revision</i>
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author <i>auteur</i>	Rubinder Mannan	date <i>date</i>	20 April 2009
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approved by <i>approuvé par</i>	date <i>date</i>
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C H A N G E L O G

reason for change / <i>raison du changement</i>	issue/ <i>issue</i>	revision/ <i>revision</i>	date/ <i>date</i>
Initial Issue	1	0	17/04/2009
Black-Body Cross-Over test incorrectly identified as Instrument Out gassing	1	1	20/04/2009

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

Issue: 1 Revision: 1

reason for change/ <i>raison du changement</i>	page(s)/ <i>page(s)</i>	paragraph(s)/ <i>paragraph(s)</i>
Black-Body Cross-Over test incorrectly identified as Instrument Out gassing	2	

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AATSR CYCLIC REPORT # 77

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
SSR	Solid State Recorder
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: 77

Cycle Start: 02 March 2009, 21:59:29 Orbit #: 36628

Cycle End: 06 April 2009, 21:59:29 Orbit #: 37128

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)

- **Envisat Orbit Control Manoeuvre:**

An Envisat Orbit Control Manoeuvre (OCM) has been scheduled for 7 April 2009 and the following planned instrument unavailability period for AATSR is foreseen: 6-Apr 2009 23:44 to 7-Apr 2009 06:50 UTC. Further information will be included in the next Cyclic Report.

- **Upcoming AATSR Instrument Black-Body Cross-Over test**

An instrument Black-Body Cross-Over test has been scheduled for the AATSR instrument from 21 April 2009 07:50:00 and is expected to be completed by 23 April 2009 08:40:00.

For this period, scientific data will not be optimally calibrated.

- **Envisat NRT dissemination delays at PDHS-K (Kiruna):**

- Due to urgent maintenance at the PDHS-K (KIRUNA) processing facilities, notification was received that the KIRUNA Rolling Archive (RA) would be interrupted on 5 March 2009 between 16:00 CET and 19:00 CET.
- Due to required interventions at the PDHS-K (KIRUNA) facilities, there was an interruption to the Envisat Near Real Time (NRT) production / dissemination services on Thursday 19 March 2009 between 08:00 and 16:00 UTC (09:00 and 17:00 CET). The Kiruna Rolling Archive (RA) and Envisat Web File Server (EWFS) were also unavailable during that time. Envisat acquisitions and L0 data productions were not impacted during the intervention.
- An unavailability problem on the Kiruna Rolling Archive was flagged with Level 1 products on 29 March 2009. This was caused by orbit 37006 containing a large number of CRC errors and missing packets. Although the productivity problem was resolved, the large numbers of duplicate products from this orbit were still available on the RA.

Recovery dissemination activity was performed on 01 April 2009.

- **Maintenance at PDHS-E (ESRIN):**

The required interventions at the PDHS-E (ESRIN) processing facilities, which were originally announced for 4 March were postponed to Tuesday 10 March 2009 from 9:00 to 13:00 CET.

The ESRIN Rolling Archive (RA) and Envisat Web File Server (EWFS) were therefore unavailable during this time.

- **Kiruna EWFS (Envisat Web File Server) - service resumed**

The anomaly causing the suspension of the EWFS Kiruna service since end of November 2008 has been resolved, and the EWFS service from Kiruna has been resumed.

The repopulation of data files has been completed and Kiruna is once again included on the centralised EWFS web page accessing from ESRIN (PDHS-E).

- **AATSR ordering on EOLI-SA disabled**

As the complete ENVISAT AATSR mission is available on-line via the MERCI tool with also Near-Real Time products available on the Rolling Archive, the possibility to order these products has been disabled in EOLI-SA. Catalogue search and browsing is however still available.

Access to AATSR data can be obtained by submitting a registration at [EOPI](#).

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_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 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:

- 25 March 2009

The orbital VC1 files continued to be generated from the available L0 data.

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
None				

Table 4-1 Instrument unavailability during cycle 77

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	March 2, 2009	36628	36727	0	0	0	100.00%	100.00%	100.00%
2	March 9, 2009	36728	36827	0	5940	0	100.00%	99.02%	99.02%
3	March 16, 2009	36828	36928	0	3848	0	100.00%	99.36%	99.36%
4	March 23, 2009	36929	37028	0	0	0	100.00%	100.00%	100.00%
5	March 30, 2009	37029	37128	0	0	0	100.00%	100.00%	100.00%

Table 4-2 Instrument and data unavailability weekly summary for cycle 77

The instrument was available for 100.00% of the time during the cycle.

The L0 data were available for 99.68% of the time during the cycle.

The L1b data were available for 99.68% 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
16-Mar-2009 05:35:05	16-Mar-2009 07:14:05	5940	36817	36818
19-Mar-2009 20:01:47	19-Mar-2009 21:05:55	3848	36869	36870

Table 4-3 ATS_NL__OP missing data during cycle 77

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:

- 37011 (29th March)
- 37022 (30th March)
- 37053 (1st April)
- 37096 (4th April)

4.3 *L0 and L1b Backlog Processing Status*

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

5 DATA QUALITY CONTROL

5.1 *Monitoring of Instrument Parameters*

5.1.1 JITTER

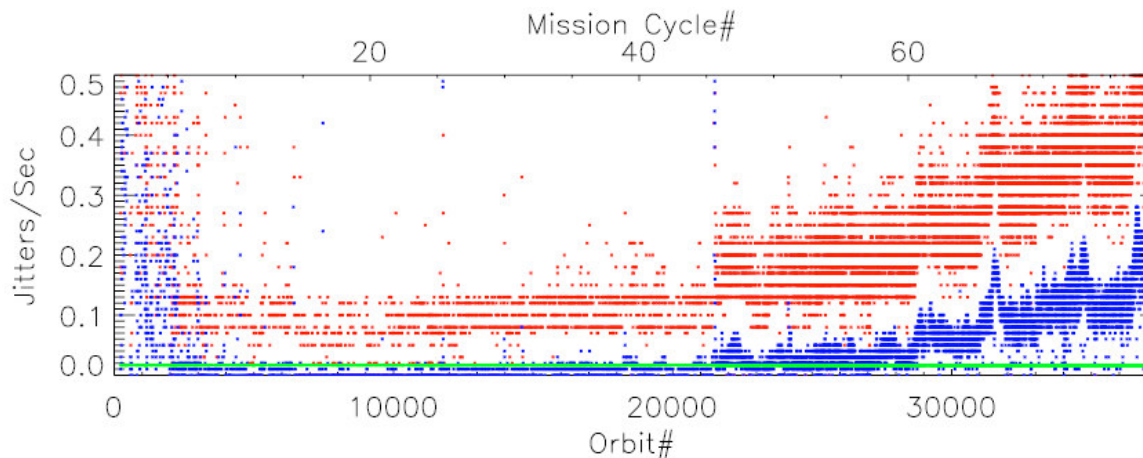


Figure 5.1 Jitter trend from mission start

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 plot shows no significant mean-rate change wrt the previous cycle.

5.1.2 SENSOR TEMPERATURE

The detector temperature plots for cycle 77 can be found at:

<http://aatsr2.ag.rl.ac.uk/data2/aatsr2/EDS-X/CyclePlots/DetTemps77.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/VC1-77.txt>

5.1.4 NE Δ T

This information will be included in a future Cyclic Report.

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.

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 Auxilliary 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(t_0) 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 t_0 . The last DSR extracted from each DS is the one immediately preceding t_1 .

For AATSR data, the last ADS DSR extracted from each DS is the one whose time label is equal to or greater than t_1 provided such a DSR exists, otherwise the last ADS DSR in the product."

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.

5.4 *Monthly Level 3 Product*

The following plots have been generated from the available meteo products acquired in March. This consists of 199 products taken from orbits 36600 to 37043. Figure 5.3, Figure 5.4, Figure 5.5 and Figure 5.6 show the SST average in dual and nadir views, the standard deviation and the number of contributory orbits for March 2009. Please note we are not able to provide absolute colour scales at this time, however the colouring scheme used is given in Figure 5.2 and the data ranges of each diagram are also given.



Figure 5.2 – This is the colour scheme used for the following plots, running linearly from left to right with increasing magnitude.

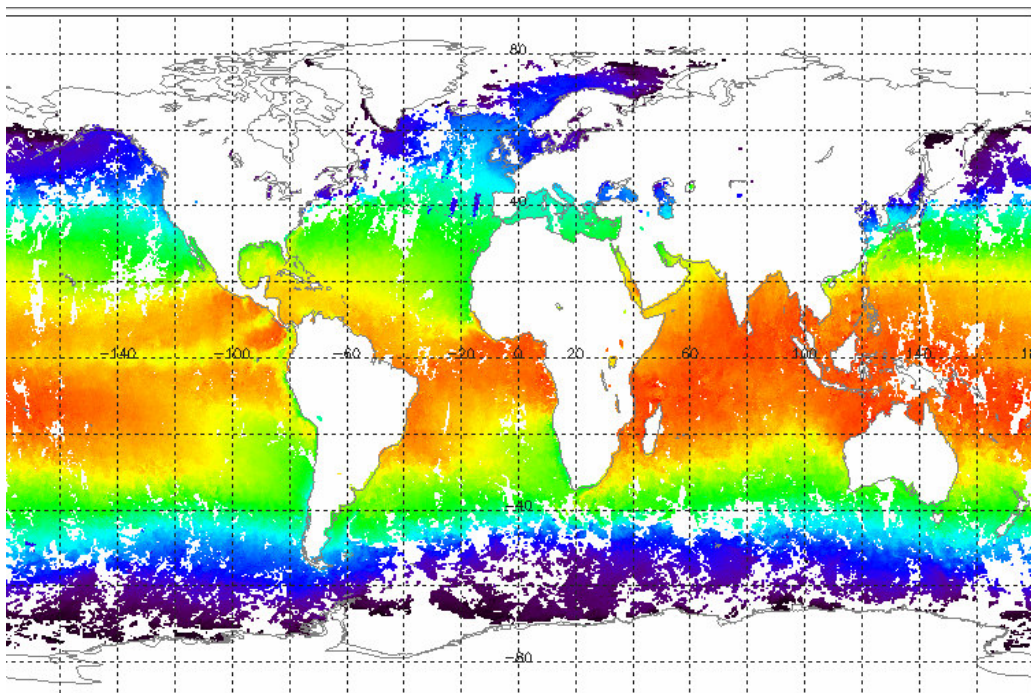


Figure 5.3 - This figure gives the monthly average Dual View SST, with a range of 270 - 305 Kelvin for March 2009.

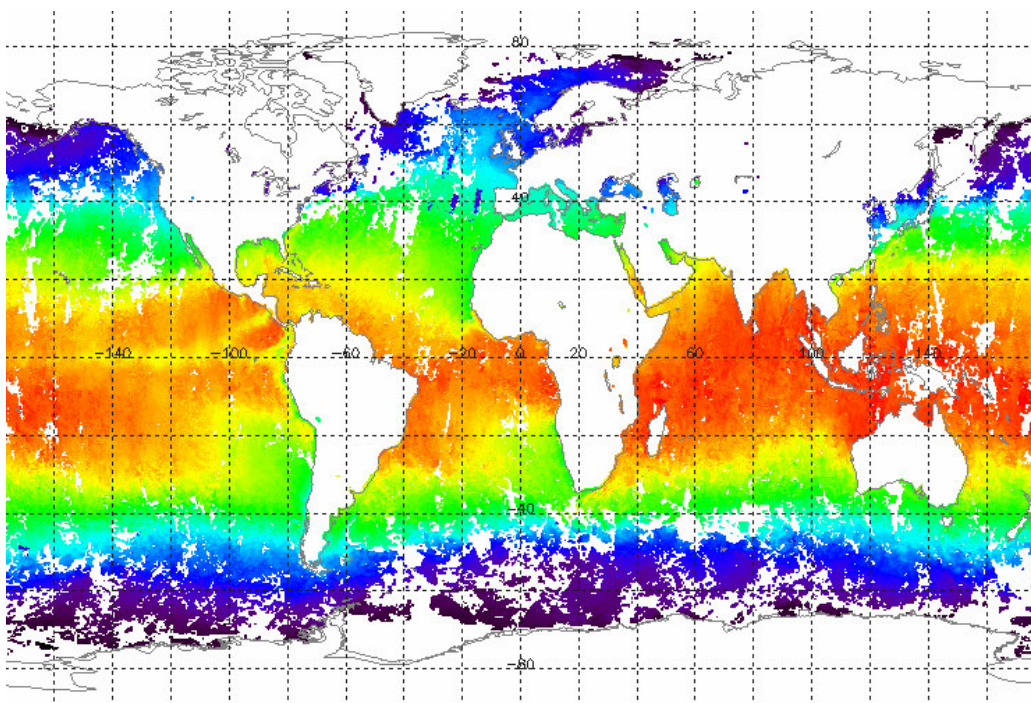


Figure 5.4 - This figure gives the monthly average Nadir SST, with a data range of 270 - 305 Kelvin for March 2009.

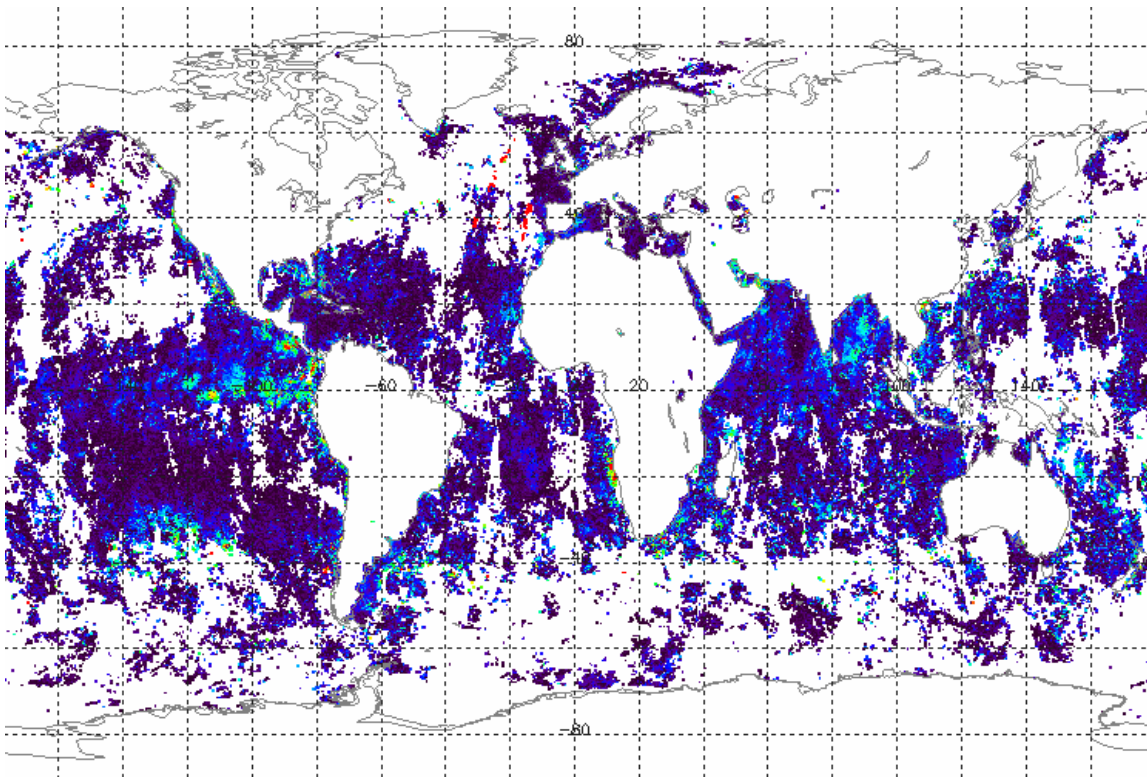


Figure 5.5 - The standard deviation of the monthly average in SST with a data range of 0 to 2 Kelvin for March 2009.

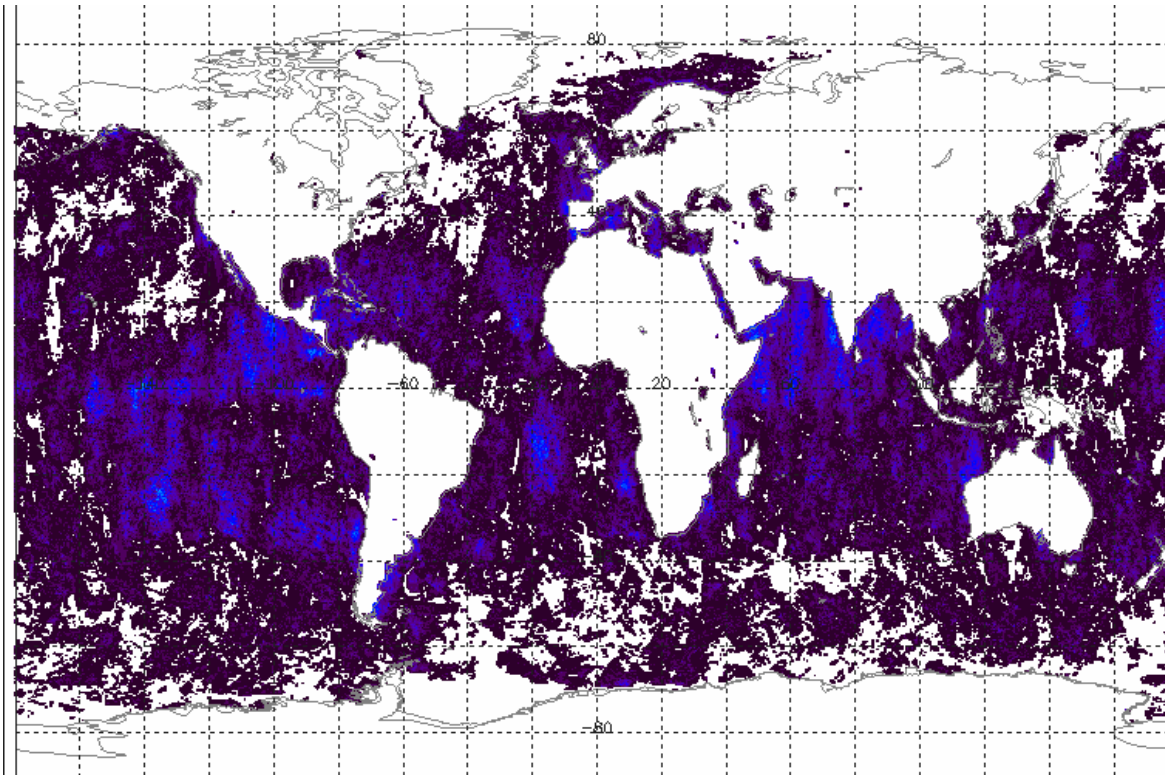


Figure 5.6 – The number of contributory orbits to the calculation of the SST, with a range of 0 to 24 for March 2009.

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 77 composed from ATS_AR_2P 10' data is shown below in Figure 6.1. The monthly mean contains day time and night time data.

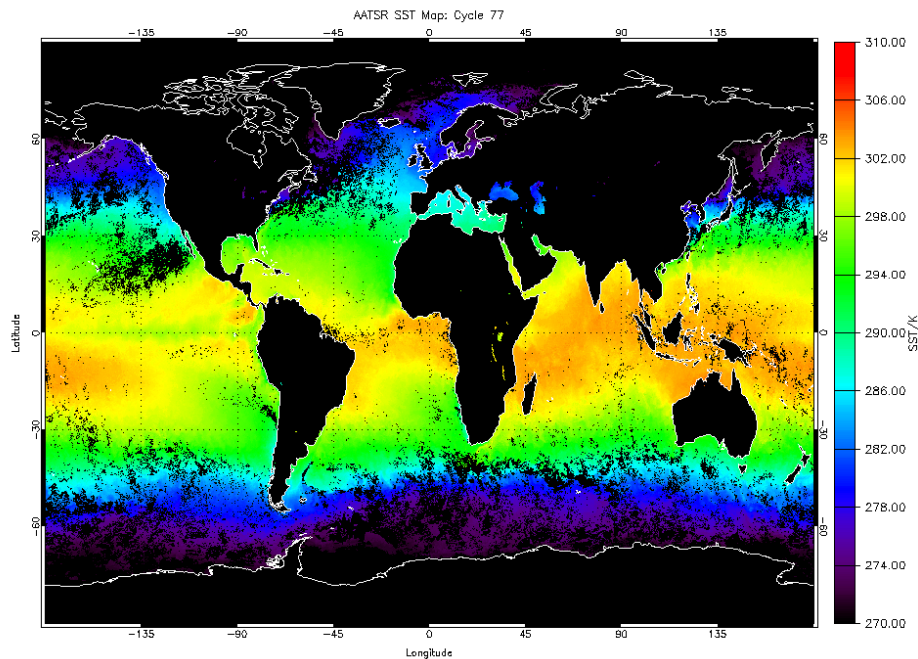


Figure 6.1: Monthly Global Average dual-view SST for Cycle 77

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 77 being shown in Figure 6.2. The updated SST coefficients released in December 2005 were used in the AATSR SST retrievals.

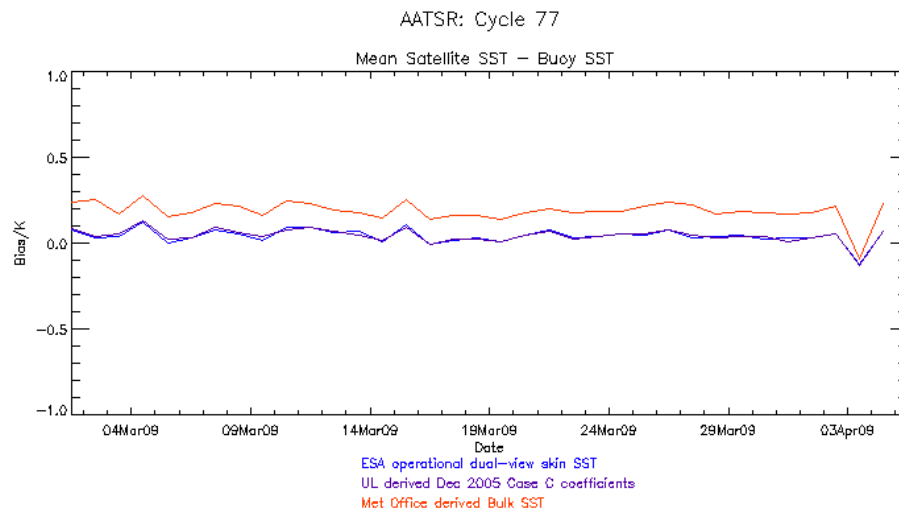


Figure 6.2: Comparison of daily mean difference between 10' AATSR SST values and in situ buoy SST for Cycle 77. Data provided by the Met Office.

During cycle 77, there were 1505 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of -0.010 K, standard deviation 0.23 K, and a mean (dual-view bulk SST minus buoy SST) of +0.134 K, standard deviation 0.22 K. A total of 1496 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.109 K, standard deviation 0.30 K, and a mean (dual-view bulk SST minus buoy SST) of +0.254 K, standard deviation 0.31 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.

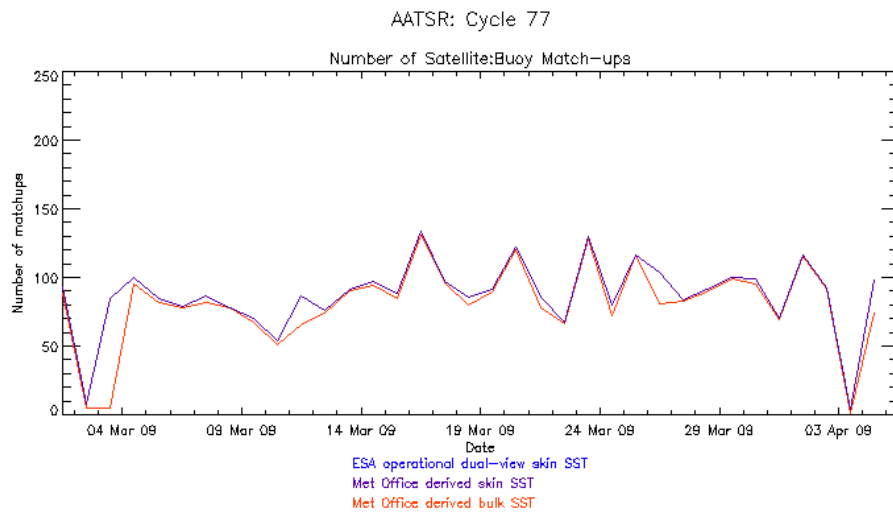


Figure 6.3: Plot of daily number of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 77. Data provided by the Met Office.

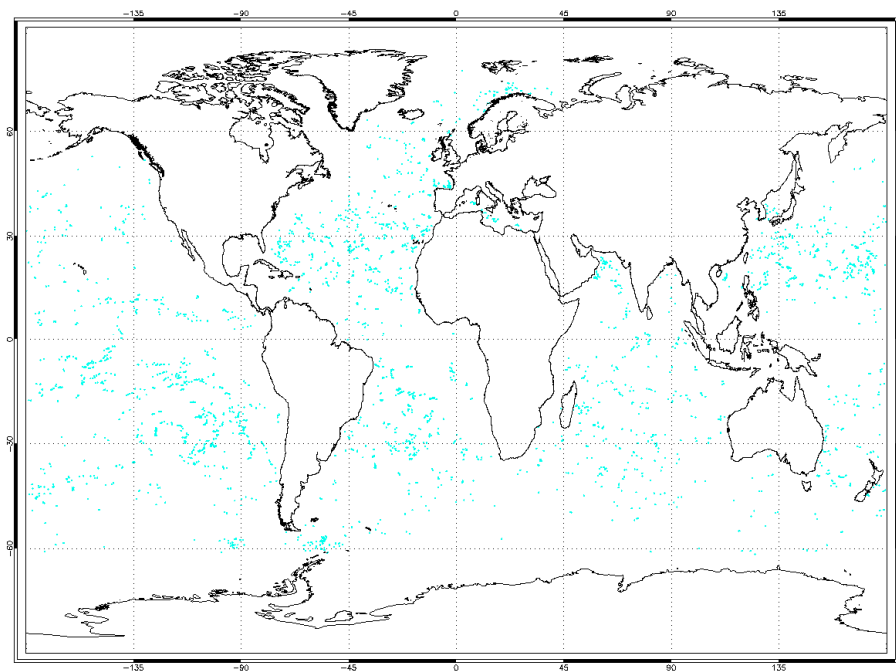


Figure 6.4: Map showing global distribution of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 77. The red dots indicate a match-ups to a moored buoy; the cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

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.