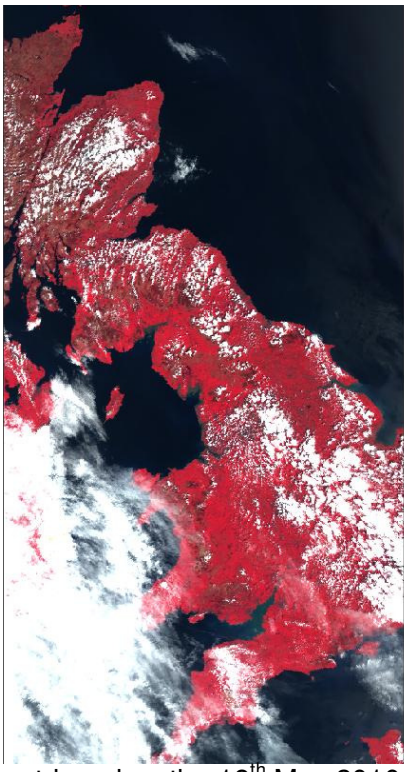
# ENVISAT - AATSR

# CYCLIC REPORT #89

| | START | END |
|---|---|---|
| DATE | 26TH APRIL 2010 | 31ST MAY 2010 |
| TIME | 21:59:29 | 21:59:29 |
| ORBIT # | 42638 | 43138 |



Subsection from a Level 1 product retrieved on the 18th May 2010, showing the UK on a mostly clear day with only some low level convective cloud.


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

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

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# AATSR CYCLIC REPORT # 89

# 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:** 89

**Cycle Start:** 26th April 2010, 21:59:29 Orbit #: 42638

**Cycle End:** 31st May 2010, 21:59:29 Orbit #: 43138

The main activities during the cycle have been as follows:

- **AATSR NRT Dissemination Delay**

  Due to system problems and problems on the processing chain at PDHS-K (Kiruna) facilities, there was an interruption to the Envisat Near Real Time (NRT) production/dissemination services on the 30th of April, on the 25th of May and on the 27th of May.

  At PDHS-E (Esrin), On-line archives (RA, EWFS and FTP) were not available from 19:00 on the 3rd of May 2010, due to technical problems, causing a delay in the Envisat Real Time dissemination. Once the issue was resolved, all backlogs were recovered.

- **ARTEMIS unavailability**

  At 2010/05/12 05:34:59z, the service failed due to an incomplete APC table loaded on board ARTEMIS. The services were resumed at 06:22:28.

- **AATSR Black-Body Cross-over Test**
  The Envisat AATSR blackbody crossover test took place from 26-May-2010 08:18:09 to 28-May-2010 08:55:00 UTC. Scientific data for orbits 43061 - 43090 will not be optimally calibrated as a result.

- **Envisat Orbit Control Manoeuvre (OCM):**

  An Envisat Orbit Control Manoeuvre (OCM) took place from 26 - 27 April 2010 and the following precise instrument unavailability period has been registered for AATSR: 26-Apr-2010 22:08:15 to 27-Apr-2010 06:59:50 UTC.

# 3 SOFTWARE & AUX FILE VERSION CONFIGURATION

## 3.1 Software Version

AATSR IPF for Level 1 and Level 2: Version 6.02L02

## 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 1 Latest auxiliary files currently in use by the PDS**

STATUS OF DAILY VISIBILE CALIBRATION FILES

#### *3.2.1.1 VC1 File Availability*

The daily reflectance channel calibration files were available for all dates during this cycle.

### 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 |
|---|---|---|---|---|
| 26/04/2010 22:11 | 27/04/2010 06:59 | OCM | EN-UNA-2010/0084 | Yes |

**Table 2 Instrument unavailability during cycle 89**

## 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 | April 26, 2010 | 42638 | 42737 | 31713 | 0 | 0 | 94.76% | 94.76% | 94.76% |
| 2 | May 3, 2010 | 42738 | 42837 | 0 | 0 | 0 | 100.00% | 100.00% | 100.00% |
| 3 | May 10, 2010 | 42838 | 42938 | 0 | 0 | 5798 | 100.00% | 100.00% | 99.04% |
| 4 | May 17, 2010 | 42939 | 43038 | 0 | 0 | 0 | 100.00% | 100.00% | 100.00% |
| 5 | May 24, 2010 | 43039 | 43138 | 0 | 0 | 0 | 100.00% | 100.00% | 100.00% |

**Table 3 Instrument and data unavailability weekly summary for cycle 89**

The instrument was available for 98.95% of the time during the cycle.
The L0 data were available for 98.95% of the time during the cycle.
The L1b data were available for 98.76% 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 |
|---|---|---|---|---|
| 26-Apr-2010 22:11:42 | 27-Apr-2010 06:59:51 | 31,713 | 42640 | 42645 |

**Table 4 ATS_NL__0P missing data during cycle 89**

The following L1 data was missing from this cycle:

| UTC Start | UTC Stop | Duration (s) | Orbit Start | Orbit End |
|---|---|---|---|---|
| 15-May-2010 21:52:54 | 15-May-2010 23:29:32 | 5798 | 42911 | 42911 |

**Table 5 ATS_ TOA_1P missing data during cycle 89**

### 4.2.1 ORBITS AFFECTED BY POOR DATA QUALITY

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

- 42640 (26th April 2010)
- 42736 (3rd May 2010)
- 43062 (26th May 2010)
- 43078 (27th May 2010)

## 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

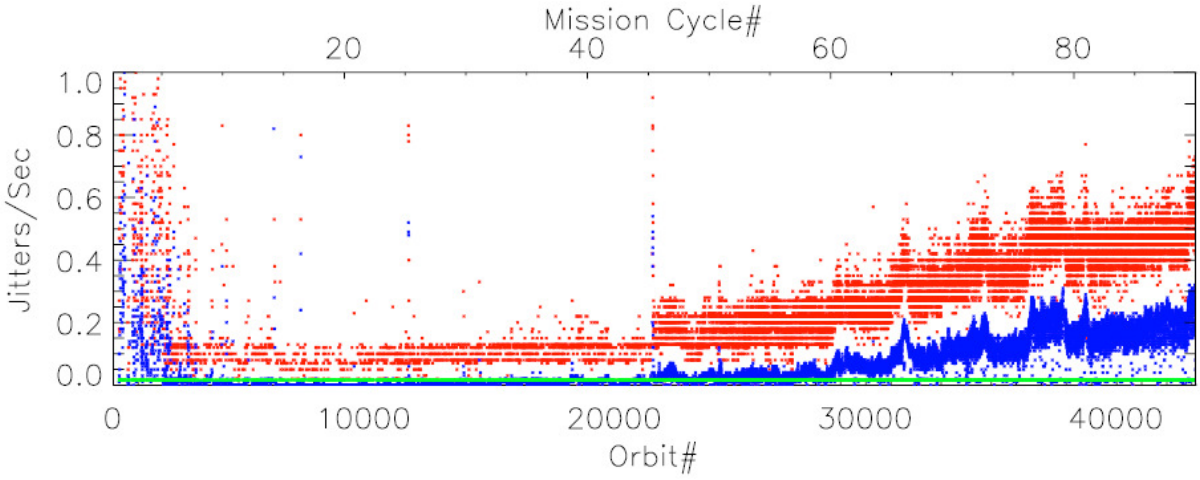


**Figure 5-1 Jitter trend from mission start**

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 a significant rate increase towards the end of Cycle #89.

### 5.1.2 SENSOR TEMPERATURE

The detector temperature plots for cycle 89 can be found at:

http://zenith.ag.rl.ac.uk/data/zenith/EDS-X/CyclePlots/DetTemps89.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://zenith.ag.rl.ac.uk/data/zenith/EDS-X/CyclePlots/VC1-89.txt

### 5.1.4 NE∆T

The NE∆T results for AATSR Cycle 89 are currently unavailable and will be provided 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
*Released* - 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.
Note: this PR has been migrated to a new PR (IDEAS-PR-09-04805) on the current Linux IPF version. A fix for this PR was introduced into the new v6.03 processor and following a successful validation this PR should be closed once the new v6.03 goes into operation.

**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 (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."

### 5.3.2 NEW SPRS SINCE THE LAST CYCLIC REPORT

No new SPRs have been opened since the last Cyclic Report

### 5.3.3 CLOSED SPRS

No new 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 May 2010. This consists of 493 products taken from orbits 42699 to 43141. Figure 5-3, **Error! Reference source not found.**, Figure 5-5 and

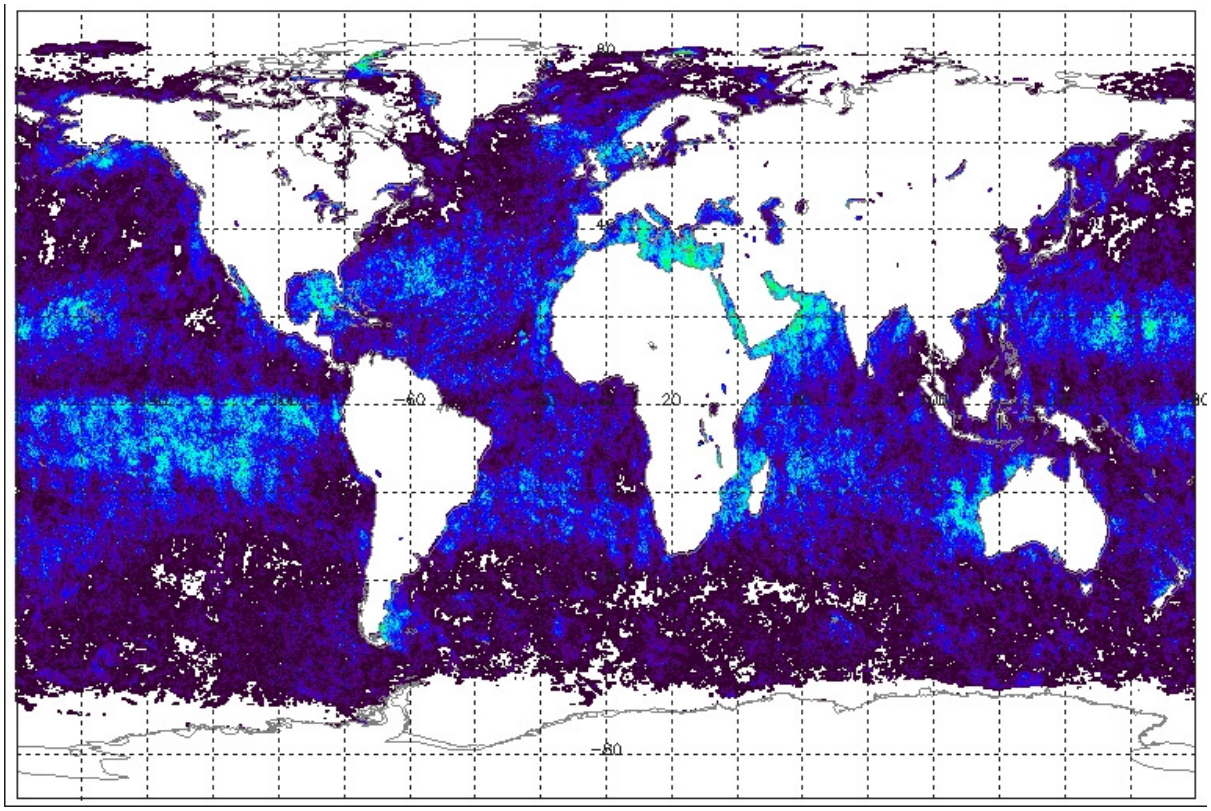

Figure 5-6 show the SST average in dual and nadir views, the standard deviation and the number of contributory orbits for May 2010. Please note we are not able to provide individual colour scales at this time, however the colouring scheme used is given in Figure 5-2 and the data ranges of each diagram 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.**

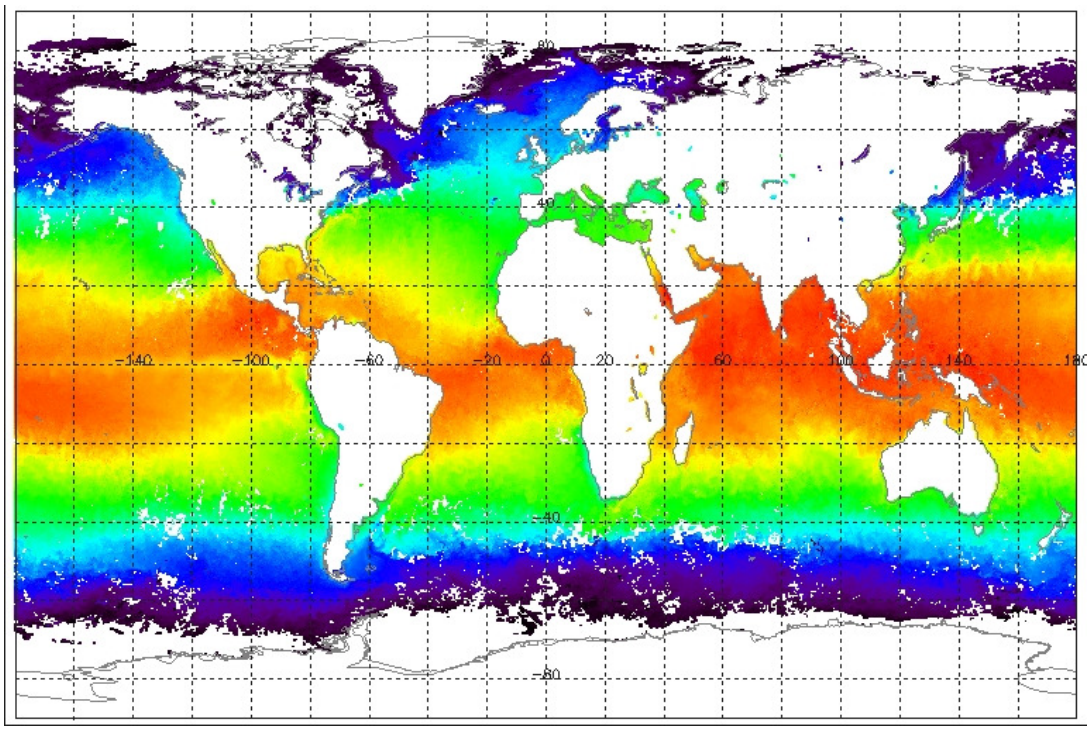


**Figure 5-3 - This figure gives the monthly average Dual View SST, with a range of 270 - 305 Kelvin for May 2010**

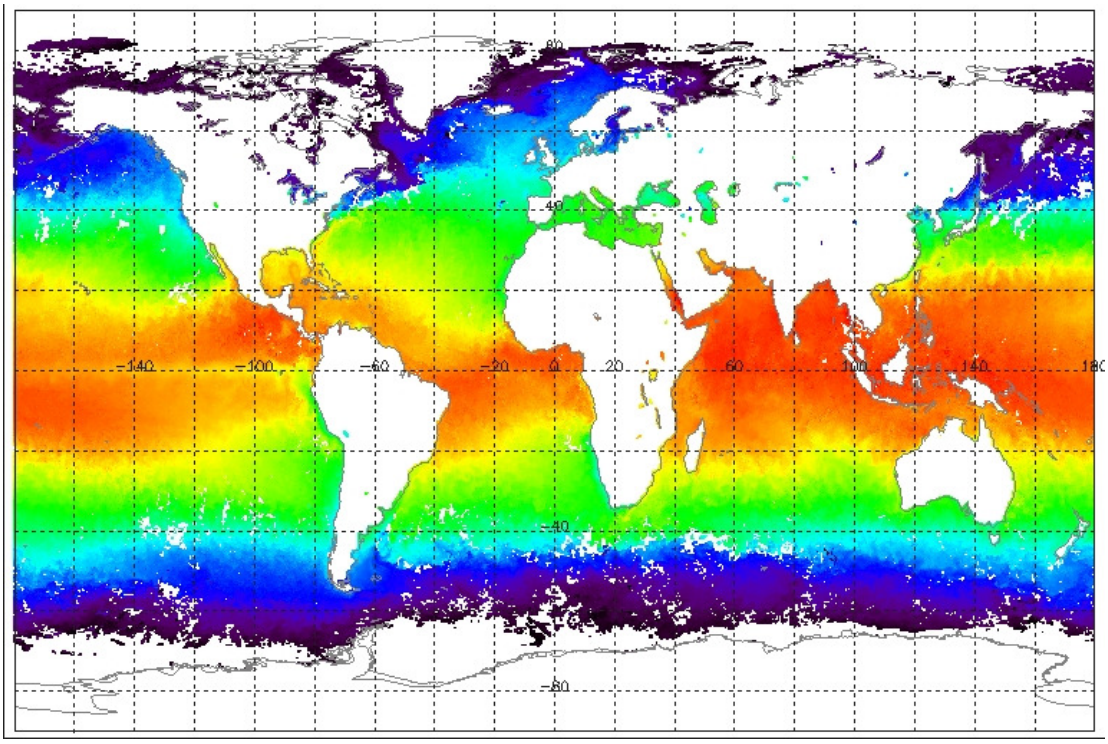

**Figure 5-4 - This figure gives the monthly average Nadir SST, with a data range of 270 - 305 Kelvin for May 2010**

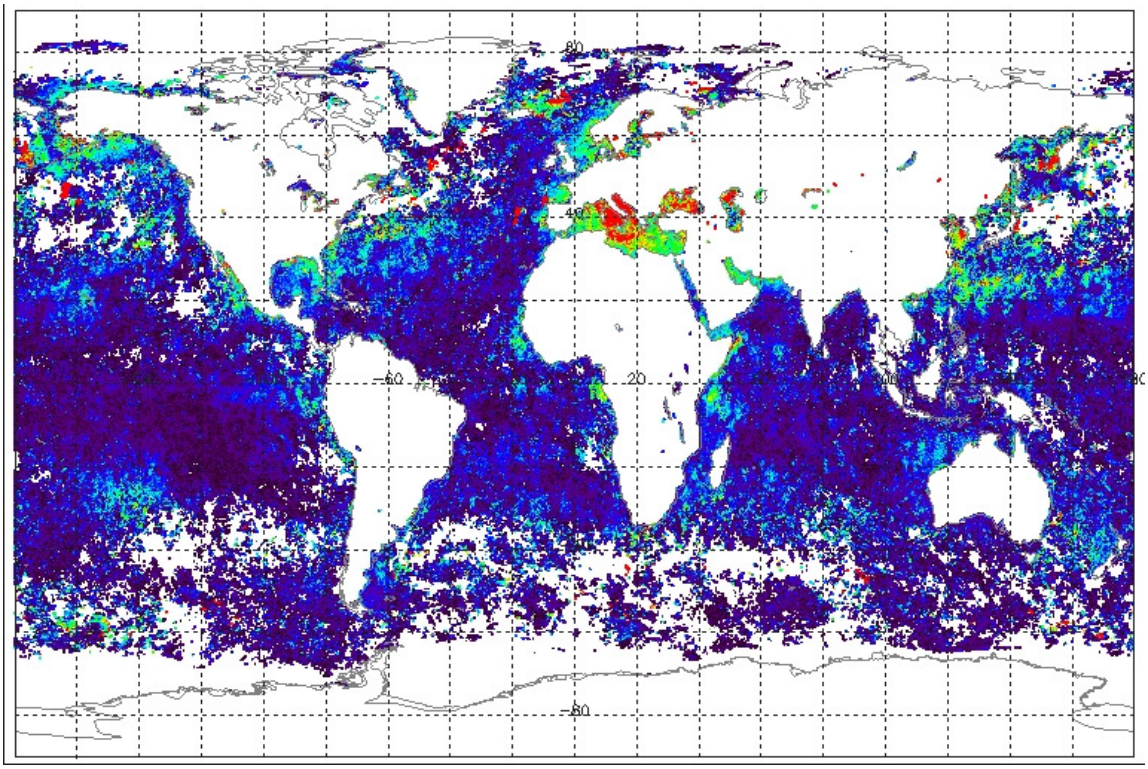

**Figure 5-5 The standard deviation of the monthly average in SST with a data range of 0 to 2 Kelvin for May 2010**

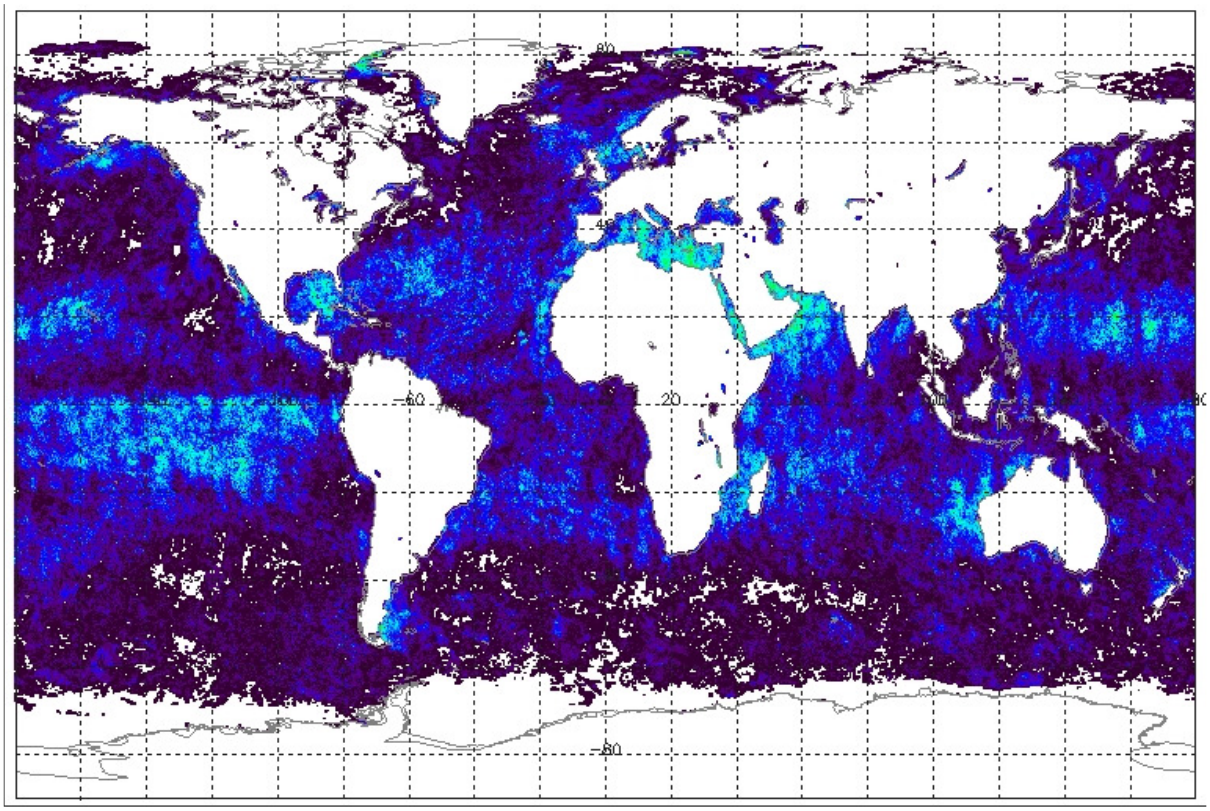

**Figure 5-6 The number of contributory orbits to the calculation of the SST, with a range of 0 to 20 for May 2010**

# 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 89 being shown in Figure 1.1.1 2. The updated SST coefficients released in December 2005 were used in the AATSR SST retrievals.

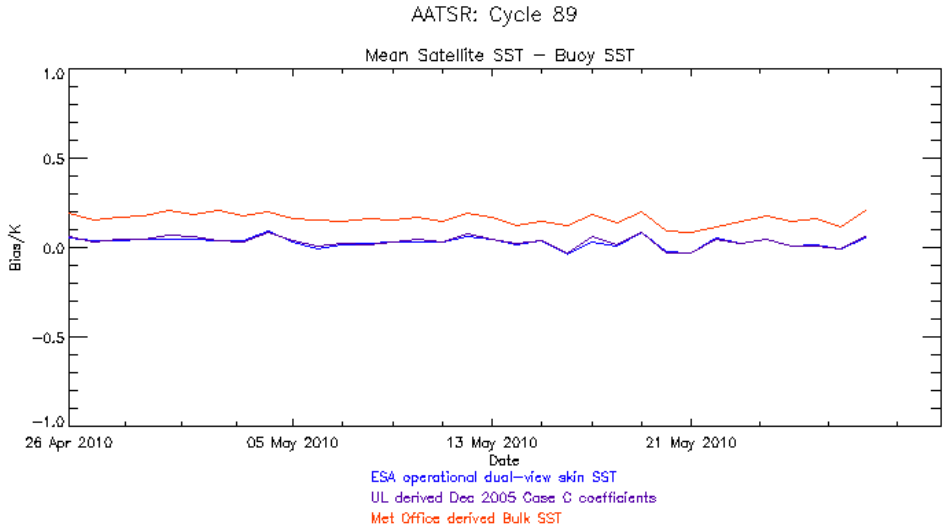


**Figure 6-1 Comparison of daily mean difference between 10´ AATSR SST values and in situ drifting buoy SST for Cycle 89. Data provided by the Met Office.**

During cycle 89, there were 1861 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.006 K, standard deviation 0.25 K, and a mean (dual-view depth SST minus buoy SST) of +0.134 K, standard deviation 0.23 K. A total of 1778 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.055 K, standard deviation 0.30 K, and a mean (dual-view depth SST minus buoy SST) of +0.189 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.

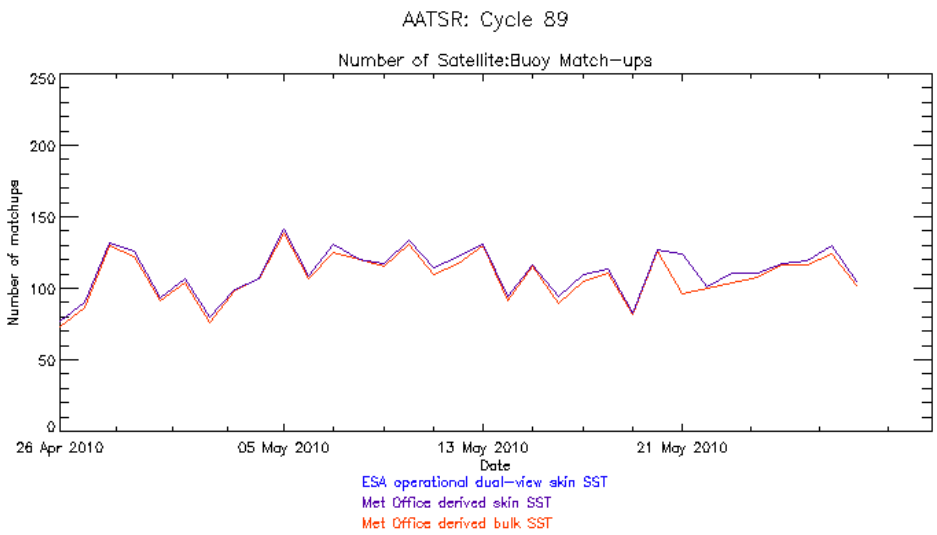


**Figure 6-2 Plot of daily number of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 89. Data provided by the Met Office**

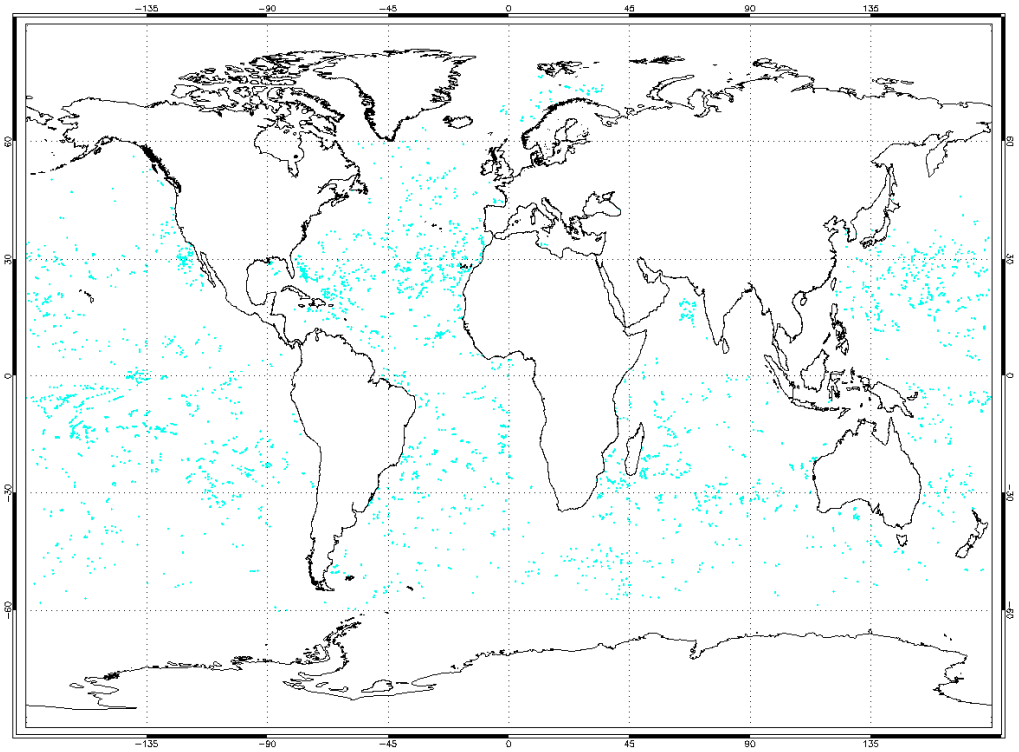

**Figure 6-3 Map showing global distribution of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 89. The cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office**

# 7 DISCLAIMERS

No new disclaimers have been issued during this cycle.