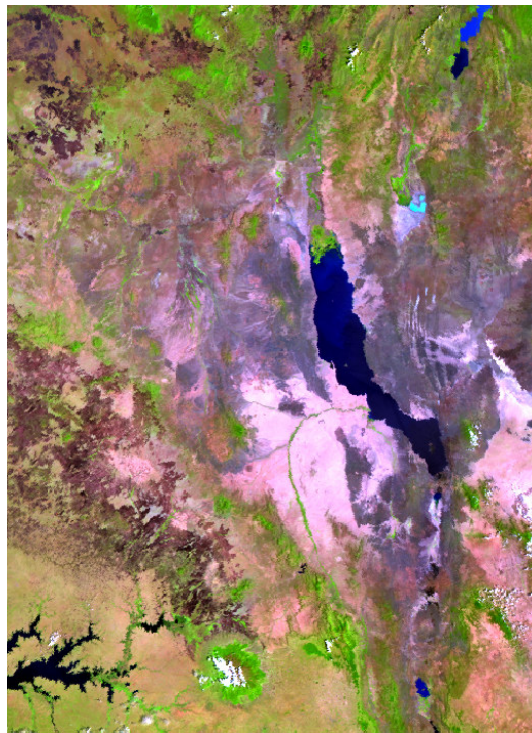

ENVISAT - AATSR

CYCLIC REPORT #75

	START	END
<i>DATE</i>	<i>22 DEC 2008</i>	<i>26 JAN 2009</i>
<i>TIME</i>	<i>21:59:29</i>	<i>21:59:29</i>
<i>ORBIT #</i>	<i>35626</i>	<i>36126</i>



7th of January, 2009 – RGB combination of nadir 1.6, 0.87 and 0.67 μm channels showing Lake Turkana in the great rift valley in Kenya.

prepared by/*préparé par* AATSR IDEAS and QWG team
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AATSR CYCLIC REPORT # 75

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: 75

Cycle Start: 22 Dec 2008, 21:59:29 Orbit #: 35626

Cycle End: 26 Jan 2009, 21:59:29 Orbit #: 36126

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)

- **Leap second impact on Envisat data:**

On 1 January 2009, the first four ENVISAT products (orbits 35756 to 35759) for all instruments have been affected by a geolocation error which was caused by an incorrect handling of the Leap Second change between 31 December 2008 and 1 January 2009. Detailed analysis is on-going in order to initiate corrective actions for reprocessing of the affected orbits.

- **Envisat NRT dissemination delays at PDHS-E (ESRIN):**

Due to a HW failure impacting the generation of auxiliary data required for Near Real Time (NRT) processing, there was a delay in the processing and distribution of some of the NRT instruments products disseminated at PDHS-E (ESRIN), PDHS-K (Kiruna) and Matera on 23 January 2009. Processing activity was resumed at all centres Friday evening, 23 January 2009

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

- Due to required interventions at PDHS-K, on Wednesday 7 January 2009 there was an interruption to the Envisat production / dissemination services between 09:00 and 16:00 UTC. During this interval some delays occurred in the Envisat Near Real Time (NRT) productions and their dissemination towards the rolling archive and the data dissemination system. The NRT production/dissemination operations were resumed as soon as the intervention had been completed. Envisat acquisitions and Level 0 data productions are not impacted during the intervention
- Due to system failures, NRT production and distribution to users was affected on 16 January 2009. Data recovery commenced as soon as NRT operations resumed.
- Problems with the Envisat NRT processing caused delays in dissemination to users from the morning of Tuesday 20 January 2009. Nominal NRT

processing and dissemination to users at PDHS-K was resumed on 22 January 2009. Recovery of backlog commenced immediately.

- **Envisat Orbit Control Manoeuvre:**

Notification was received regarding an Envisat orbit control manoeuvre (OCM) which was scheduled for 26-27 January 2009. 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 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:

- 7th, 8th January 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 75

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 22, 2008	35626	35725	0	0	0	100.00%	100.00%	100.00%
2	December 29, 2008	35726	35825	0	17190	0	100.00%	97.16%	97.16%
3	January 5, 2009	35826	35926	0	3522	0	100.00%	99.42%	99.42%
4	January 12, 2009	35927	36026	0	354	0	100.00%	99.94%	99.94%
5	January 19, 2009	36027	36126	0	0	0	100.00%	100.00%	100.00%

Table 4-2 Instrument and data unavailability weekly summary for cycle 75

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

The L0 data were available for 99.30% of the time during the cycle.

The L1b data were available for 99.30% 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
30-Dec-2008 22:37:55	31-Dec-2008 00:17:13	5958	35740	35740
02-Jan-2009 02:49:02	02-Jan-2009 03:52:00	3778	35770	35772
02-Jan-2009 19:50:54	02-Jan-2009 20:55:01	3847	35782	35782
05-Jan-2009 02:56:42	05-Jan-2009 03:56:49	3607	35815	35815
08-Jan-2009 03:04:54	08-Jan-2009 04:03:36	3522	35858	35858
13-Jan-2009 10:51:51	13-Jan-2009 10:57:45	354	35934	35934

Table 4-3 ATS_NL__0P missing data during cycle 75

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:

- 35790 (3rd January 2009)
- 35834 (6th January 2009)

- 35923, 35925 (12th January 2009)
- 35949 (16th January 2009)

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

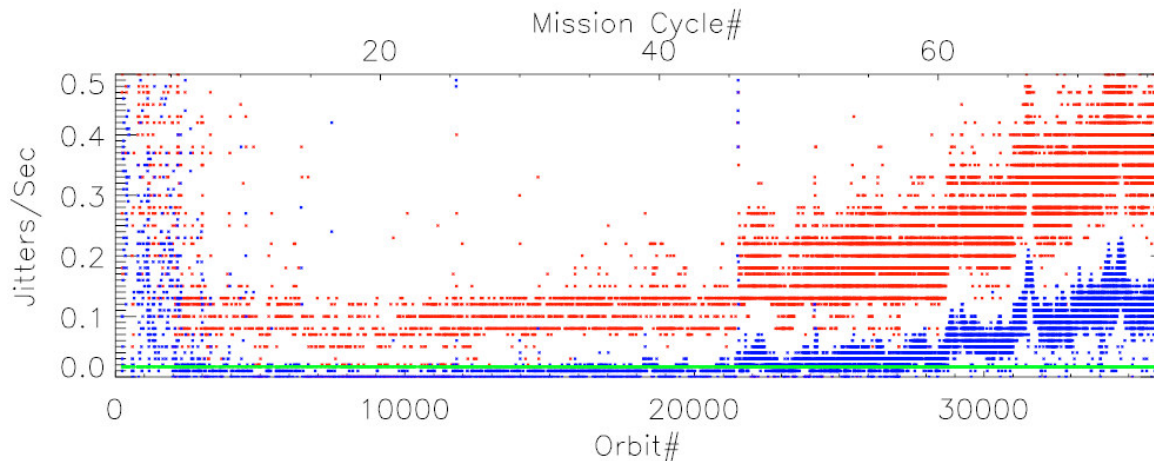


Figure 5.1 Jitter trend from mission start

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 75 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. 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/VC1-75.txt>

5.1.4 NEAT

This information will be included in the next 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 January. This consists of 407 orbits from 35756 to 36197. 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 for January 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.

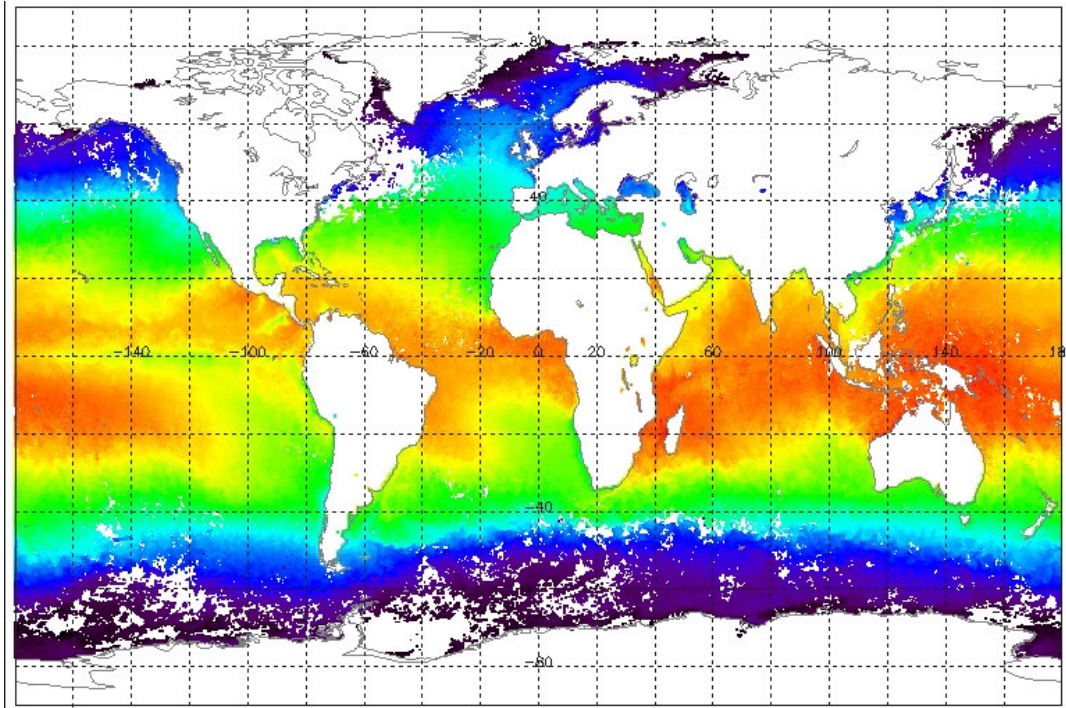


Figure 5.3 - This figure gives the monthly average Dual View SST, with a range of 270 - 305 Kelvin for January 2009.

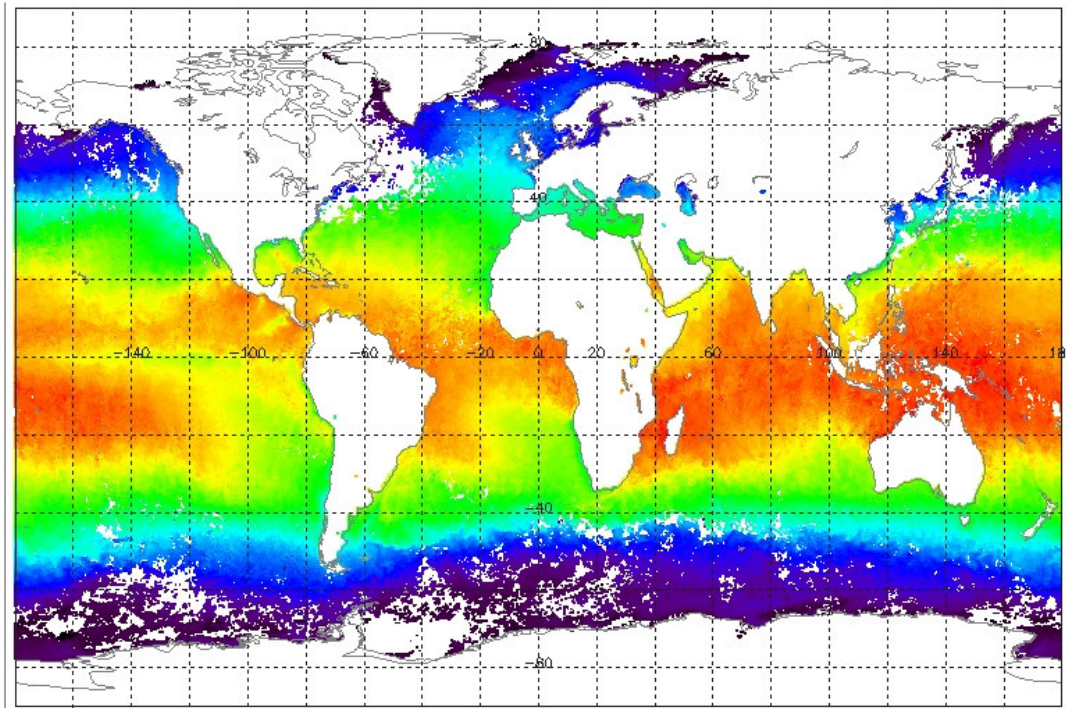


Figure 5.4 - This figure gives the monthly average Nadir SST, with a data range of 270 - 305 Kelvin for January 2009.

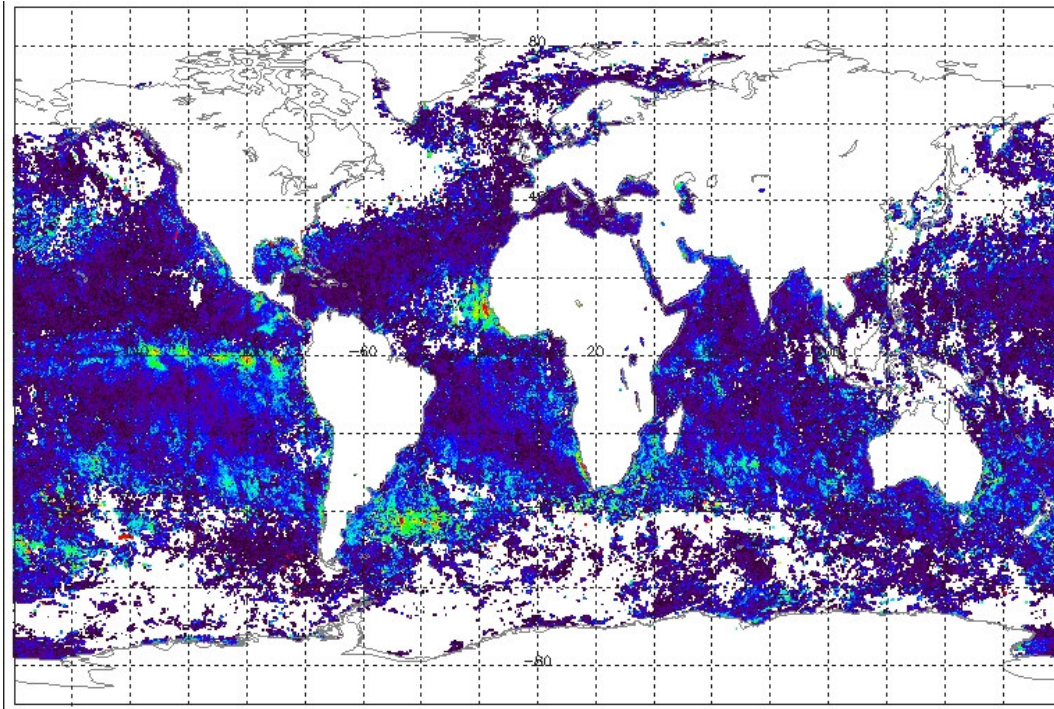


Figure 5.5 - The standard deviation of the monthly average in SST with a data range of 0 to 2 Kelvin for January 2009.

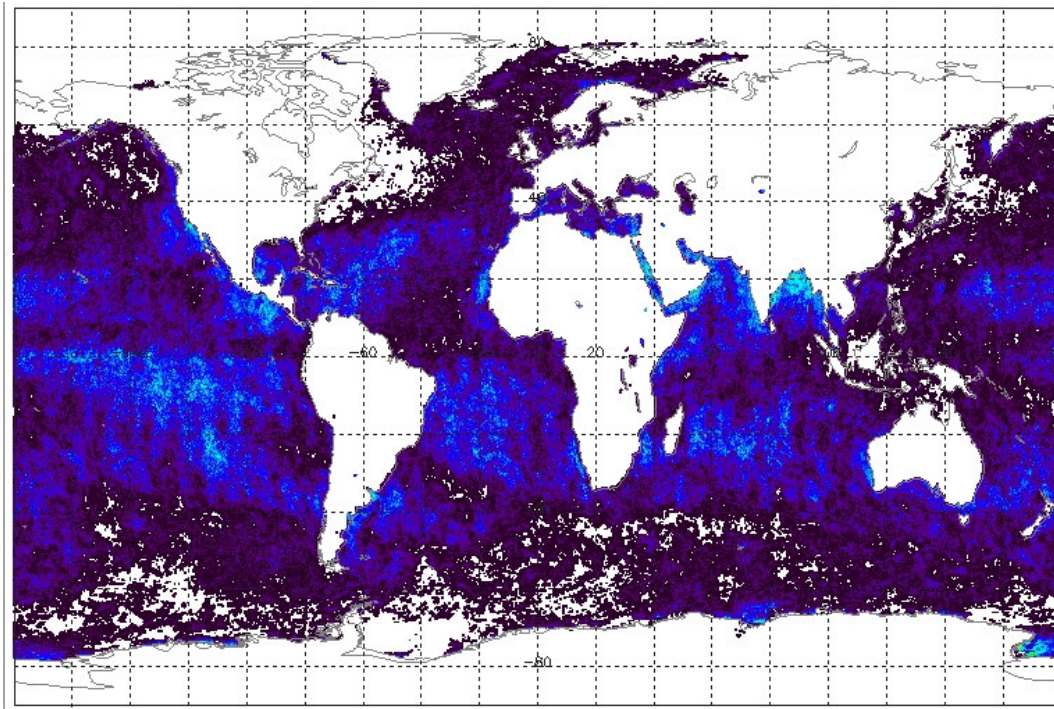


Figure 5.6 – The number of contributory orbits to the calculation of the SST, with a range of 0 to 24 for January 2009.

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

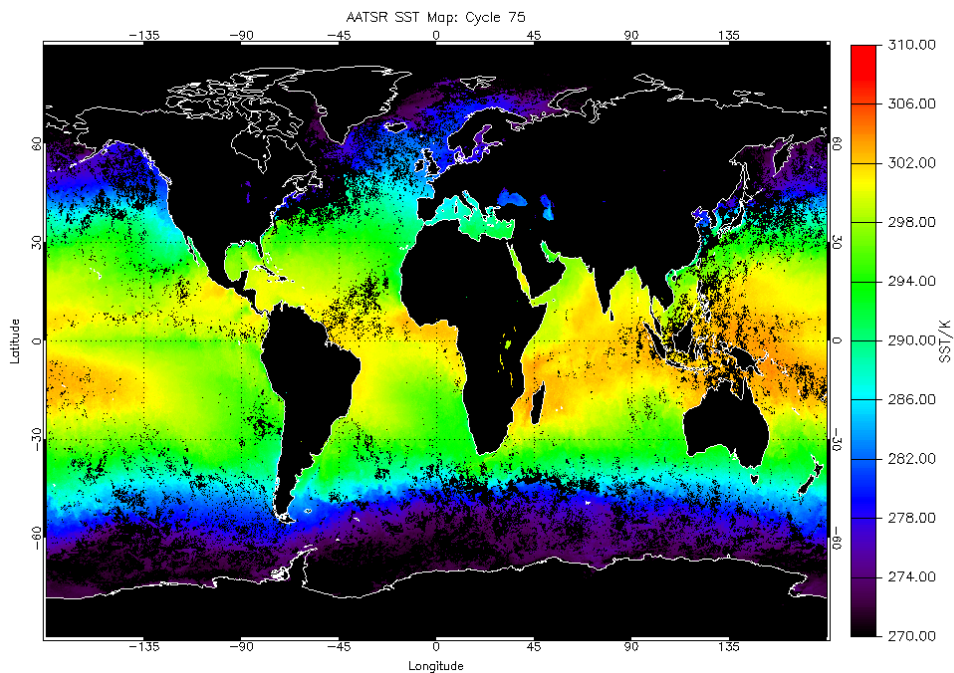


Figure 6.1: Monthly Global Average dual-view SST for Cycle 75.

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

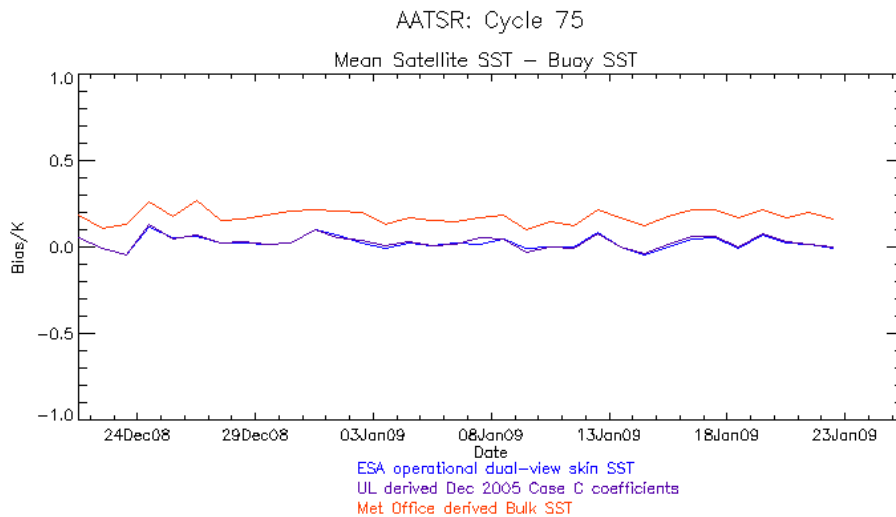


Figure 6.2: Comparison of daily mean difference between 10' AATSR SST values and in situ buoy SST for Cycle 75. Data provided by the Met Office.

During cycle 75, there were 1318 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of -0.015 K, standard deviation 0.24 K, and a mean (dual-view bulk SST minus buoy SST) of +0.137 K, standard deviation 0.23 K. A total of 1353 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.080 K, standard deviation 0.28 K, and a mean (dual-view bulk SST minus buoy SST) of +0.219 K, standard deviation 0.28 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.

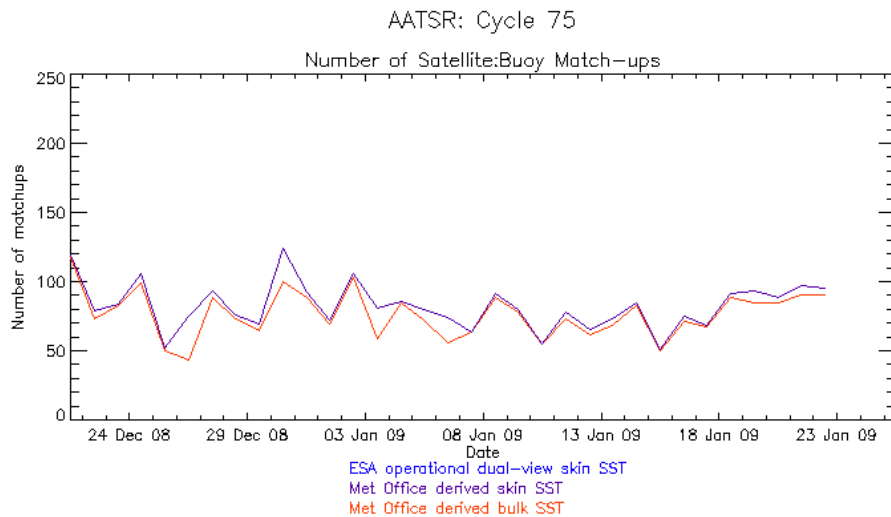


Figure 6.3: Plot of daily number of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 75. Data provided by the Met Office.

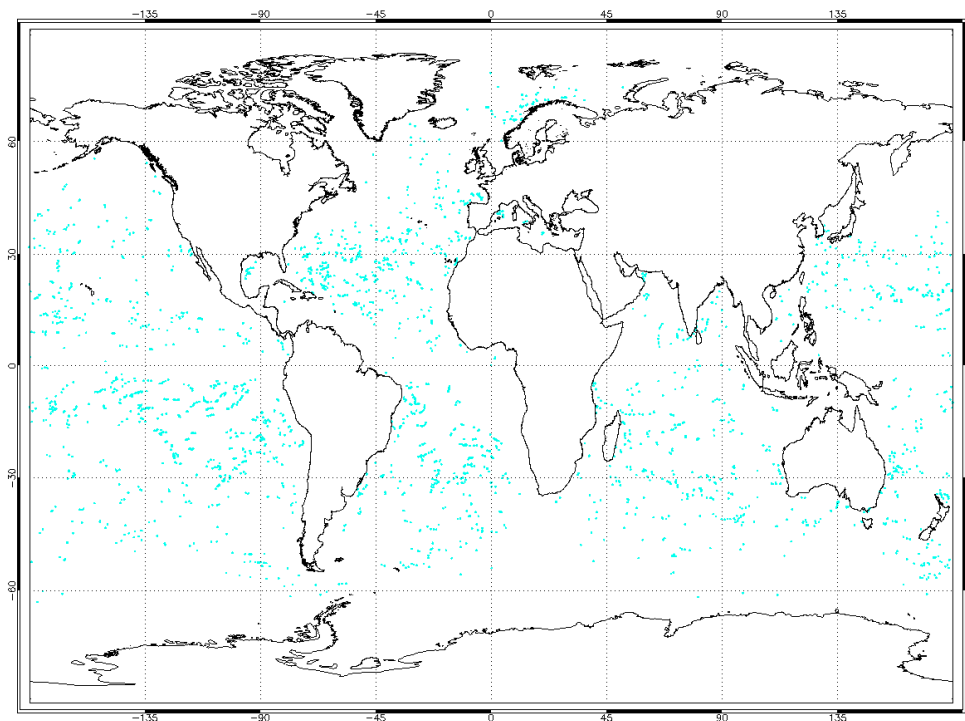


Figure 6.4: Map showing global distribution of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 75. The red dots indicate a match-ups to a moored buoy; the cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

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.