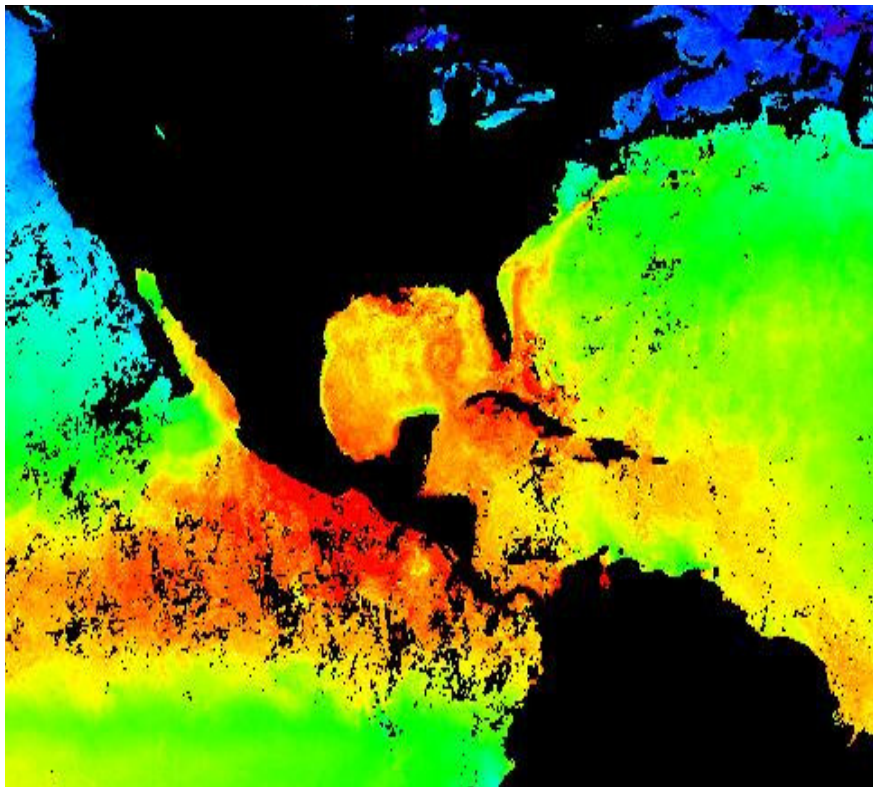


---

## **ENVISAT - AATSR**

### **CYCLIC REPORT #80**

|                | START               | END                 |
|----------------|---------------------|---------------------|
| <i>DATE</i>    | <i>15 JUNE 2009</i> | <i>20 JULY 2009</i> |
| <i>TIME</i>    | <i>21:59:29</i>     | <i>21:59:29</i>     |
| <i>ORBIT #</i> | <i>38131</i>        | <i>38631</i>        |



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

---

|  |                          |
|--|--------------------------|
| prepared by/ <i>préparé par</i>        | AATSR IDEAS and QWG team |
| reference/ <i>référence</i>            |                          |
| issue/ <i>édition</i>                  | 1                        |
| revision/ <i>révision</i>              | 0                        |
| date of issue/ <i>date d'édition</i>   | 03 August 2009           |
| status/ <i>état</i>                    |                          |
| Document type/ <i>type de document</i> | Technical Note           |
| Distribution/ <i>distribution</i>      |                          |

## A P P R O V A L

|                       |                                |                         |                               |
|-----------------------|--------------------------------|-------------------------|-------------------------------|
| Title<br><i>titre</i> | AATSR Cyclic Report – Cycle 80 | issue 1<br><i>issue</i> | revision 0<br><i>revision</i> |
|-----------------------|--------------------------------|-------------------------|-------------------------------|

|                         |                 |                                    |
|-------------------------|-----------------|------------------------------------|
| author<br><i>auteur</i> | Rubinder Mannan | date 03 August<br><i>date</i> 2009 |
|-------------------------|-----------------|------------------------------------|

|                                    |                     |
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| approved by<br><i>approuvé par</i> | date<br><i>date</i> |
|------------------------------------|---------------------|

## 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> |
|---|---------------------|---------------------------|-------------------|
|   |                     | 0                         |                   |

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

ISSUE: 1 REVISION: 0

| reason for change/ <i>raison du changement</i> | page(s)/ <i>page(s)</i> | paragraph(s)/ <i>paragraph(s)</i> |
|--|-------------------------|-----------------------------------|
|  |                         |                                   |

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## AATSR CYCLIC REPORT # 80

### 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:** 80

**Cycle Start:** 15 June 2009, 21:59:29 Orbit #: 38131

**Cycle End:** 20 July 2009, 21:59:29 Orbit #: 38631

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)

- **ESRIN EWFS (Envisat Web File Server ) unavailability:**

An announcement was made on 17 July 2009 regarding a major hardware intervention causing the EWFS at ESRIN (PDHS-E) to be unavailable starting from Friday 24 July 2009.

The service reliability will be affected during the entire weekend 24-26 July 2009

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

An announcement was made on 16 July 2009 regarding an OCM which is planned for 21<sup>st</sup> July 2009. Due to the execution of this OCM, the following unavailability periods were foreseen: 20-July 2009 22:06:00 to 21 July 2009 06:51:00 UTC.

## 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 during the reporting period for 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 |
|-----------|----------|--------|-----------|---------|
| None      |          |        |           |         |

Table 4-1 Instrument unavailability during cycle 80

### 4.2 L0 Data Acquisition and L1b Processing Status

| # | Week<br>Dates | Orbit |       | Availability (s) |            |            | Availability (%) |         |         |
|---|---------------|-------|-------|------------------|------------|------------|------------------|---------|---------|
|   |               | Start | Stop  | Inst<br>Unav     | L0<br>gaps | L1<br>gaps | Instrument       | L0      | L1      |
| 1 | June 15, 2009 | 38131 | 38230 | 0                | 10300      | 0          | 100.00%          | 98.30%  | 98.30%  |
| 2 | June 22, 2009 | 38231 | 38330 | 0                | 0          | 0          | 100.00%          | 100.00% | 100.00% |
| 3 | June 29, 2009 | 38331 | 38431 | 0                | 0          | 0          | 100.00%          | 100.00% | 100.00% |
| 4 | July 6, 2009  | 38432 | 38531 | 0                | 0          | 0          | 100.00%          | 100.00% | 100.00% |
| 5 | July 13, 2009 | 38532 | 38631 | 0                | 0          | 0          | 100.00%          | 100.00% | 100.00% |

Table 4-2 Instrument and data unavailability weekly summary for cycle 80

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

The L0 data were available for 99.66% of the time during the cycle.

The L1b data were available for 99.66% 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 |
|----------------------|----------------------|--------------|-------------|-----------|
| 21-Jun-2009 04:46:05 | 21-Jun-2009 06:25:34 | 5969         | 38205       | 38206     |
| 22-Jun-2009 20:13:24 | 22-Jun-2009 21:25:35 | 4331         | 38229       | 38230     |

Table 4-3 ATS\_NL\_\_0P missing data during cycle 80

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:

- 38139 (16<sup>th</sup> June 2009)
- 38223 (22<sup>nd</sup> June 2009)
- 38354 (1<sup>st</sup> July 2009)
- 38439 (7<sup>th</sup> July 2009)



- 38471 (9<sup>th</sup> July 2009)
- 38522 (13<sup>th</sup> July 2009)
- 38553 (15<sup>th</sup> July 2009)
- 38586 (17<sup>th</sup> July 2009)
- 38631 (20<sup>th</sup> July 2009)

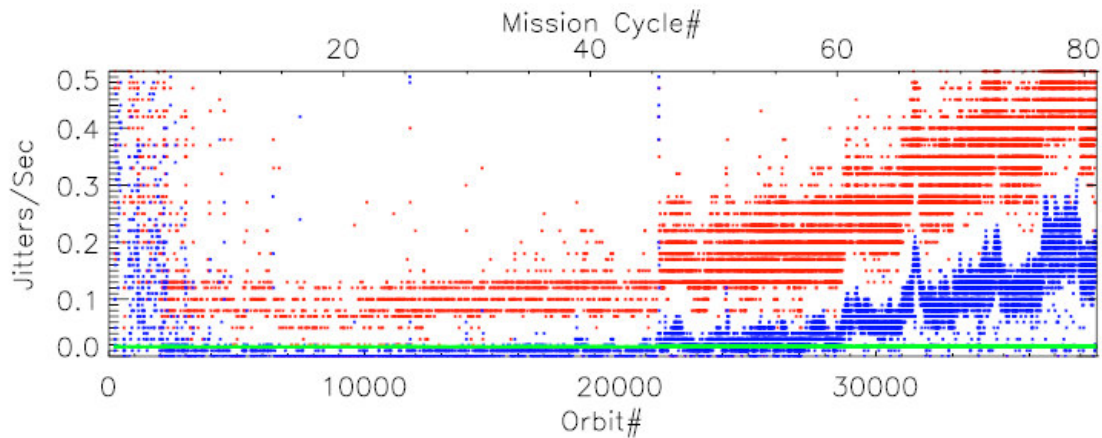
### ***4.3 L0 and L1b Backlog Processing Status***

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 plot shows the mean jitter-rate has recently deteriorated slightly with respect to its level at the end of cycle #79 but has remained below the peak level reached prior to the previous out-gassing.

#### 5.1.2 SENSOR TEMPERATURE

The detector temperature plots for cycle 80 can be found at:  
<http://aatsr2.ag.rl.ac.uk/data2/aatsr2/EDS-X/CyclePlots/DetTemps80.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/VC1-80.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

The following SPRs were closed.

#### **Missing AATSR Coverage – March 2007**

NA-PR-09-04382

Systematic gaps are present in the consolidated L0 data in the AATSR archive between the 27th of February 2007 and the 28th of March 2007. Typically 2 orbits of data are missing each day, for example on the 6th of March where orbits 26211 and 26219 are missing. On this day orbits 26208-26210 were acquired at Esrin, orbits 26212-26218 were acquired at Kiruna, then orbits 26220+ were acquired at Esrin again.

This behaviour - 2 orbits missing at the switch between acquisition sites - was not observed in NRT and therefore the data should be available. L0 data covering the gaps has been obtained by reconsolidating the unconsolidated products. The consolidated L0 products are being sent to UK-MM-PAF for processing

All available data was recovered and distributed.

## 5.4 Monthly Level 3 Product

The following plots have been generated from the available Meteo products acquired in April 2009. This consists of 464 products taken from orbits 37917 to 38344. 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 June 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.

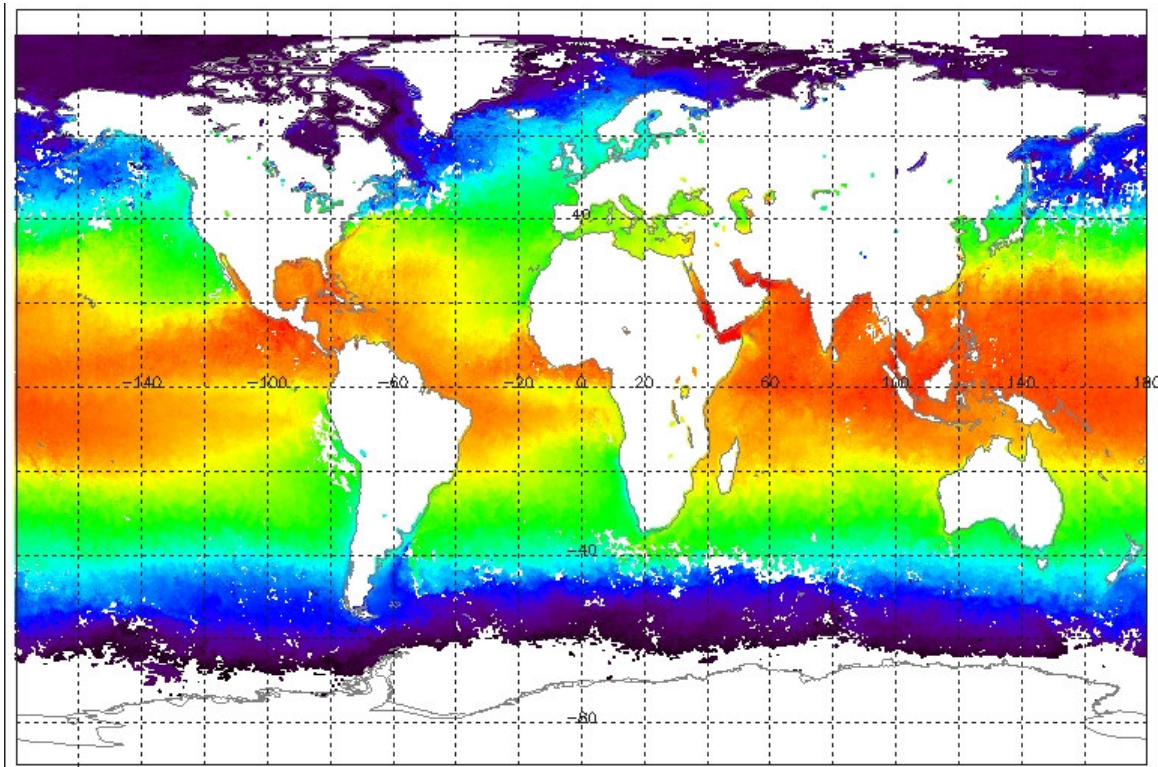


Figure 5-3 - This figure gives the monthly average Dual View SST, with a range of 270 - 305 Kelvin for June 2009.



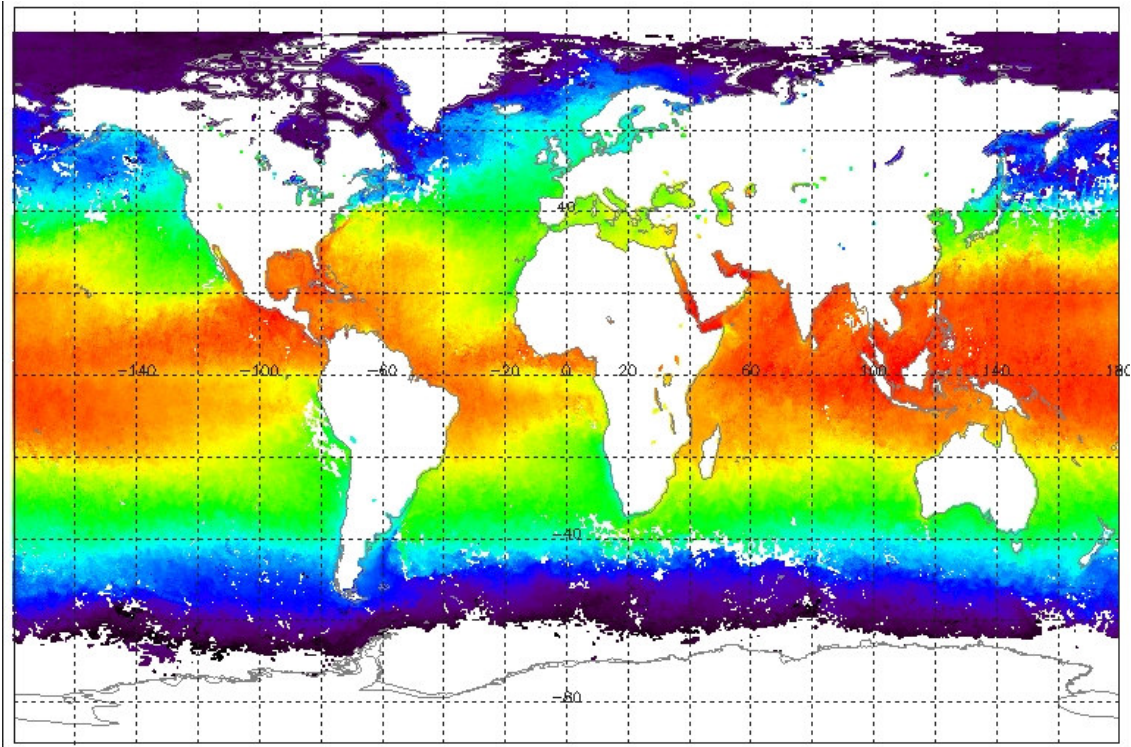


Figure 5-4 - This figure gives the monthly average Nadir SST, with a data range of 270 - 305 Kelvin for June 2009.

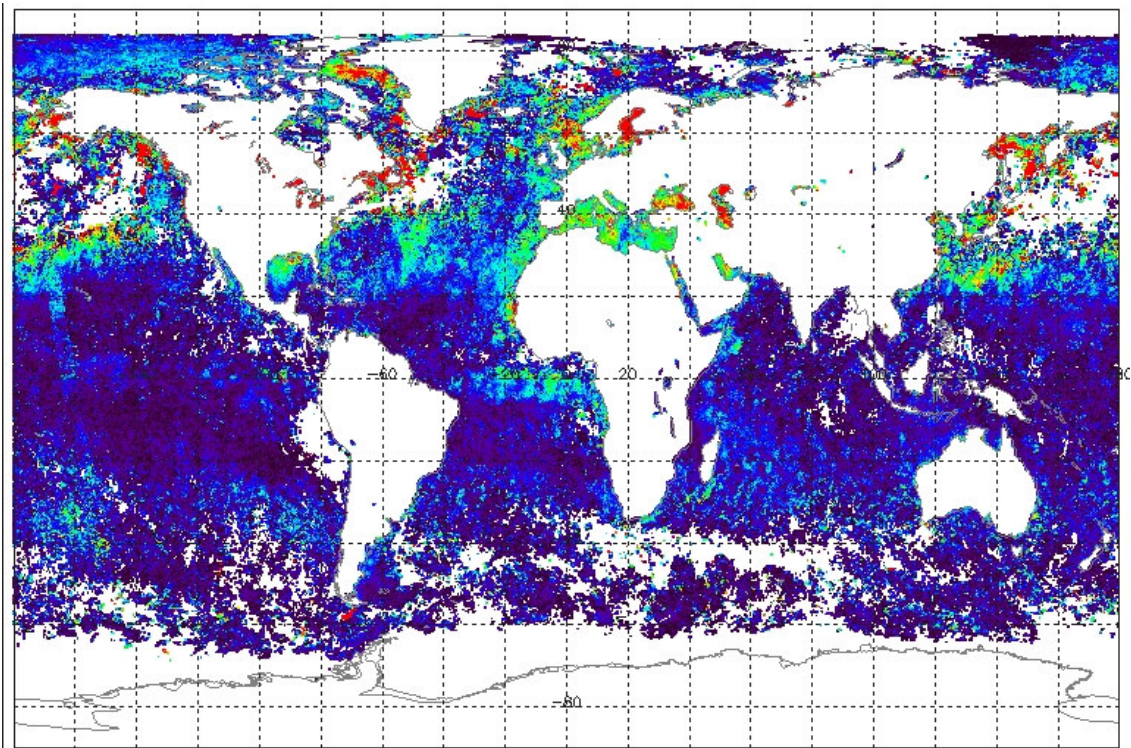
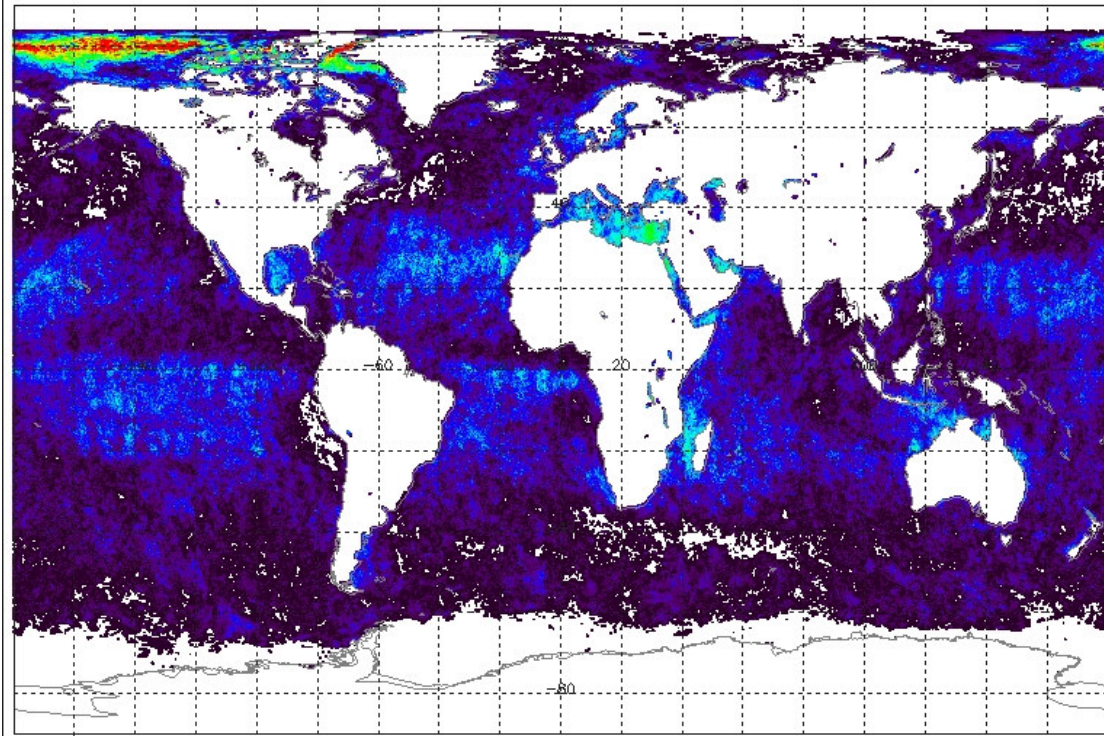


Figure 5-5 - The standard deviation of the monthly average in SST with a data range of 0 to 2 Kelvin for June 2009.



**Figure 5-6 – The number of contributory orbits to the calculation of the SST, with a range of 0 to 24 for June 2009.**



## 6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

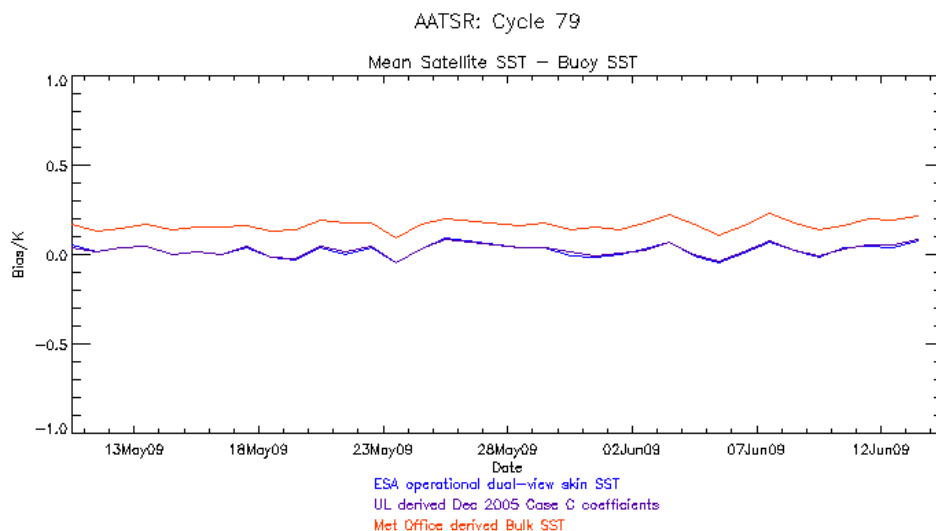
### 6.1 Calibration

No calibration results were reported during this cycle.

### 6.2 Validation

#### 6.2.1 VALIDATION RESULTS FROM CYCLE 79

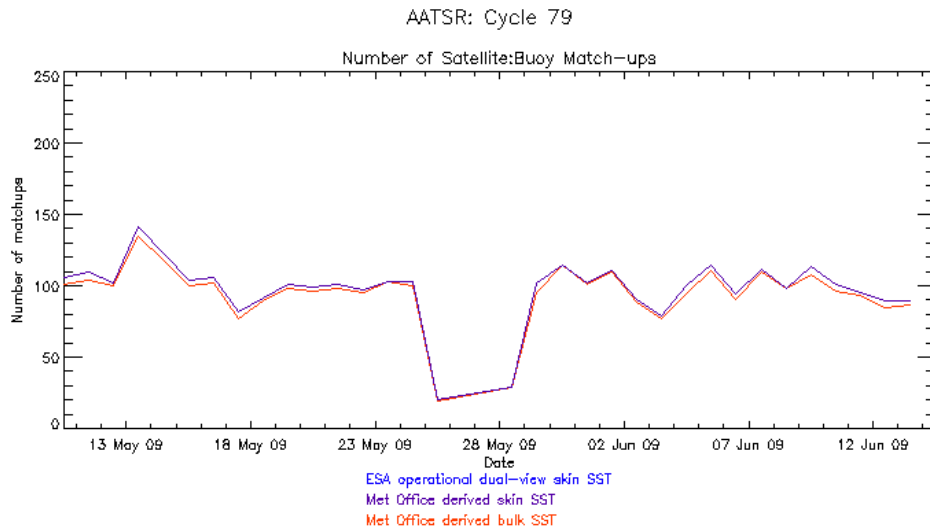
The Met Office has validated the AATSR dual-view SST data using the global network of *in situ* drifting buoy SST data, the results for Cycle 79 being shown in Figure 6-1. The updated SST coefficients released in December 2005 were used in the AATSR SST retrievals.



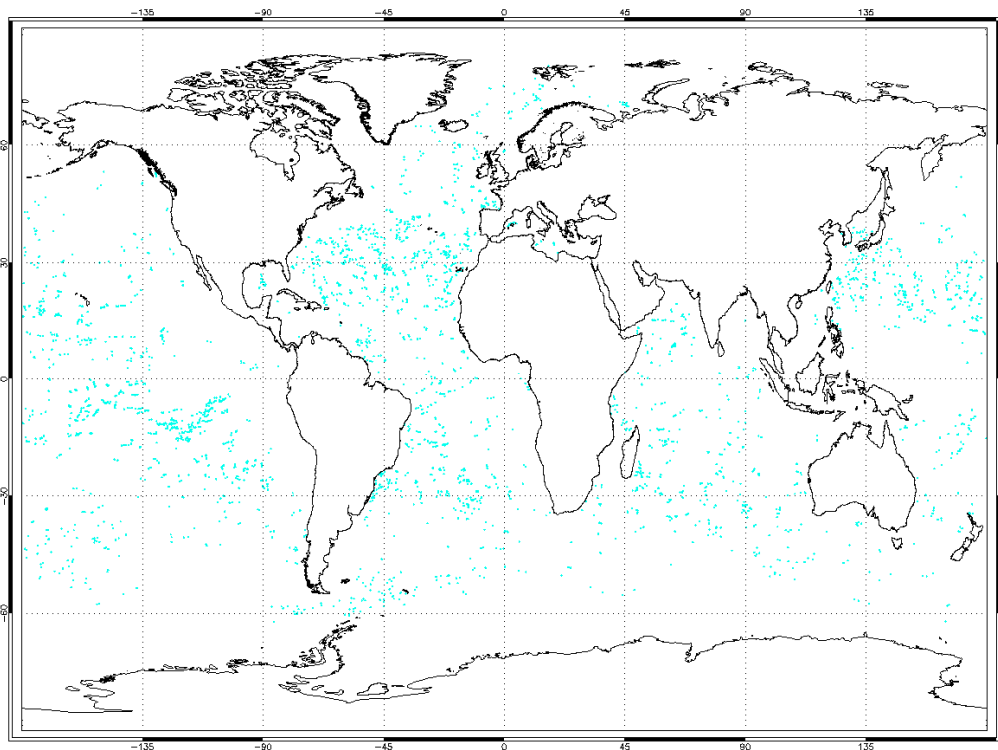
**Figure 6-1 - Comparison of daily mean difference between 10' AATSR SST values and in situ drifting buoy SST for Cycle 79. Data provided by the Met Office.**

During cycle 79, there were 1652 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of -0.018 K, standard deviation 0.24 K, and a mean (dual-view bulk SST minus buoy SST) of +0.120 K, standard deviation 0.23 K. A total of 1529 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.061 K, standard deviation 0.31 K, and a mean (dual-view bulk SST minus buoy SST) of +0.201 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.





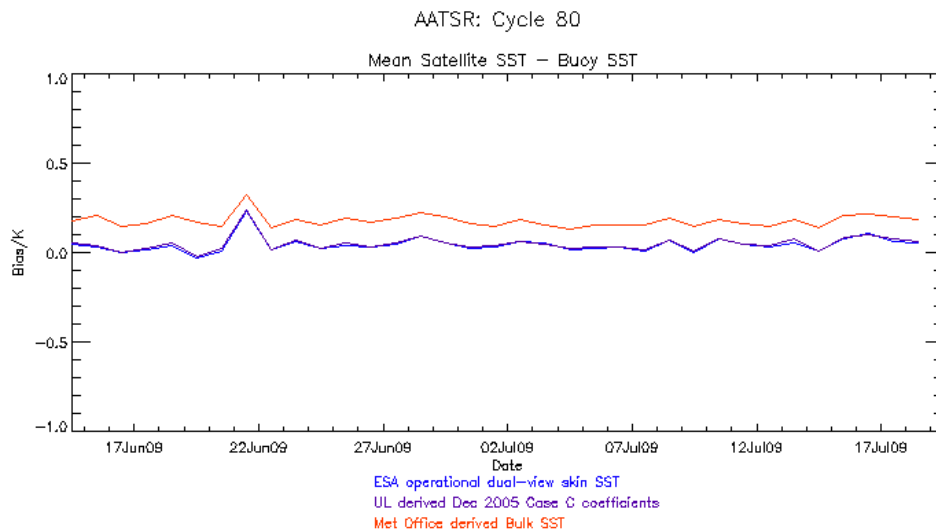
**Figure 6-2 - Plot of daily number of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 79. Data provided by the Met Office.**



**Figure 6-3 - Map showing global distribution of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 79. The cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office**

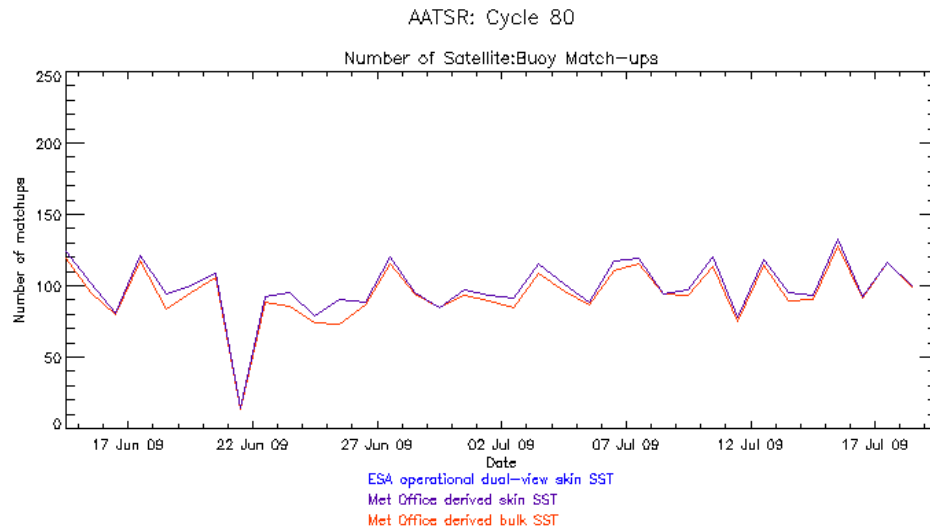
## 6.2.2 VALIDATION RESULTS FROM CYCLE 80

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 80 being shown in Figure 6-4. The updated SST coefficients released in December 2005 were used in the AATSR SST retrievals.

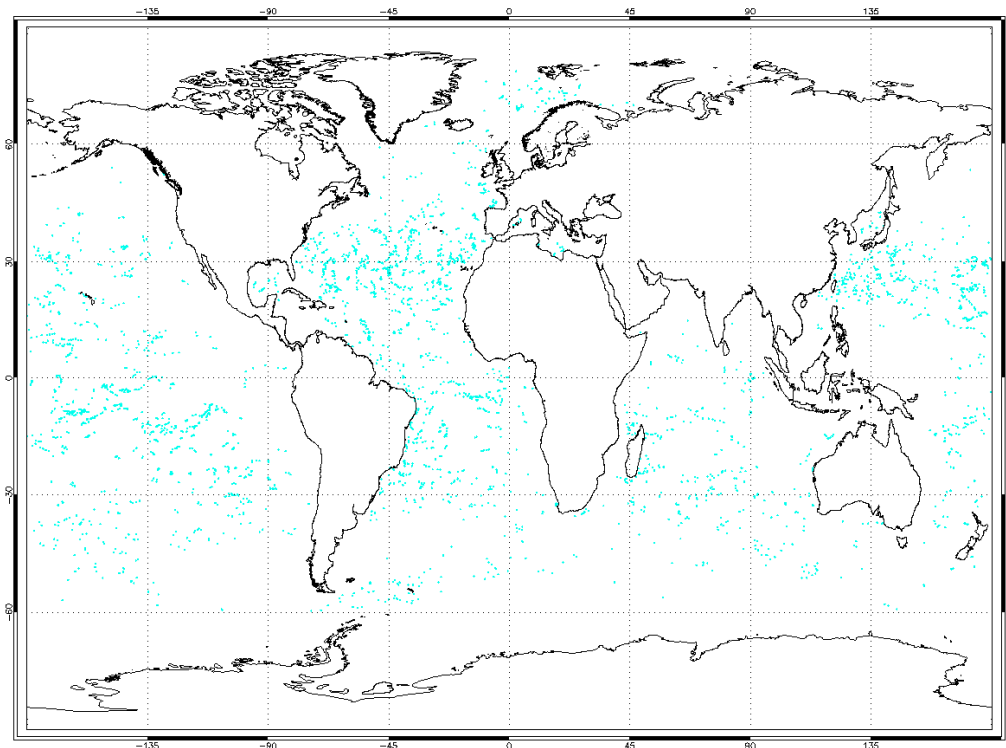


**Figure 6-4 - Comparison of daily mean difference between 10' AATSR SST values and in situ drifting buoy SST for Cycle 80. Data provided by the Met Office.**

During cycle 80, there were 1754 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.009 K, standard deviation 0.25 K, and a mean (dual-view bulk SST minus buoy SST) of +0.135 K, standard deviation 0.22 K. A total of 1512 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.079 K, standard deviation 0.32 K, and a mean (dual-view bulk SST minus buoy SST) of +0.216 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 6-5 - Plot of daily number of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 80. Data provided by the Met Office.**



**Figure 6-6 - Map showing global distribution of match-ups between 10' AATSR SST values and in situ buoy SST for Cycle 80. 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.