

# ENVISAT - AATSR

## CYCLIC REPORT #93

	START	END
<i>DATE</i>	13TH SEPTEMBER 2010	18TH OCTOBER 2010
<i>TIME</i>	21:59:29	21:59:29
<i>ORBIT #</i>	44644	45144



This subset from a Level 1 product acquired on the 6<sup>th</sup> October 2010 shows the Pyrenees at North and the Mediterranean coast of Spain. This RGB image is composed of the 1.6, 0.87 and 0.55 micron channels for the nadir view.

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## AATSR CYCLIC REPORT # 93

### 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:** 93

**Cycle Start:** 13th September 2010, 21:59:29 Orbit #: 44644

**Cycle End:** 18th October 2010, 21:59:29 Orbit #: 45144

The main activities during the cycle have been as follows:

- **ESRIN downtimes and delays**

During the reporting period there were several network downtimes at ESRIN: on 14<sup>th</sup> September from 07:30 to 13:30 UTC, on 22<sup>nd</sup> September from 10:00 to 18:00 CET, on 5<sup>th</sup> October from 9:00 to 15:00 and on 11<sup>th</sup> October from 10:00 to 12:00 CET.

There were delays on 20<sup>th</sup> September, on 12<sup>th</sup> October and on 14<sup>th</sup> October in the Envisat NRT production and distribution to users.

Outage communication on the 24<sup>th</sup> September affected the access to the Rolling Archives.

Problems have been solved and the services are now accessible again. NRT processing and dissemination is back to nominal operations.

- **Kiruna downtimes and delays**

There was a planned network downtime of about two hours on the 21<sup>st</sup> September between 10:00 and 18:00.

Due to required interventions at the PDHS-K facilities, there was an interruption to the Envisat Near Real Time (NRT) production / dissemination services on 4<sup>th</sup> October and 6<sup>th</sup> October 2010, between 10:00 and 18:00 CET.

There were dissemination delays on the 12<sup>th</sup> October.

- **Error in Visible Calibration (VC1) auxiliary files**

It was detected that all VC1 files generated from 4<sup>th</sup> April until 12<sup>th</sup> July (inclusive) did not contain the long-term drift correction. The work to regenerate and disseminate corrected VC1 files is concluded now. The last set of files have been successfully checked and delivered.

- **Preparation for the Envisat 2010+ change of orbit**

Preparatory work is on-going on the preparation for the orbital change at the end of the month.

### 3 SOFTWARE & AUX FILE VERSION CONFIGURATION

#### 3.1 Software Version

AATSR IPF for Level 1 and Level 2: Version 6.03

AATSR L2P Processor: Version 1.5.

#### 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 following daily reflectance channel calibration files were not available during this cycle:

Date	Validity range		Comments
	From	To	
20/09/2010	19/09/2010	26/09/2010	None
23/09/2010	22/09/2010	30/09/2010	None
10/10/2010	09/10/2010	16/10/2010	None
11/10/2010	10/10/2010	17/10/2010	None

**Table 3-2 Unavailable VC1 files**

### 3.2.2 STATUS OF OTHER AUXILIARY FILES

No auxiliary files changed during this cycle.

## 4 PDS STATUS

### 4.1 Instrument Unavailability

No AATSR data were unavailable due to instrument unavailability during the cycle.

### 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	Sep 13, 2010	44644	44743	0	0	0	100.00%	100.00%	100.00%
2	Sep 20, 2010	44744	44843	0	0	309	100.00%	100.00%	99.95%
3	Sep 27, 2010	44844	44944	0	0	0	100.00%	100.00%	100.00%
4	Oct 04, 2010	44945	45044	0	0	0	100.00%	100.00%	100.00%
5	Oct 11, 2010	45045	45144	0	0	5767	100.00%	100.00%	99.05%

**Table 4-1 Instrument and data unavailability weekly summary for cycle 93**

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

The L0 data were available for 100.00% of the time during the cycle.

The L1b data were available for 99.80% of the time during the cycle.

No L0 data was missing from this cycle.

The following L1b data was missing from this cycle:

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
24/09/2010 01:40	24/09/2010 01:46	309	44789	44789
13/10/2010 05:35	13/10/2010 07:11	5767	45063	45064

**Table 4-2 ATS\_TOA\_1P missing data during cycle 93**

#### 4.2.1 ORBITS AFFECTED BY POOR DATA QUALITY

During this cycle, no orbits contained frames suffering from bad/missing telemetry.

### 4.3 L0 and L1b Backlog Processing Status

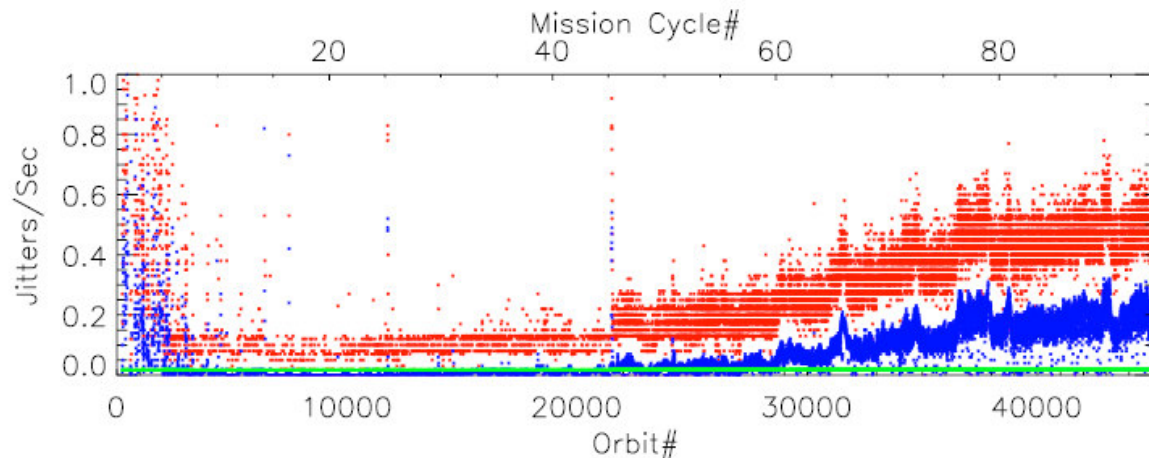
There is no update available on the status of backlog processing.



## 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 a slightly improved mean jitter-rate wrt the previous cycle.

#### 5.1.2 SENSOR TEMPERATURE

The detector temperature plots for Cycle 93 can be found at:

<http://zenith.ag.rl.ac.uk/data/zenith/EDS-X/CyclePlots/DetTemps93.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/VC1-93.txt>

#### 5.1.4 NE $\Delta$ T

Information on the NE $\Delta$ T for Cycle 93 was not available at the time of publishing; the 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 new and open SPRs, their potential impact on the data quality, and any SPRs that have been closed.

### **5.3.1 EXISTING SPRS THAT ARE STILL OPEN**

The following SPRs are still open:

#### **Wrong REF\_DOC in MPH of AATSR products**

NA-PR-10-05334

As a result of the AMALFI-2 pilot project, it has been discovered that the REF\_DOC field in the MPH of AATSR products is different from the product specification name.

- 1) The REF\_DOC should follow "AA-BB-CCC-DD-EEEE\_V/I", 23 characters where AA-BB-CCC-DD-EEEE is the ESA standard document number and V/I is the volume/issue.
- 2) The referenced product spec is still 3/K. whilst the one applicable, and also referenced in the SRN of 6.03 is 4/A.

#### **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. In the case of the SQADS, this is sampled only every 512 rows, rather than every 32, so in order to provide coverage for every granule in a child product, the number of SQADS records strictly required depends on the length of the child product and where the child product starts in relation to the 512 record boundaries. Parent products by definition start on a 512 record boundary, but child products need not. If we define a product segment of 512 consecutive rows (=16 granules) as a frame, then the number of SQADS records required in the child product is equal to the number of frames overlapped by the child product. For the case of the Scan Pixel x and y ADS, the records represent instrument scans, not image rows. There is no simple algorithm to define the number of records from the parent product that should be included in the child product.

### **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**

One new SPR has been closed since the last Cyclic Report:

### **Processing of L1/L2 fails with product:**

**ATS\_NL\_\_OPNPDE20100515\_214836\_000061722089\_00272\_42911\_1524.N1**  
IDEAS-PR-10-05411

The problem does not occur in prototype, but in PDGS operational chain and in GAMME validation platform. Processing the following L0 product to L1 and L2 fails  
ATS\_NL\_\_OPNPDE20100515\_214836\_000061722089\_00272\_42911\_1524.N1.

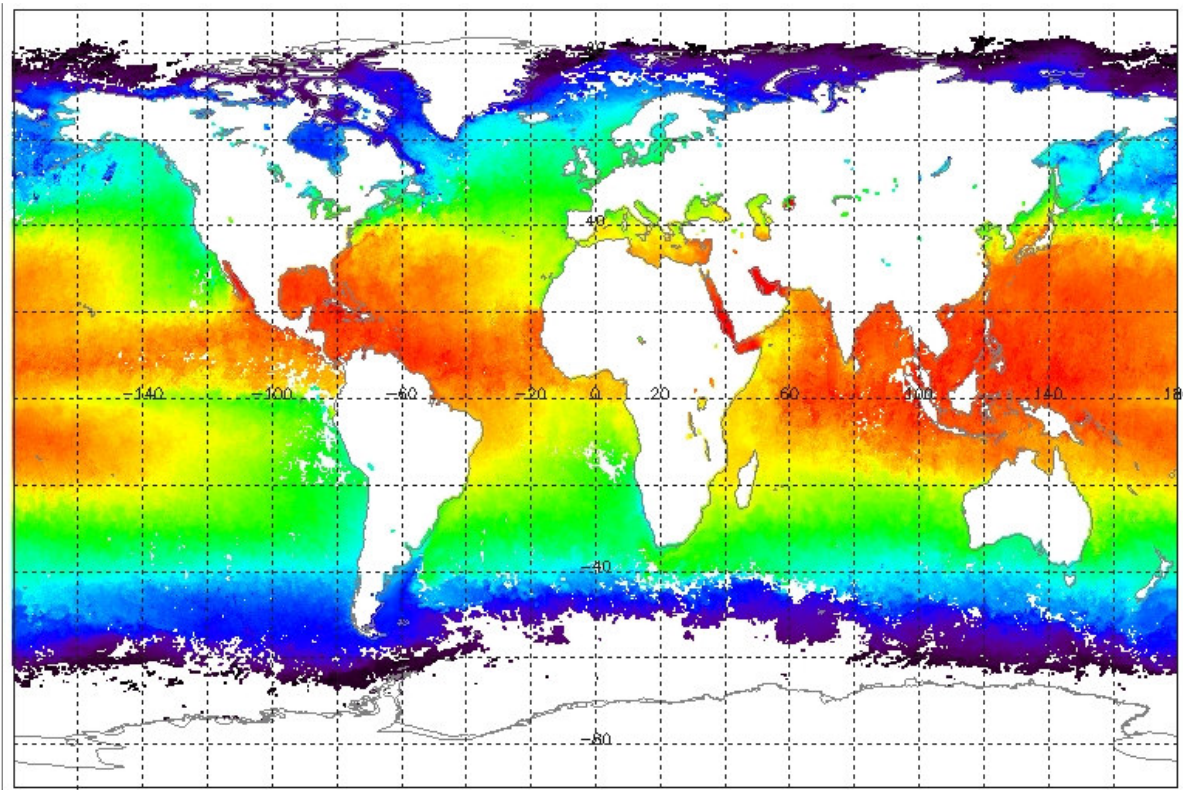
This was found to be due to some assertions added for debug and which should be almost always true so the affected products are very rare; tests showed that there is no significant improvement of performance after removing this debug option.

## 5.4 Monthly Level 3 Product

The following plots have been generated from the available Meteo products acquired in September 2010. This consists of 495 products taken from orbits 44459 to 44885. 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 September 2010. Please note we are not able to provide individual colour scales at this time, however the scheme used is given in Figure 5-2, and the data ranges of each plot are specified in the accompanying caption.



**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** Monthly average Dual View SST, with a range of 270 - 305 Kelvin for September 2010

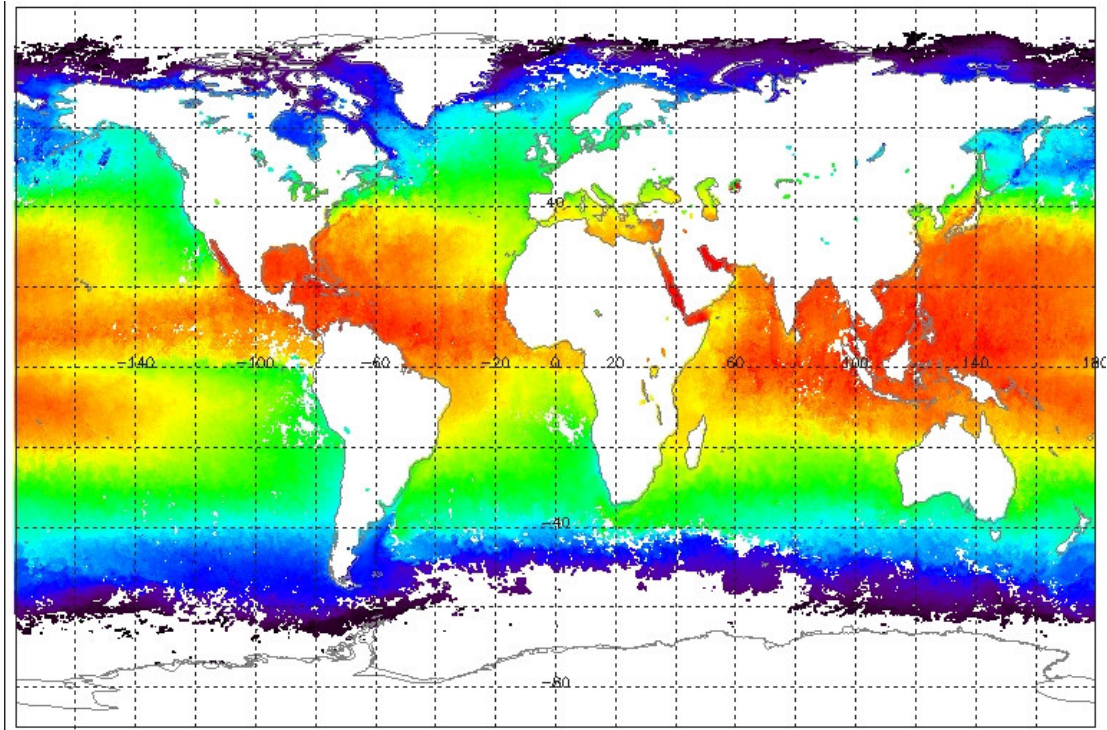


Figure 5-4 Monthly average Nadir SST, with a data range of 270 - 305 Kelvin for September 2010

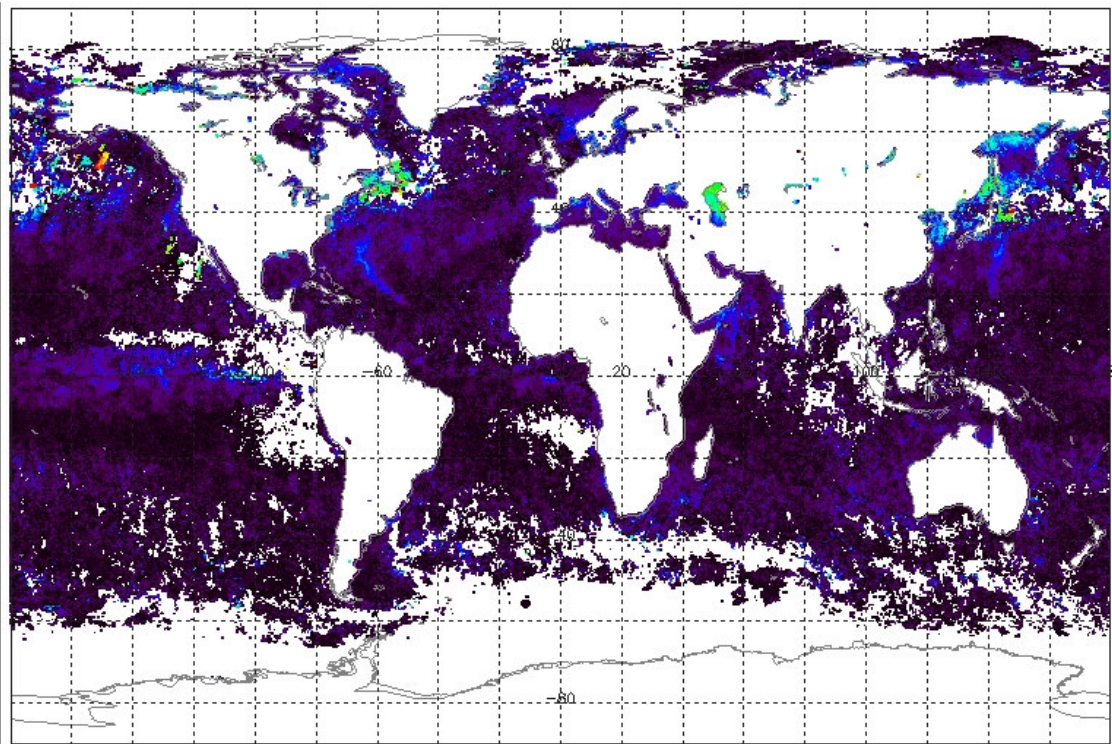
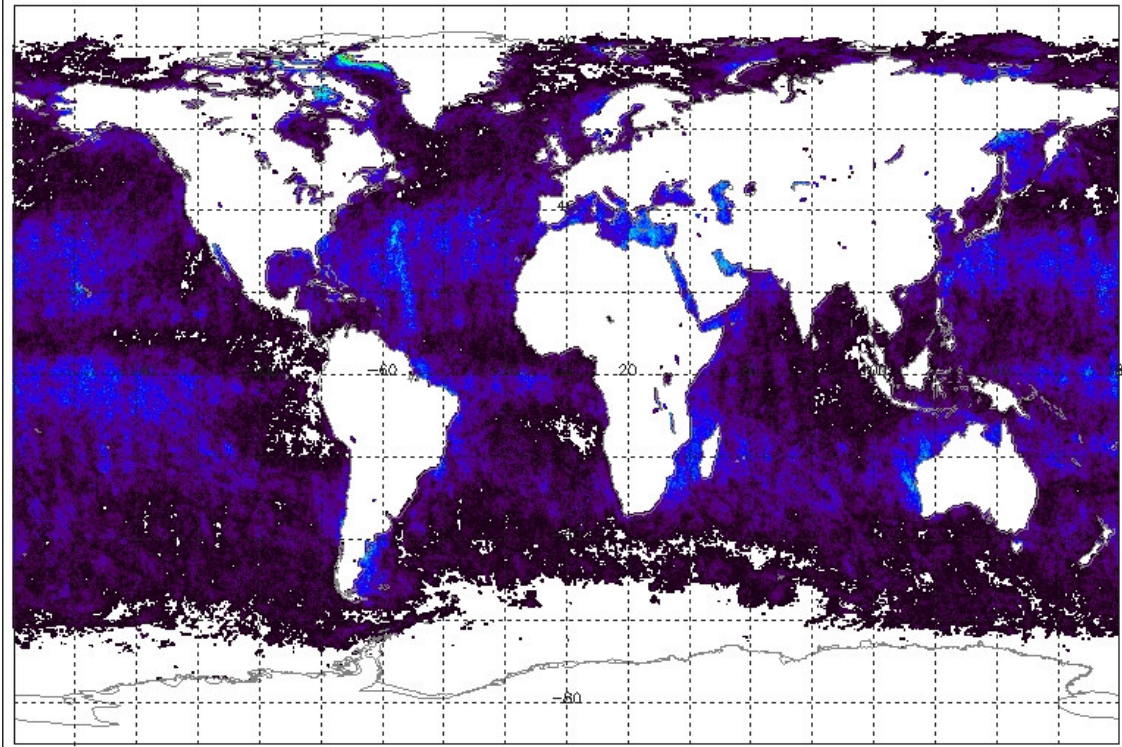


Figure 5-5 Standard deviation of the monthly average SST with a data range of 0 to 5 Kelvin for September 2010



**Figure 5-6 Number of contributory orbits to the calculation of the SST, with a range of 0 to 36 for September 2010**

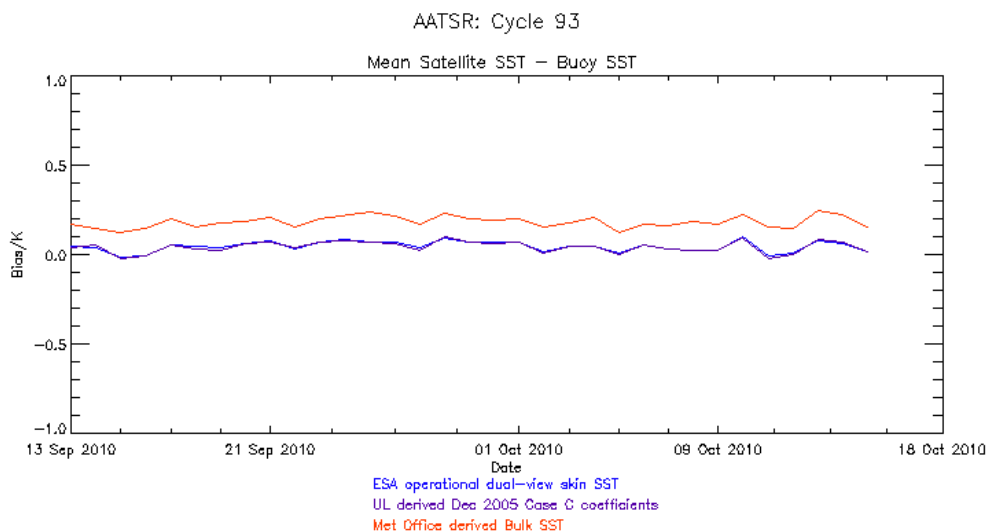
## 6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

### 6.1 Calibration

No calibration results were reported during this cycle.

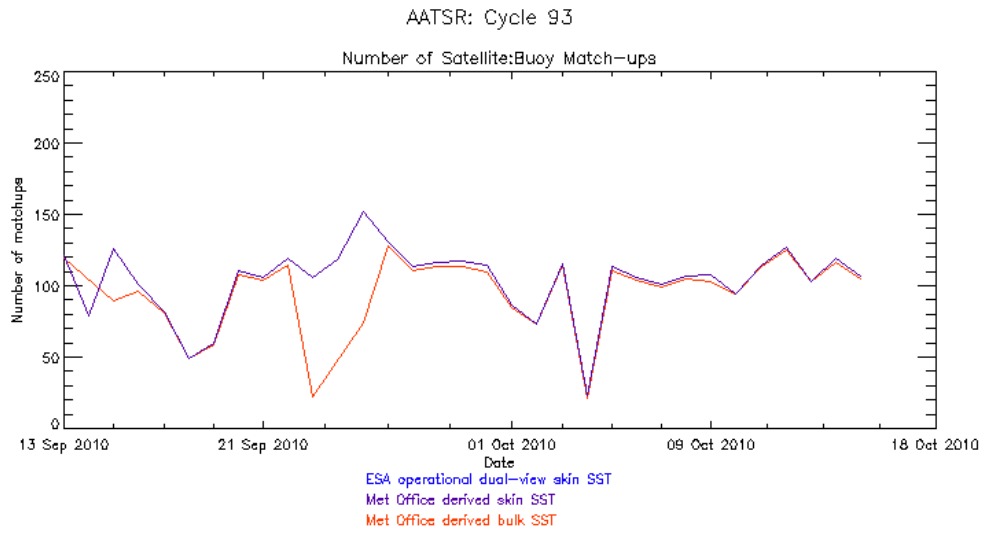
### 6.2 Validation

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 93 being shown in Figure 6-1. The updated SST coefficients released in December 2005 were used in the AATSR SST retrievals.

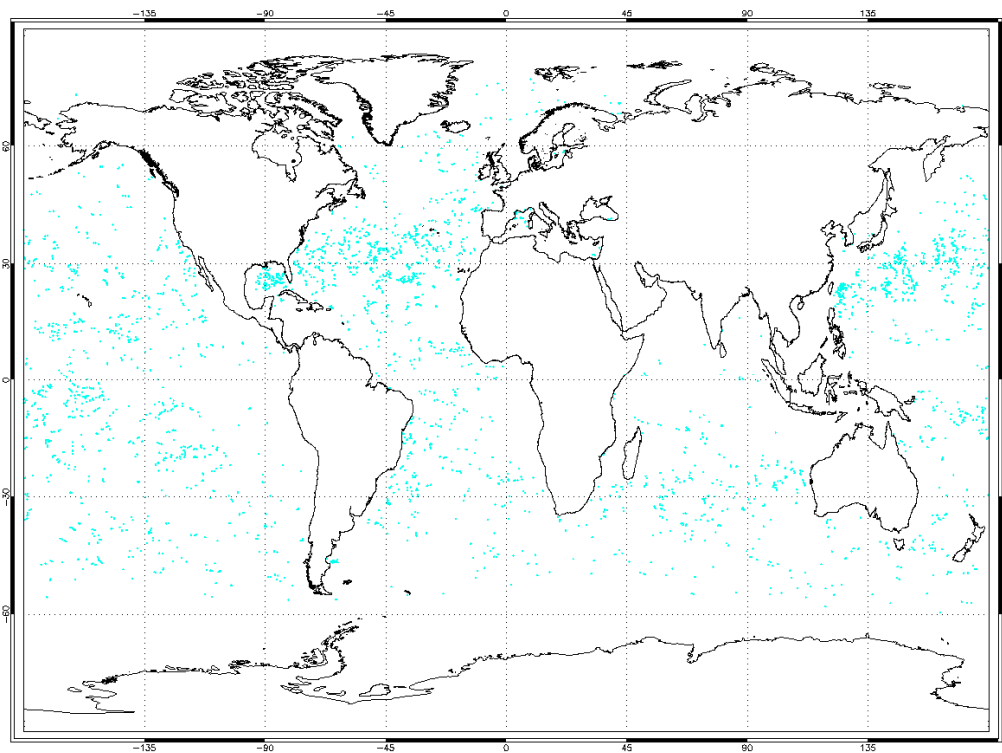


**Figure 6-1 Comparison of daily mean difference between 10' AATSR SST values and in situ drifting buoy SST for Cycle 93. Data provided by the Met Office.**

During cycle 93, there were 1814 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.003 K, standard deviation 0.24 K, and a mean (dual-view depth SST minus buoy SST) of +0.142 K, standard deviation 0.22 K. A total of 1574 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.094 K, standard deviation 0.29 K, and a mean (dual-view depth SST minus buoy SST) of +0.231 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 93. 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 93. 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.