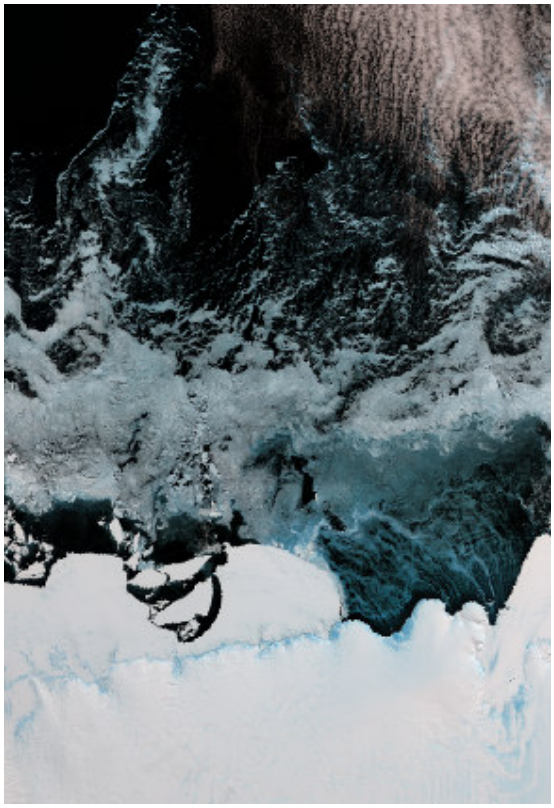
ENVISAT - AATSR

CYCLIC REPORT #73

	START	END
DATE	13 OCT 2008	17 NOV 2008
TIME	21:59:29	21:59:29
ORBIT #	34624	35124



Adelie Coast, Antarctica, 4th November 2008 – RGB Composite of nadir view reflectance channels taken from orbit 34938.

prepared by/*préparé par*	AATSR IDEAS and QWG team
reference/*réference*	
issue/*édition*	1
revision/*révision*	0
date of issue/*date d'édition*	27 November 2008
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 73	issue *issue* 1	revision *revision* 0
author *auteur*	Rubinder Mannan/Gordon Mack	date *date*	27 November 2008
approved by *approuvé par*		date *date*	

C H A N G E L O G

reason for change /*raison du changement*	issue/*issue*	revision/*revision*	date/*date*
		0	

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)*

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AATSR CYCLIC REPORT # 73

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: 73

Cycle Start: 13 Oct 2008, 21:59:29 Orbit #: 34624

Cycle End: 17 Nov 2008, 21:59:29 Orbit #: 35124

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.

- **System Maintenance:**

  Due to system maintenance, which took place at ESRIN on 21st October 2008, the IECF was down from 09:00 to 16:00.

- **Envisat Orbit Maintenance Manoeuvre:**

  An orbit maintenance manoeuvre was performed on 7th November 2008. AATSR data was unaffected during this time.

- **PDHS-K (Kiruna) interruption to Envisat production / dissemination services:**

  Due to required interventions at the PDHS-K (Kiruna) facilities, there were interruptions to the Envisat Near Real Time (NRT) production / dissemination services on Thursday 6 November 2008 08:00-12:00 UTC (09:00 CET to 13:00 CET). The NRT production / dissemination operations were resumed as soon as the intervention had been completed. Envisat acquisitions and Level 0 data productions were not impacted during the intervention.

- **Planned power-outage:**

  Due to a planned power-down in the building housing the RAL DDS, the EDS-X component of the AATSR-EDS website was unavailable from 8th-10th November 2008. The EDS-S component was unaffected by the power outage. Also due to this power-outage, there were no AATSR VC1 deliveries between 8 and 9th November. NRT calibration quality for AATSR reflectance channels has been maintained throughout this cycle.

- **PDHS-K (Kiruna) network problem:**

  Due to network problems, the Rolling Archive, Envisat Web File Server and FTP service at PDHS-K (Kiruna) were unavailable during the afternoon of Tuesday the 11th November 2008. The problem was resolved the following morning on the 12th November 2008.

- **Outgassing:**

  Notification was received regarding an outgassing which has been scheduled for the AATSR instrument from 25 November 2008 08:10:00 and is expected to be completed by 28 November 2008 08:16:00. For this period, no Infra Red data will be available; the products will only contain the visible channels (0.86um, 0.67um and 0.56um) and will be affected by poor calibration. This will be included in the next Cyclic Report.

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 VISIBILE CALIBRATION FILES

3.2.1.1 VC1 File Availability

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

- 21 October 2008
- 07 November 2008
- 08 November 2008
- 09 November 2008

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 73

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	October 13, 2008	34624	34723	0	0	0	100.00%	100.00%	100.00%
2	October 20, 2008	34724	34823	0	0	0	100.00%	100.00%	100.00%
3	October 27, 2008	34824	34924	0	0	0	100.00%	100.00%	100.00%
4	November 3, 2008	34925	35024	0	0	0	100.00%	100.00%	100.00%
5	November 10, 2008	35025	35124	0	0	0	100.00%	100.00%	100.00%

Table 4-2 Instrument and data unavailability weekly summary for cycle 73

The instrument was available for 100% of the time during the cycle.
The L0 data were available for 100% of the time during the cycle.
The L1b data were available for 100% of the time during the cycle.

There were no data missing at L0 or at L1b during this cycle.

4.2.1 ORBITS AFFECTED BY POOR DATA QUALITY

The information reported in Section 4.2 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:

- 34648 (15th October 2008)
- 34976 (7th November 2008)

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

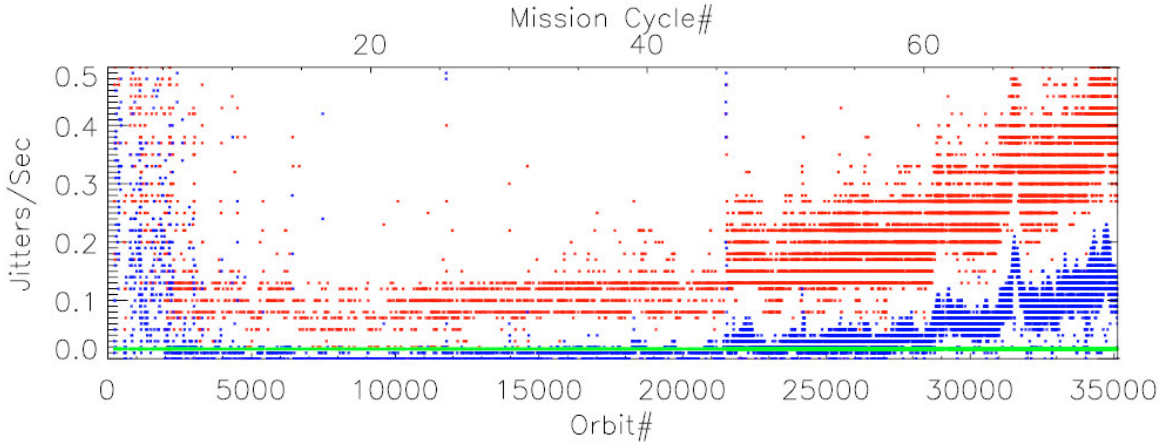

Figure 5.1 Jitter trend from mission start

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 that the mean rate continues to increase slowly.

5.1.2 SENSOR TEMPERATURE

The detector temperature plots for cycle 73 can be found at:
http://aatsr2.ag.rl.ac.uk/data2/aatsr2/EDS-X/CyclePlots/

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

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/VC1-73.txt

5.1.4 NE∆T

	Hot BB T = 301.93K		Cold BB T = 263.23K	
	Count	**NE∆T (mK)**	**Count**	**NE∆T (mK)**
12µm	1.67	34.7	1.24	35.8
11µm	1.58	32.2	1.15	34.3
3.7µm	2.55	32.1	1.22	74.9

Table 5-1 NE∆T data for cycle 73

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.

5.3.2 NEW SPRS SINCE THE LAST CYCLIC REPORT

The following SPR has been opened since the last cyclic report:

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(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."

5.3.3 CLOSED SPRS

The following SPR can be considered closed, as it has been superseded by NA-PR-08-04015.

AATSR Child Products contain insufficient number of ADS records.
NA-PR-08-03912
The number of ADS records present in AATSR child products is insufficient for processing of the entire product. Users are currently advised to order products of at least 1 granule longer to obtain all required ADS records. Excluding the SQADS and the scan pixel x and y ADS, the DPM requires that for AATSR full resolution products, the number of records in the ADS shall be one greater than the number of MDS granules in the product. Child products are currently produced with a number of ADS records equal to the number of MDS granules in the product.

5.4 Monthly Level 3 Product

The following plots have been generated from the available meteo products acquired in October. This consists of 438 orbits from 34439 to 34881. Figures Figure 5.3, Figure 5.4, Figure 5.5, Figure 5.6 show the SST average in dual and nadir views, the standard deviation and the number of contributory orbits.

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 from left to right with increasing magnitude.

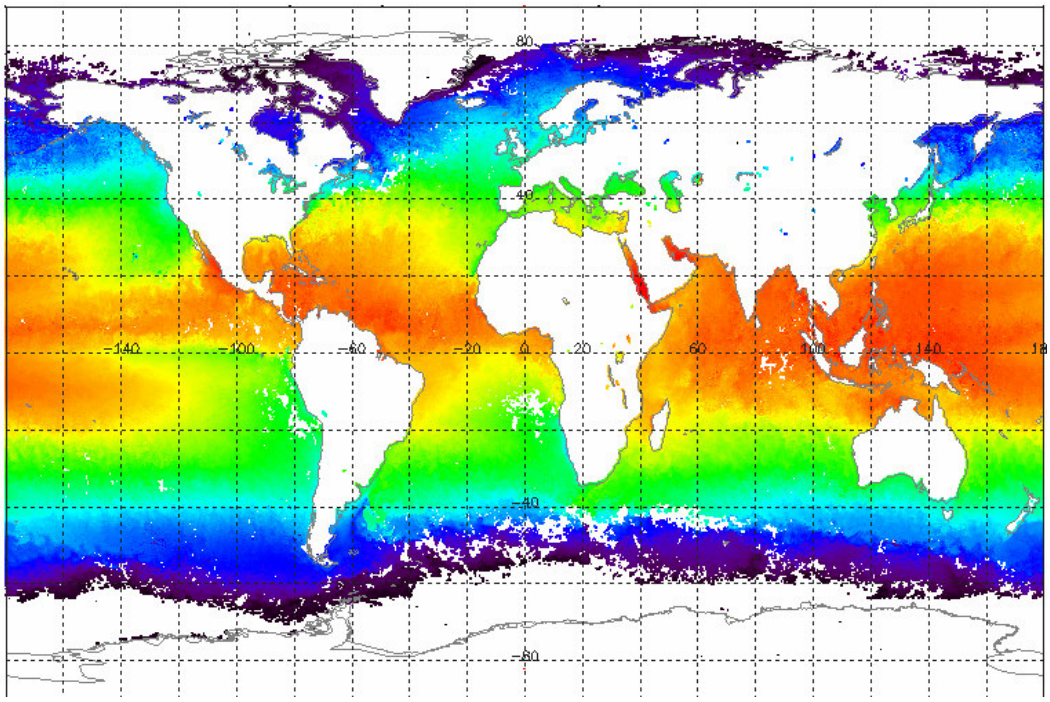

Figure 5.3 - This figure gives the monthly average Dual View SST, with a range of 270 - 305 Kelvin

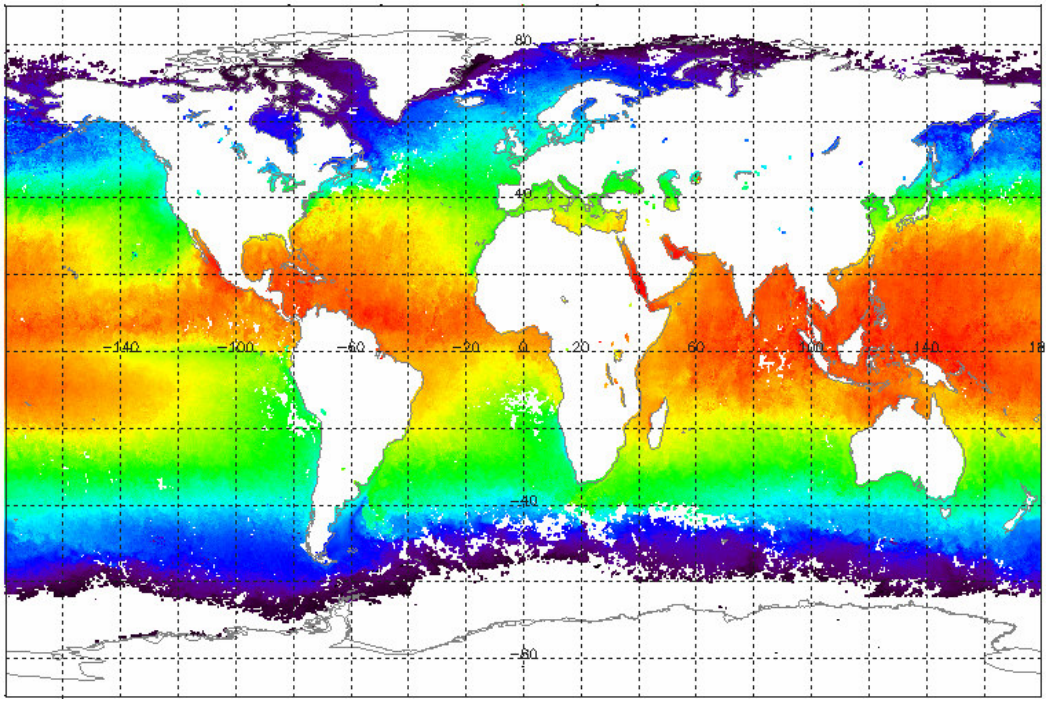

Figure 5.4 - This figure gives the monthly average Nadir SST, with a data range of 270 - 305 Kelvin

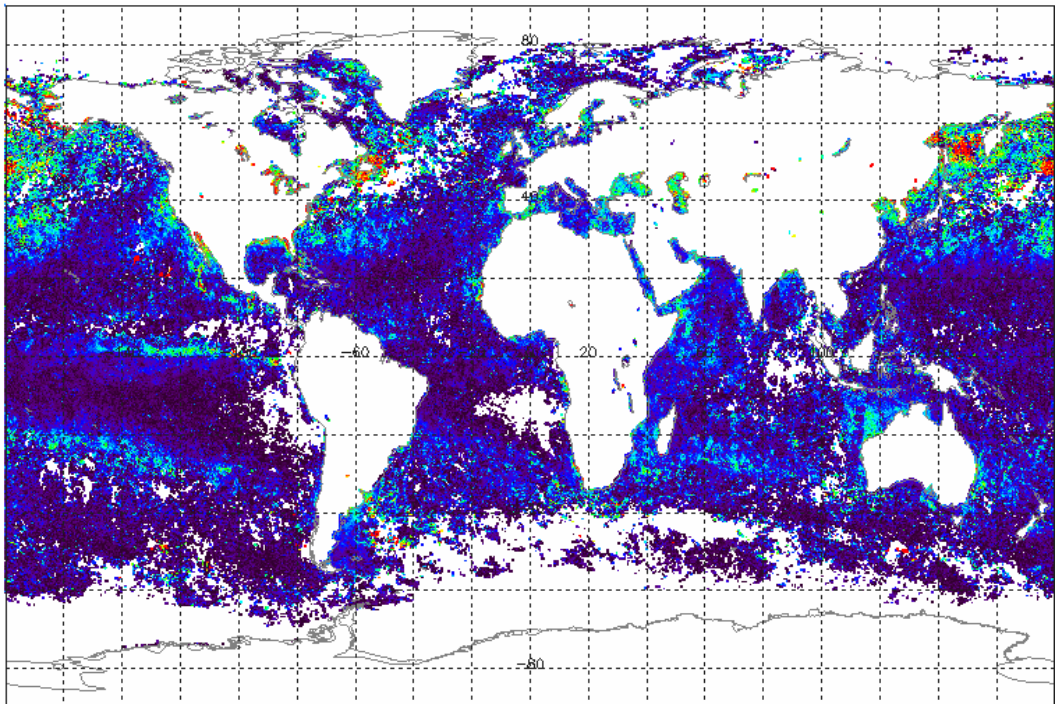

Figure 5.5 - The standard deviation of the monthly average in SST with a data range of 0 to 2 Kelvin

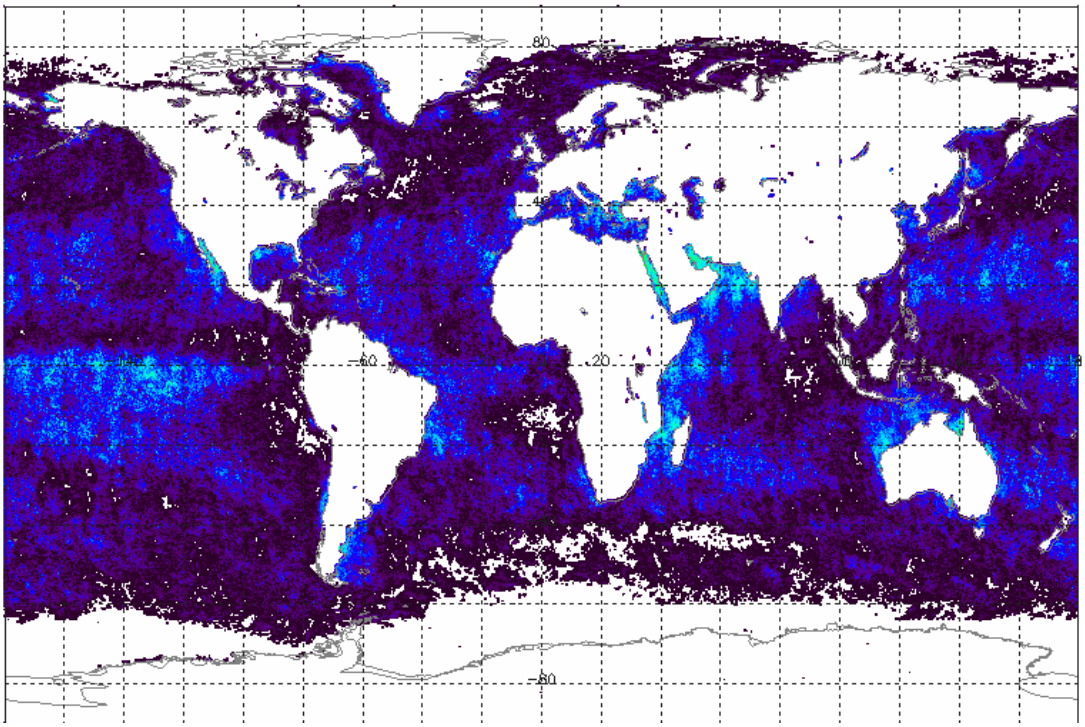

Figure 5.6 – The number of contributory orbits to the calculation of the SST, with a range of 0 to 24

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 Cycles 72 and 73 composed from ATS_AR__2P 10' data is shown below in Figure 6.1 and Figure 6.2. The monthly mean contains day time and night time data.

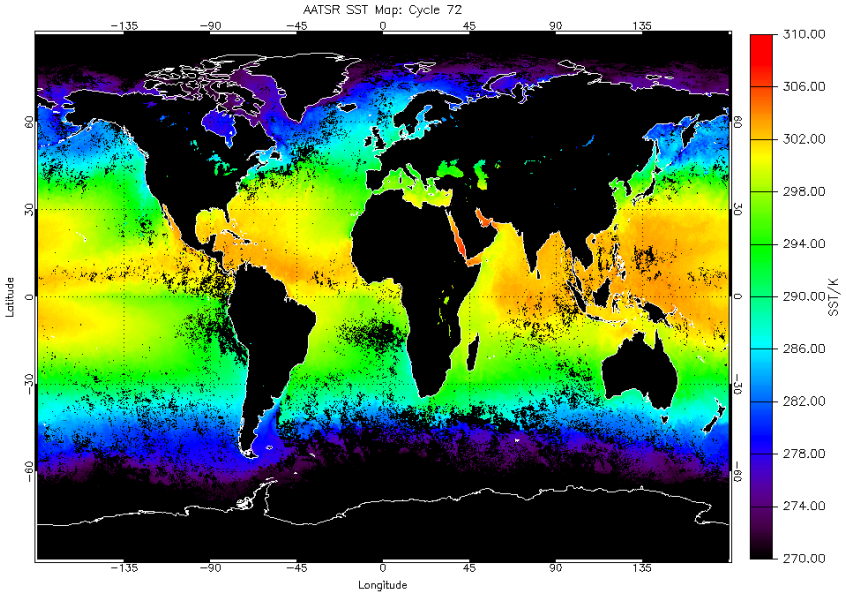

Figure 6.1: Monthly Global Average dual-view SST for Cycle 72.

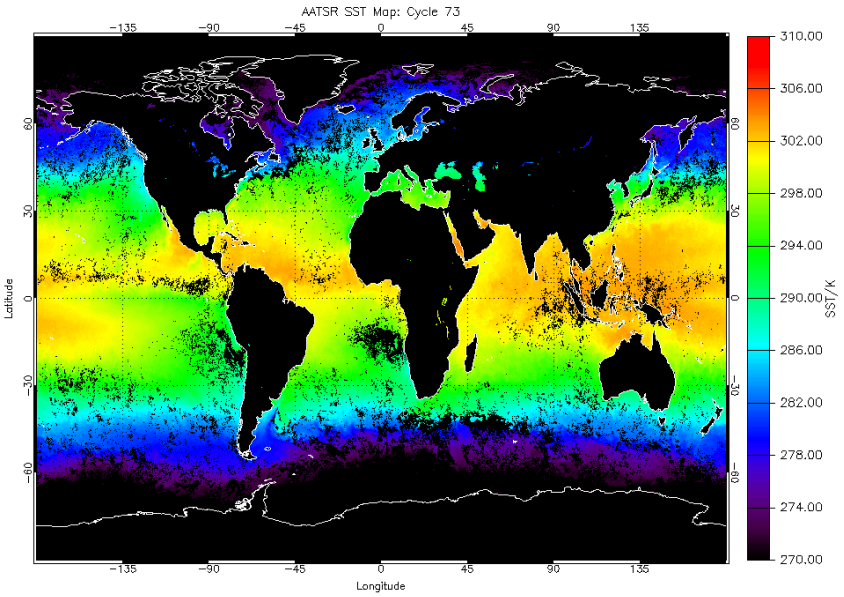

Figure 6.2: Monthly Global Average dual-view SST for Cycle 73.

The Met Office has validated the AATSR dual-view SST data using the global network of *in situ* buoy SST data, the results for Cycles 72 and 73 being shown in Figure 6.3 and Figure 6.4. The updated SST coefficients released in December 2005 were used in the AATSR SST retrievals.

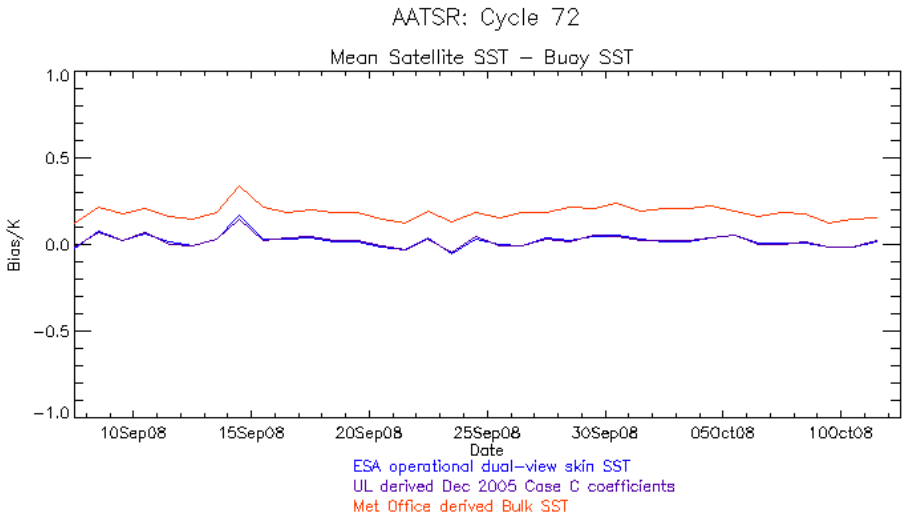

Figure 6.3: Comparison of daily mean difference between 10´ AATSR SST values and in situ buoy SST for Cycle 72. Data provided by the Met Office.

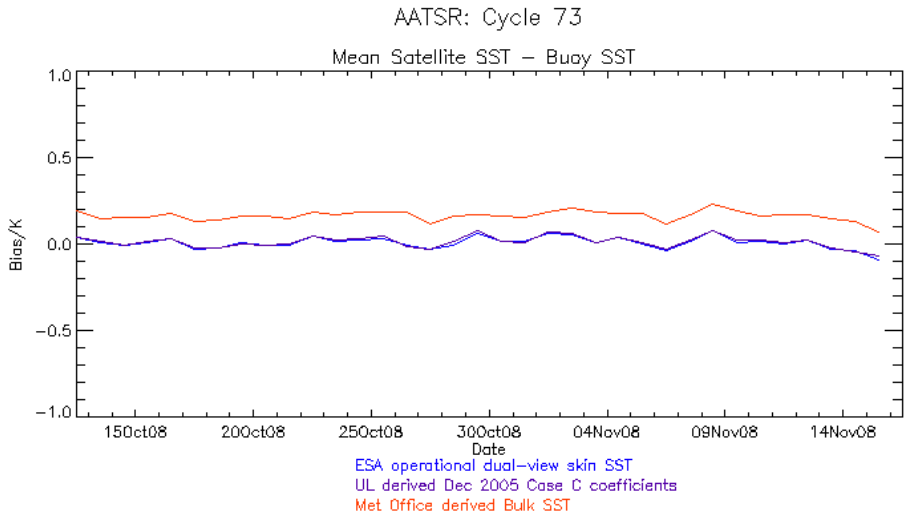

Figure 6.4: Comparison of daily mean difference between 10´ AATSR SST values and in situ buoy SST for Cycle 73. Data provided by the Met Office.

During cycle 72, there were 2119 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of -0.039 K, standard deviation 0.25 K, and a mean (dual-view bulk SST minus buoy SST) of +0.121 K, standard deviation 0.24 K. A total of 1967 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.074 K, standard deviation 0.35 K, and a mean (dual-view bulk SST minus buoy SST) of +0.241 K, standard deviation 0.35 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.

During cycle 73, there were 2069 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of -0.024 K, standard deviation 0.25 K, and a mean (dual-view bulk SST minus buoy SST) of +0.122 K, standard deviation 0.23 K. A total of 1850 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.051 K, standard deviation 0.31 K, and a mean (dual-view bulk SST minus buoy SST) of +0.212 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.

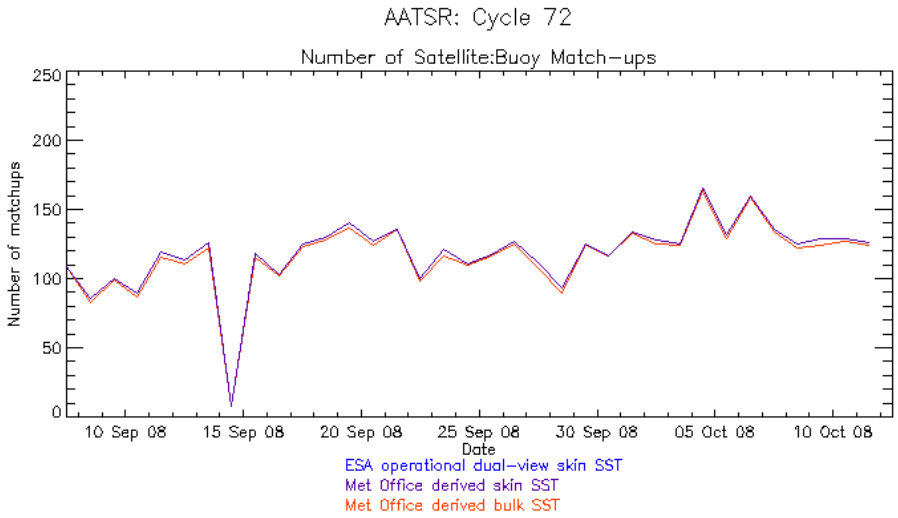

Figure 6.5: Plot of daily number of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 72. Data provided by the Met Office.

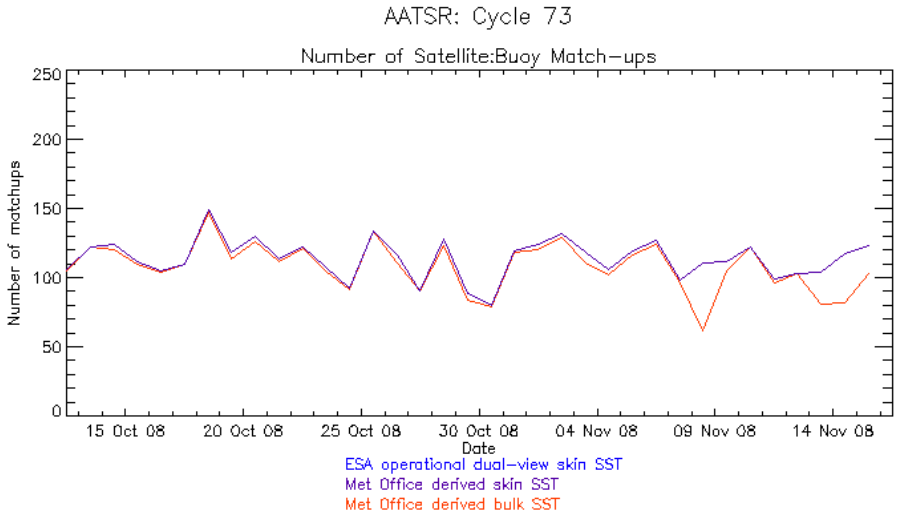

Figure 6.6: Plot of daily number of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 73. Data provided by the Met Office.

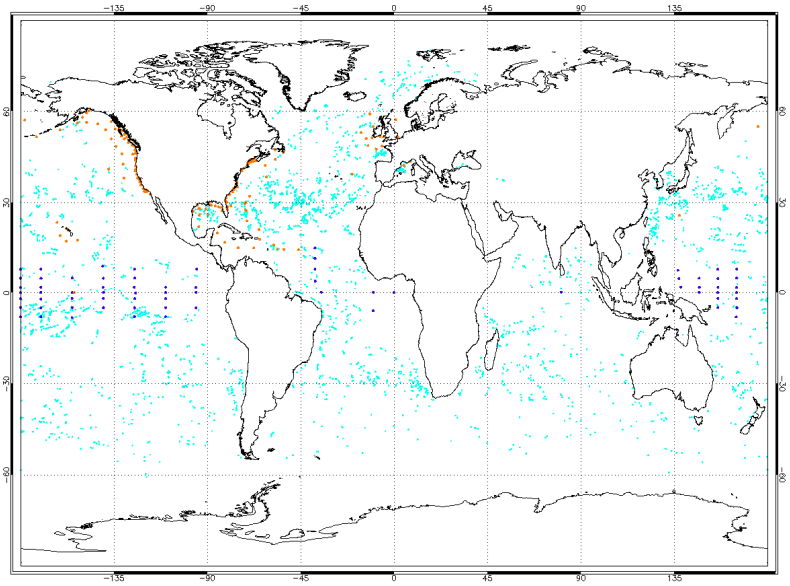

Figure 6.7: Map showing global distribution of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 72. The red dots indicate a match-ups to a moored buoy; the cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

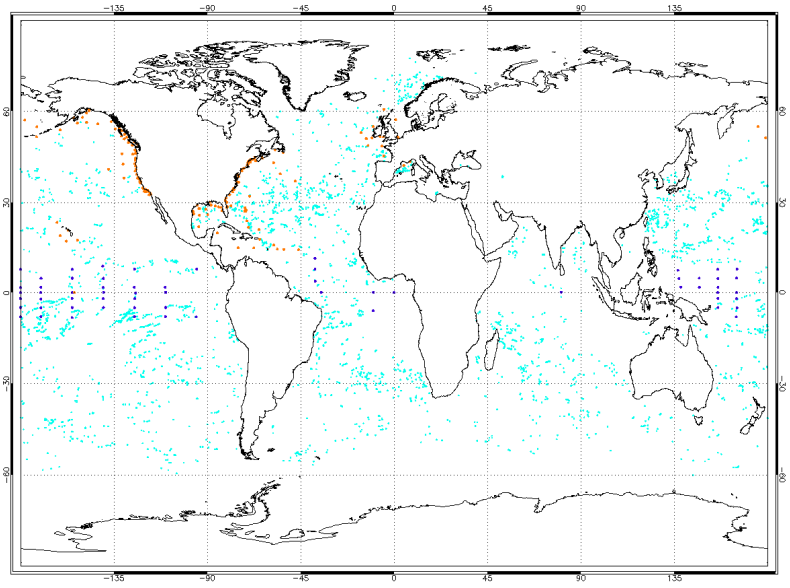

Figure 6.8: Map showing global distribution of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 73. The red dots indicate a match-ups to a moored buoy; the cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

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.