
ENVISAT - AATSR

CYCLIC REPORT #81

	START	END
DATE	20 JULY 2009	24 AUGUST 2009
TIME	21:59:29	21:59:29
ORBIT #	38632	39132



22nd July 2009 – This RGB combination shows the Nile delta. The image is composed of the AATSR 1.6 μ m, 0.87 μ m and 0.67 μ m channels taken from the nadir view during orbit 38653.

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AATSR CYCLIC REPORT # 81

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: 81

Cycle Start: 20 July 2009, 21:59:29 Orbit #: 38632

Cycle End: 24 August 2009, 21:59:29 Orbit #: 39132

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)

L2P processor – no change (1.5)

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

An OCM was begun on the 20th of July. Due to the execution of this OCM, the following unavailability period was registered for AATSR: 20-July 2009 22:06:00 to 21 July 2009 06:51:00 UTC.

- **NRT Dissemination Disruptions**

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

- 21st of July at Kiruna. Dissemination resumed on 23rd.
- 23rd of July at ESRIN. Dissemination resumed on 24th.
- 28th of July at Kiruna. Dissemination resumed on 29th.
- 20th of August at ESRIN. Dissemination resumed on 21st.
- 23rd of August at ESRIN. Dissemination resumed on 24th.

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 20th of August, during this cycle.

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
20/07/2009 22:06:00	21/07/2009 06:51:00	OCM	EN-UNA-2009/0114	Yes

Table 4-1 Instrument unavailability during cycle 81

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	July 20, 2009	38632	38731	31500	5810	6700	94.79%	93.83%	92.72%
2	July 27, 2009	38732	38831	0	975	0	100.00%	99.84%	99.84%
3	August 3, 2009	38832	38932	0	0	0	100.00%	100.00%	100.00%
4	August 10, 2009	38933	39032	0	0	0	100.00%	100.00%	100.00%
5	August 17, 2009	39033	39132	0	11800	0	100.00%	98.05%	98.05%

Table 4-2 Instrument and data unavailability weekly summary for cycle 81

The instrument was available for 98.96% of the time during the cycle.

The L0 data were available for 98.34% of the time during the cycle.

The L1b data were available for 98.12% 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
27-Jul-2009 13:43:12	27-Jul-2009 15:20:02	5810	38727	38728
03-Aug-2009 09:47:59	03-Aug-2009 10:04:14	975	38825	38825
20-Aug-2009 00:27:14	20-Aug-2009 02:03:18	5764	39062	39063
24-Aug-2009 04:33:46	24-Aug-2009 06:14:22	6036	39122	39123

Table 4-3 ATS_NL__0P missing data during cycle 81

The following L1 data was missing from this cycle:

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
24-Jul-2009 21:23	24-Jul-2009 23:01	5919	38688	38689
25-Jul-2009 06:44	25-Jul-2009 06:57	781	38694	38694

Table 4-4 ATS_TOA_1P missing data during cycle 81

4.2.1 ORBITS AFFECTED BY POOR DATA QUALITY

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

- 38668 (23rd of July, 2009)
- 38743 (28th of July, 2009)
- 38811 (2nd of August, 2009)
- 38910-38911 (9th of August, 2009)
- 38927, 38929 (10th of August, 2009)

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

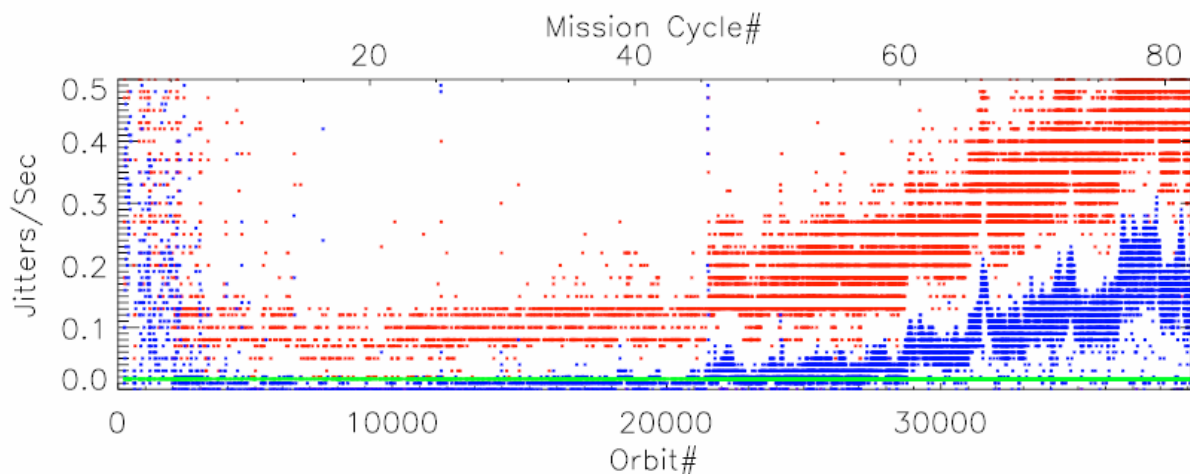


Figure 5-1 Jitter trend from mission start

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 the mean jitter-rate peaked for a short time during this cycle before dropping back to more-or-less the same level as the previous cycle.

5.1.2 SENSOR TEMPERATURE

The detector temperature plots for cycle 81 can be found at:

<http://aatsr2.ag.rl.ac.uk/data2/aatsr2/EDS-X/CyclePlots/DetTemps81.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/VC1-81.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 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(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 new 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 July 2009. This consists of 437 products taken from orbits 38347 to 38789. 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 July 2009. Please note we are not able to provide individual 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.

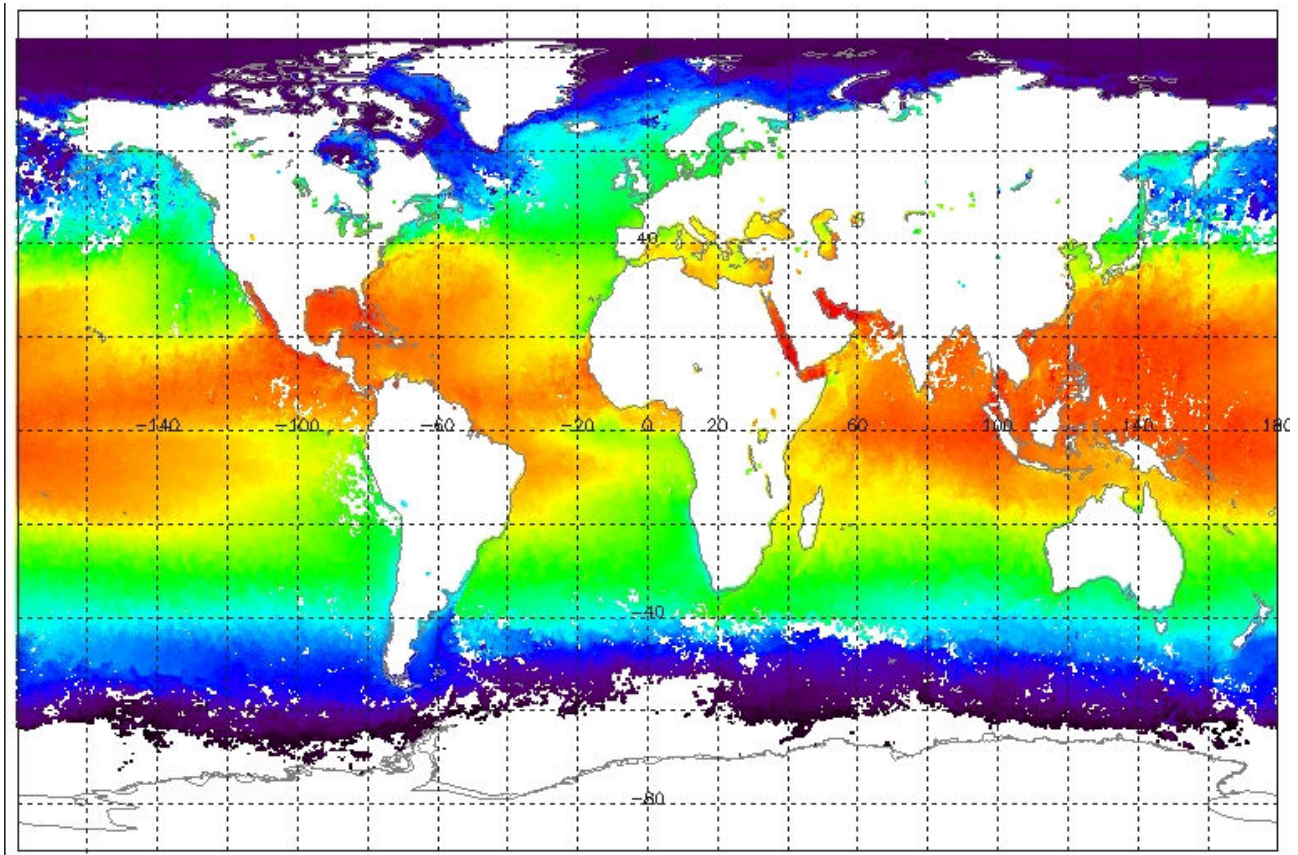


Figure 5-3 - This figure gives the monthly average Dual View SST, with a range of 270 - 305 Kelvin for July 2009.

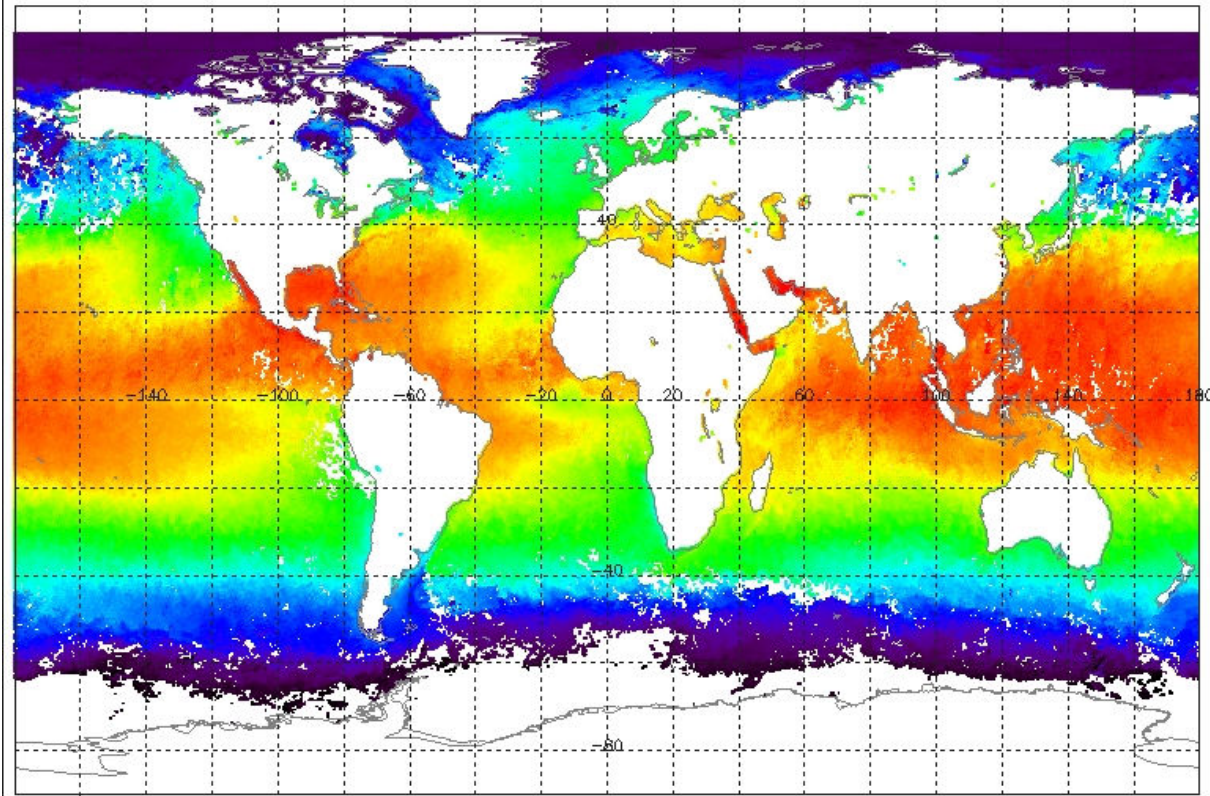


Figure 5-4 - This figure gives the monthly average Nadir SST, with a data range of 270 - 305 Kelvin for July 2009.

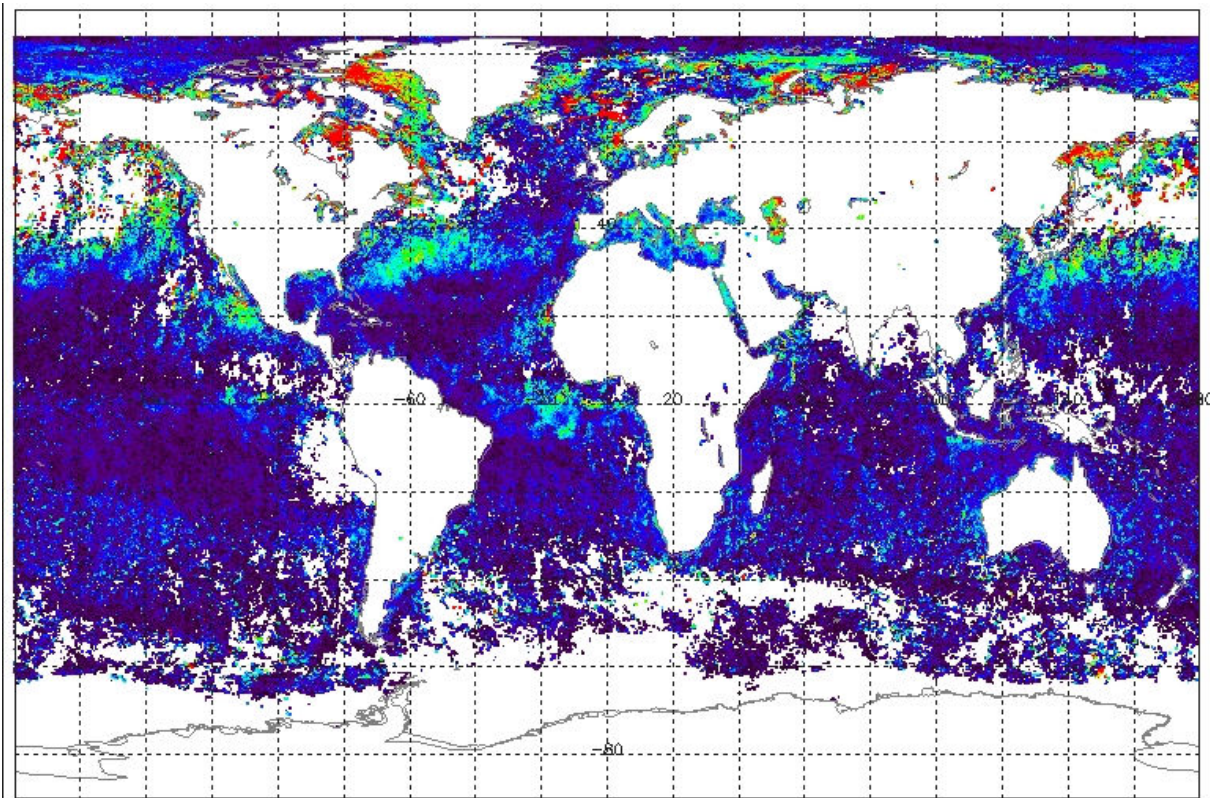


Figure 5-5 - The standard deviation of the monthly average in SST with a data range of 0 to 2 Kelvin for July 2009.

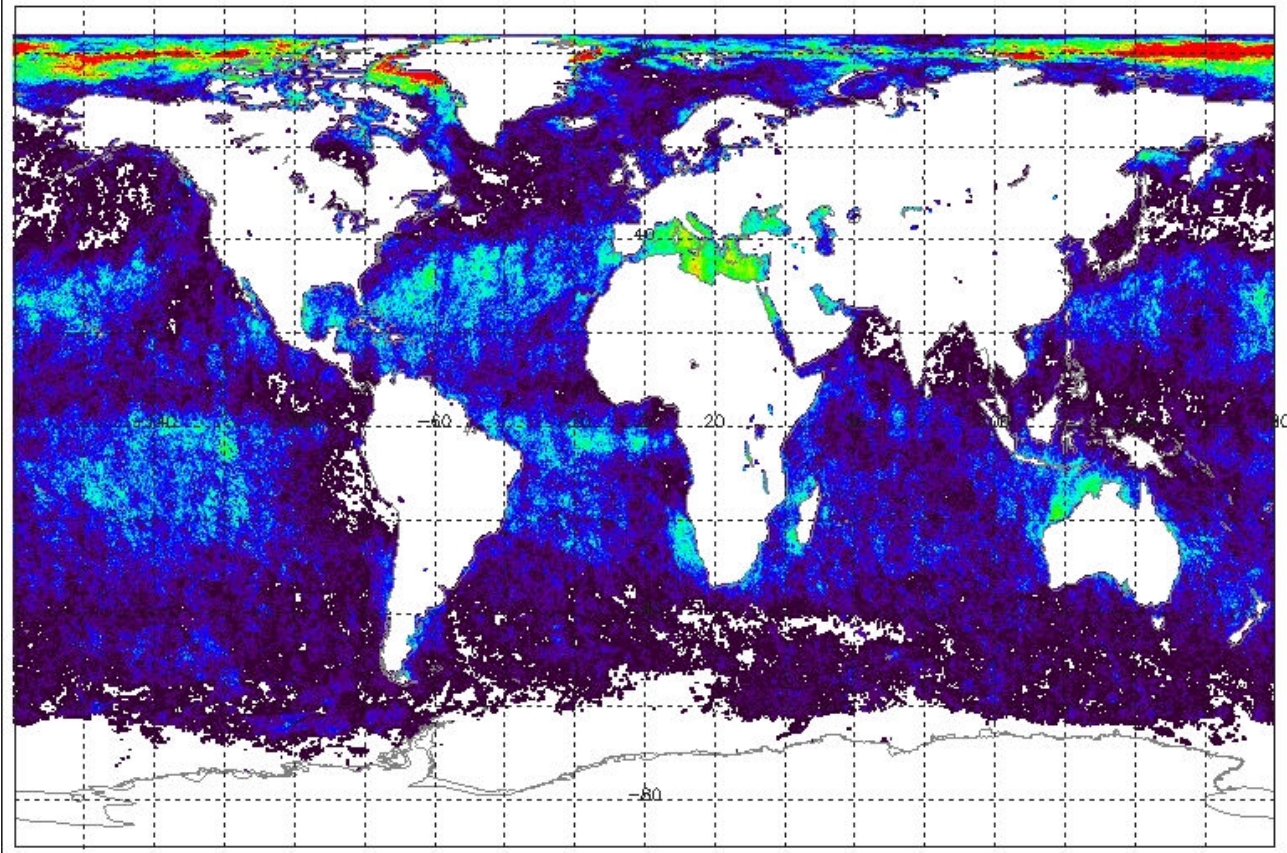


Figure 5-6 – The number of contributory orbits to the calculation of the SST, with a range of 0 to 20 for July 2009.

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 81 being shown in Figure 6.2-1. The updated SST coefficients released in December 2005 were used in the AATSR SST retrievals.

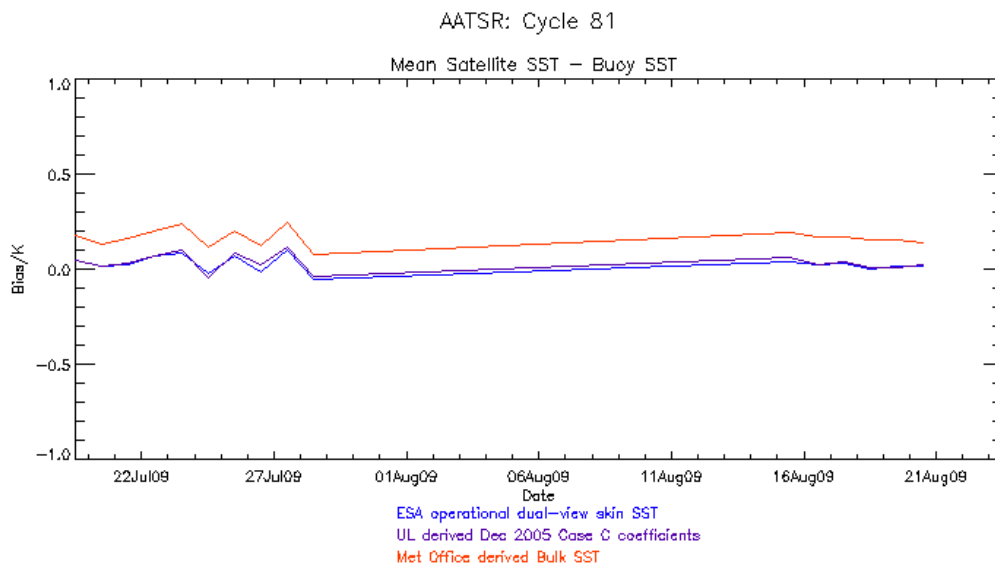


Figure 6.2-1: Comparison of daily mean difference between 10' AATSR SST values and in situ drifting buoy SST for Cycle 81. Data provided by the Met Office.

During cycle 81, there were 723 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of -0.006 K, standard deviation 0.23 K, and a mean (dual-view bulk SST minus buoy SST) of $+0.123$ K, standard deviation 0.21 K. A total of 674 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of $+0.097$ K, standard deviation 0.30 K, and a mean (dual-view bulk SST minus buoy SST) of $+0.229$ K, standard deviation 0.29 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.

The lower than usual number of match-ups this cycle is due to a processing error at the Met Office that resulted in no match-ups between the 29th of July and the 15th of August 2009.

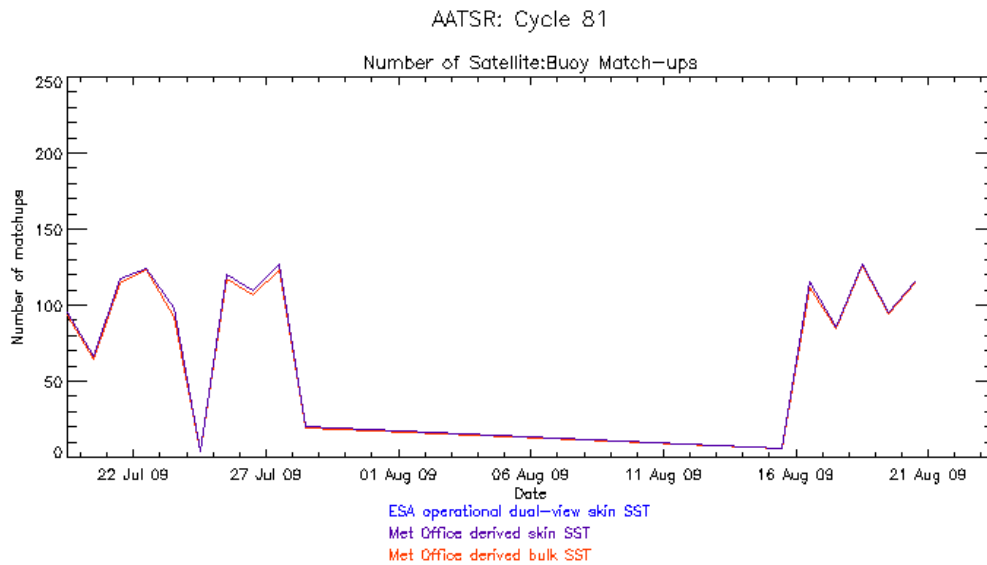


Figure 6.2-2: Plot of daily number of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 81. Data provided by the Met Office.

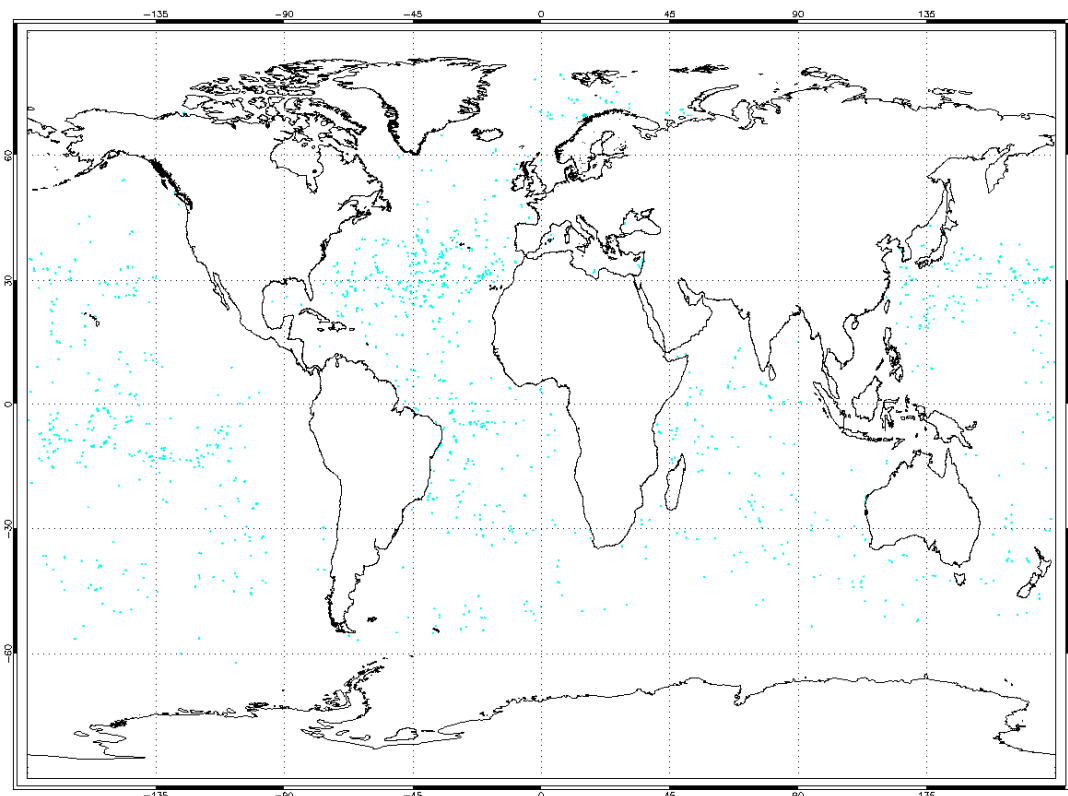


Figure 6.2-3: Map showing global distribution of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 81. The cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.