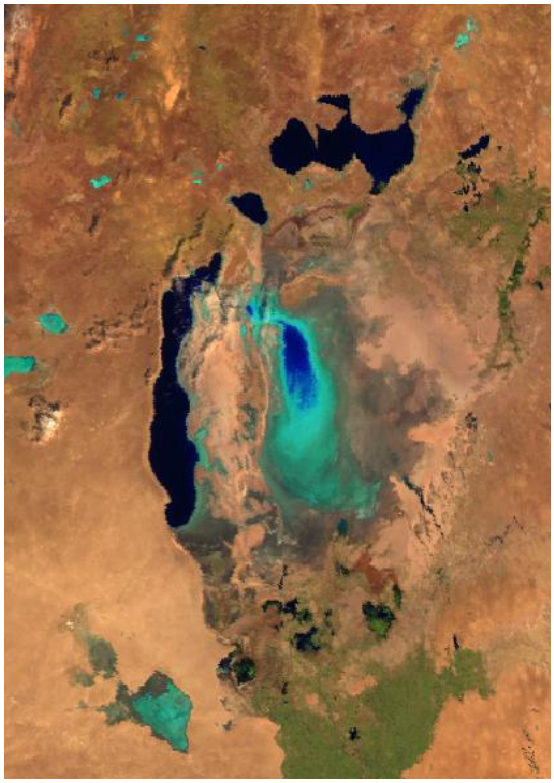
ENVISAT - AATSR

CYCLIC REPORT #83

	START	END
DATE	28 SEPTEMBER 2009	2 NOVEMBER 2009
TIME	21:59:29	21:59:29
ORBIT #	39634	40134



This image, an RGB combination of 1.6, 0.87 and 0.55 micron channels taken on the 6th October 2009, shows the Aral Sea, located on the border between Kazakhstan and Uzbekistan. Over the last 40 years, the Aral Sea, once the fourth largest lake in the world, has evaporated to half its original surface area and a quarter its initial volume

prepared by/*préparé par* AATSR IDEAS and QWG team
reference/*réference*
issue/*édition* 1
revision/*révision* 0

date of issue/*date d'édition* 16 November 2009
status/*état*
Document type/*type de document* Technical Note
Distribution/*distribution*

A P P R O V A L

Title *titre*	AATSR Cyclic Report – Cycle 83	issue 1 *issue*	revision 0 *revision*
author *auteur*	Sophie Cowie	date *date*	16 November 2009
approved by *approuvé par*		date *date*	

C H A N G E L O G

reason for change /*raison du changement*	issue/*issue*	revision/*revision*	date/*date*
		0	

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

ISSUE: 1 REVISION: 0

reason for change/*raison du changement*	page(s)/*page(s)*	paragraph(s)/ *paragraph(s)*

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AATSR CYCLIC REPORT # 83

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: 83

Cycle Start: 28 September 2009, 21:59:29 Orbit #: 39634

Cycle End: 2 November 2009, 21:59:29 Orbit #: 40134

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 – (6.02L02)
  L2P processor – no change (1.5)

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

  An Envisat Orbit Control Manoeuvre (OCM) was executed on 28-29th September 2009 and the following instrument unavailability period for AATSR has been registered: 28-Sept-09 22:07:54 to 29-Sept-09 06:59:54 UTC.

- **AOD (Aerosol Optical Depth) Data in AATSR L2P Products**

  As of 23rd September 2009, the data source used for AOD (Aerosol Optical Depth) information has ceased production. Consequently, AOD information is no longer available as an ancillary field in AATSR L2P products. There is no associated impact on the other datasets contained in the products.

- **AATSR in Reset/Wait/Init due to ICU format header error**

  On 8th October 2009 at 03:15:05, AATSR switched into WAIT mode. Measurement Mode was resumed at 17:04:49 on the same day.

- **EWFS (Envisat Web File Server) – Service unavailability**

  Due to unforeseen problems with the EWFS server during 30th September – 1st October 2009, the website catalogue was not being updated. The service resumed nominal operation on the 1st October.

  Due to technical problems, the EWFS at ESRIN was subject to recurrent intermittent downtimes affecting the access and the search retrieval functions on 30th October 2009.

- **NRT Dissemination Disruptions**

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

  - 16th – 19th October 2009 at ESRIN
  - 21st – 22nd October 2009 at ESRIN due to network problems

  All data backlogs were processed during the next few days.

- **ARTEMIS unavailability**

  An on-board anomaly affecting the ESA Data Rely Satellite Artemis resulted in an interruption of the Envisat data down-linked at ESRIN (PDHS-E) from 27-Oct -2009 20:02 UTC to 28-Oct-2009 12:24 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 3-1 Latest auxiliary files currently in use by the PDS

3.2.1 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
28-Sep-2009 22:07:54	29-Sep-2009 06:59:54	OCM	EN-UNA-2009/0149	Yes
30-Sep-2009 04:49:03	30-Sep-2009 05:21:38	Artemis Unavailability	ART-ENV-UNA-2009-007	No
08-Oct-2009 03:15:05	08-Oct-2009 17:04:49	AATSR in Reset/Wait/Init due to ICU format header	EN-UNA-2009/0160	No
27-Oct-2009 20:02:47	28-Oct-2009 12:24:09	Artemis Unavailability	ART-ENV-UNA-2009-008 Is.2	No

Table 4-1 Instrument unavailability during cycle 83

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	September 28, 2009	39634	39733	33875	39336	0	94.40%	87.90%	87.90%
2	October 5, 2009	39734	39833	49784	53006	0	91.77%	83.00%	83.00%
3	October 12, 2009	39834	39934	0	5981	0	100.00%	99.01%	99.01%
4	October 19, 2009	39935	40034	0	0	0	100.00%	100.00%	100.00%
5	October 26, 2009	40035	40134	58882	38956	0	90.26%	83.82%	83.82%

Table 4-2 Instrument and data unavailability weekly summary for cycle 83

The instrument was available for 95.29% of the time during the cycle.
The L0 data were available for 90.75% of the time during the cycle.
The L1b data were available for 90.75% 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
28-Sep-2009 22:07:54	29-Sep-2009 07:22:00	33246	39634	39638
30-Sep-2009 03:29:19	30-Sep-2009 05:10:49	6090	39650	39651
06-Oct-2009 09:53:42	06-Oct-2009 10:47:21	3219	39741	39741
08-Oct-2009 03:15:05	08-Oct-2009 17:04:52	49787	39765	39774
13-Oct-2009 11:10:59	13-Oct-2009 12:50:40	5981	39842	39842
27-Oct-2009 20:22:20	28-Oct-2009 07:11:36	38956	40047	40054

Table 4-3 ATS_NL__0P missing data during cycle 83

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:

- 39649 (30th September 2009)
- 39663 (1st October 2009)
- 39713 (4th October, 2009)
- 39815 (11th October, 2009)
- 39830 (12th October, 2009)
- 39872 (15th October, 2009)
- 39883, 39884 (16th October, 2009)
- 39934 (19th October,2009)
- 40098 (31st October, 2009)
- 40116 (1st November, 2009)
- 40131 (2nd November, 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

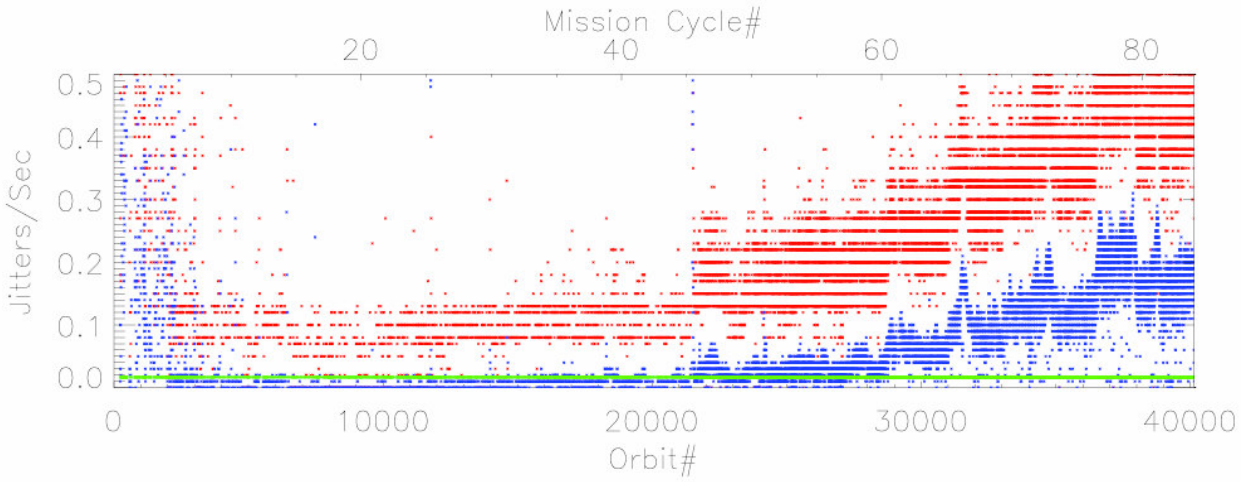

Figure 5-1 Jitter trend from mission start

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 no significant rate-change with respect to the previous cycle.

5.1.2 SENSOR TEMPERATURE

The detector temperature plots for cycle 83 can be found at:
http://aatsr2.ag.rl.ac.uk/data2/aatsr2/EDS-X/CyclePlots/DetTemps83.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/VC1-83.txt

5.1.4 NE∆T

NE∆T results for Cycle 83 will be reported 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.
Note: this PR is being migrated to a new identifier, associated with the Linux IPF.

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 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 August 2009. This consists of 509 products taken from orbits 39234 to 39662. 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 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.

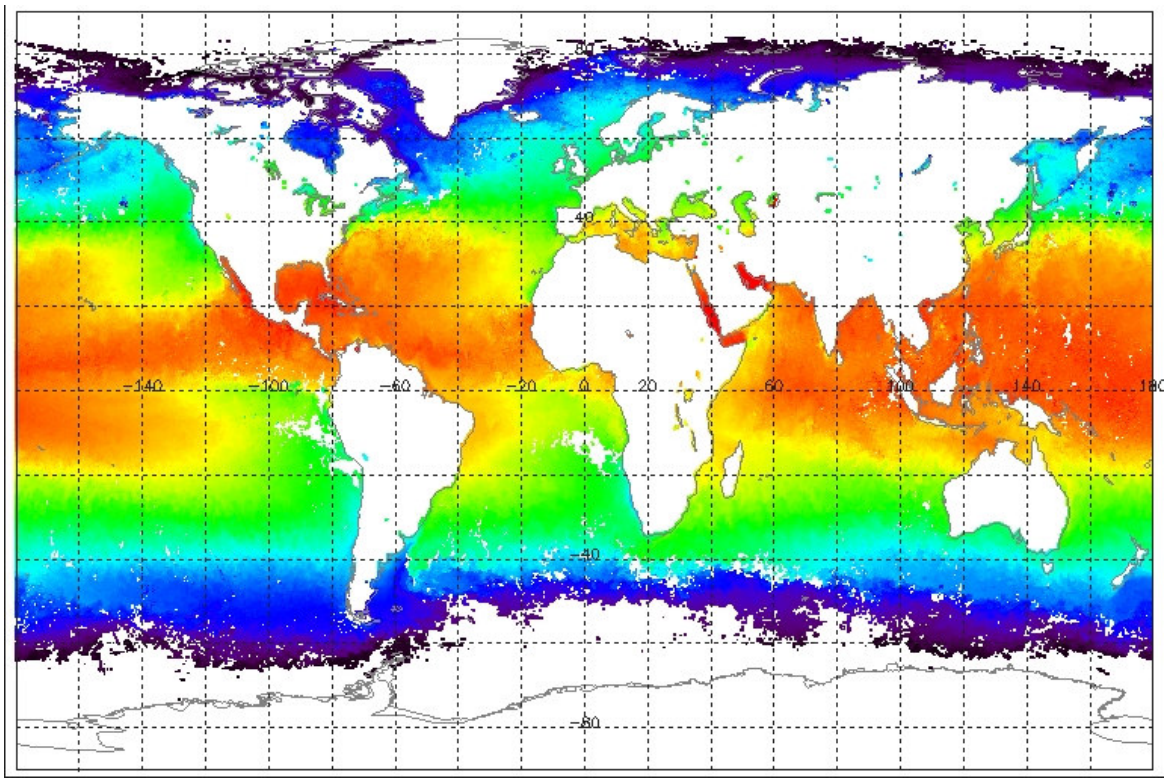

Figure 5-3 - This figure gives the monthly average Dual View SST, with a range of 270 - 305 Kelvin for September 2009.

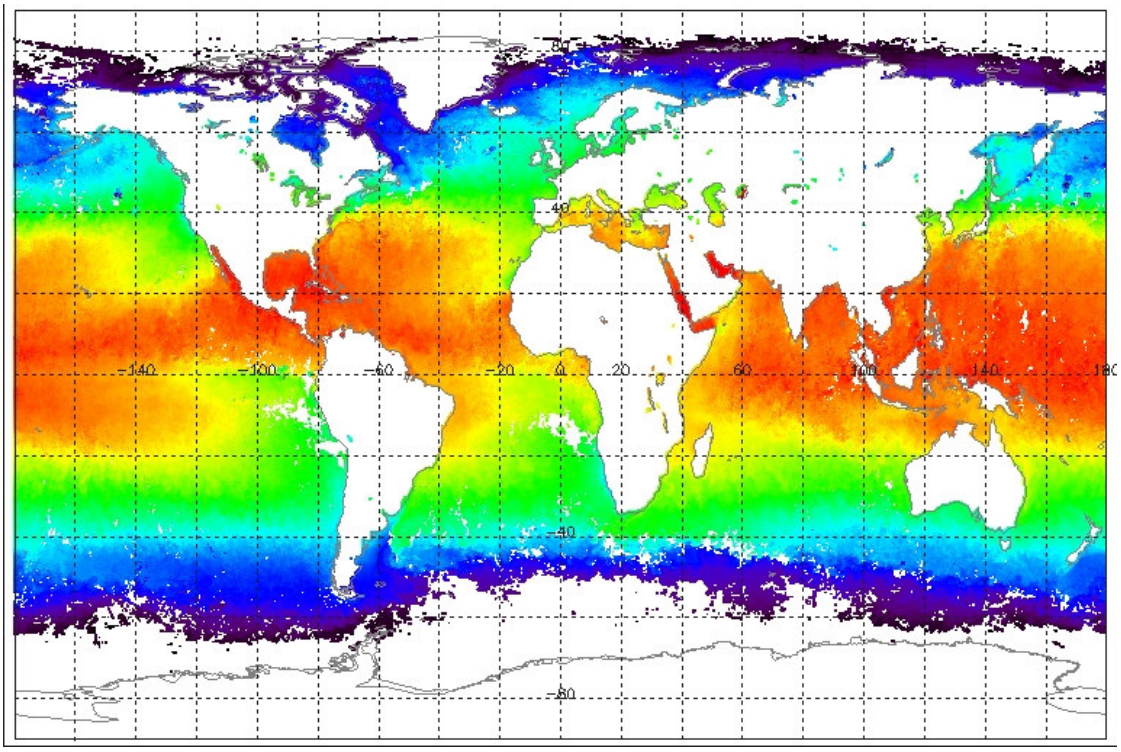

Figure 5-4 - This figure gives the monthly average Nadir SST, with a data range of 270 - 305 Kelvin for September 2009.

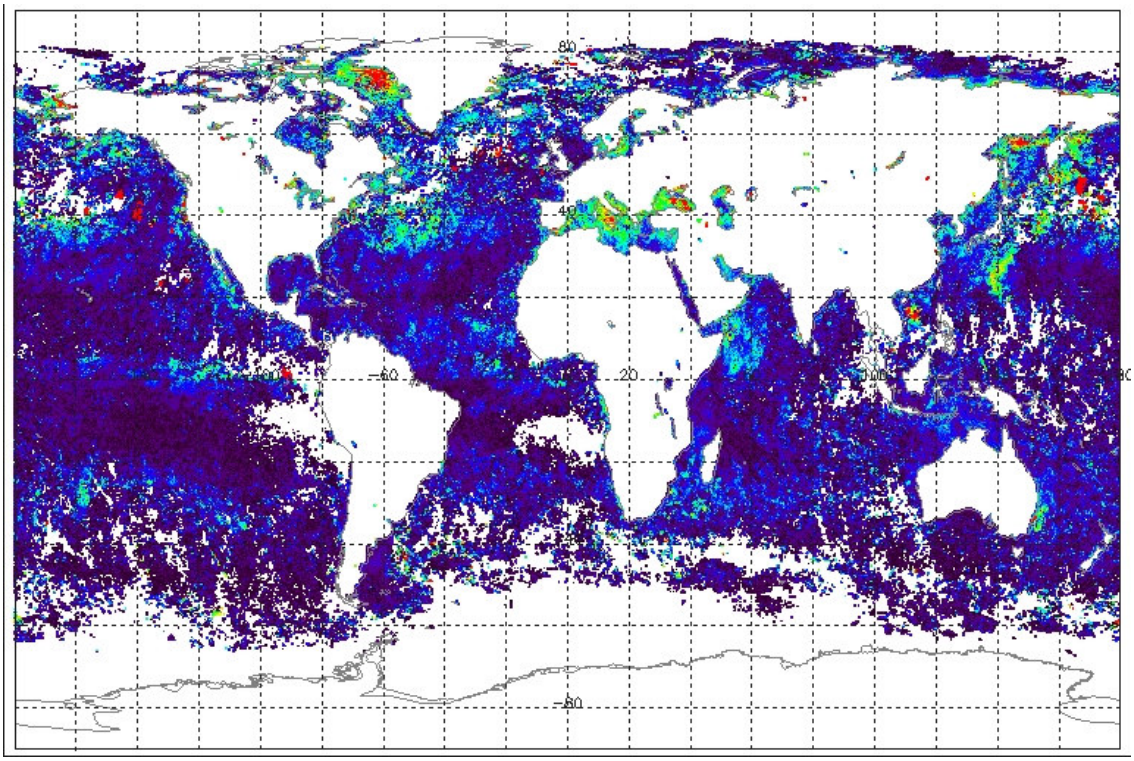

Figure 5-5 - The standard deviation of the monthly average in SST with a data range of 0 to 2 Kelvin for September 2009.

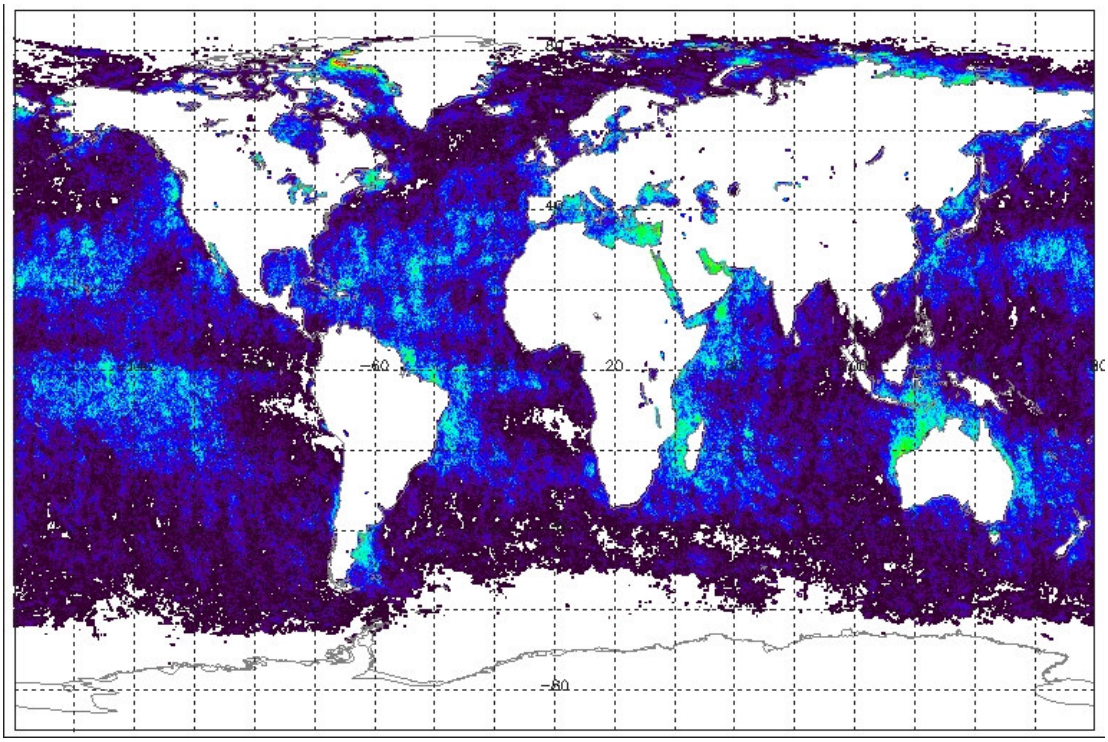

Figure 5-6 – The number of contributory orbits to the calculation of the SST, with a range of 0 to 20 for September 2009

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

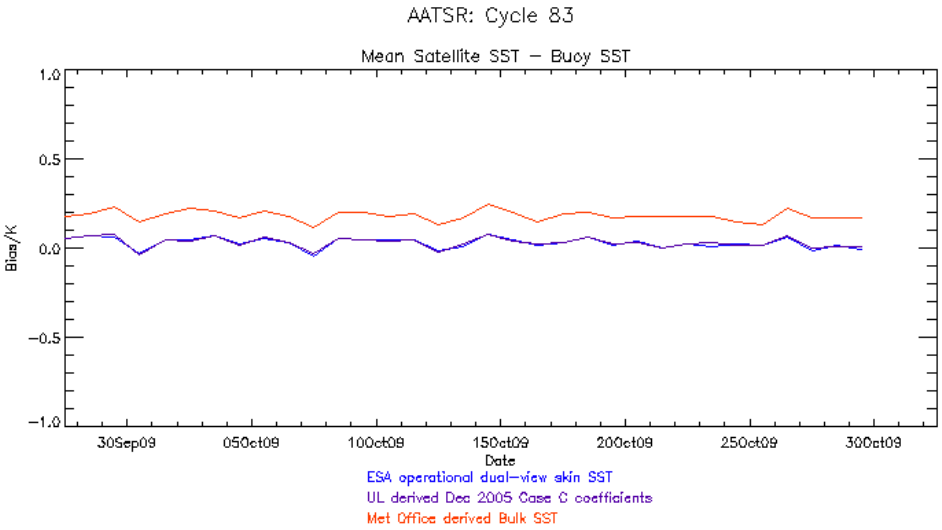

Figure 6-1 - Comparison of daily mean difference between 10´ AATSR SST values and in situ drifting buoy SST for Cycle 83. Data provided by the Met Office.

During cycle 83, there were 1964 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of -0.017 K, standard deviation 0.23 K, and a mean (dual-view bulk SST minus buoy SST) of +0.131 K, standard deviation 0.22 K. A total of 1718 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.089 K, standard deviation 0.29 K, and a mean (dual-view bulk SST minus buoy SST) of +0.246 K, standard deviation 0.30 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.

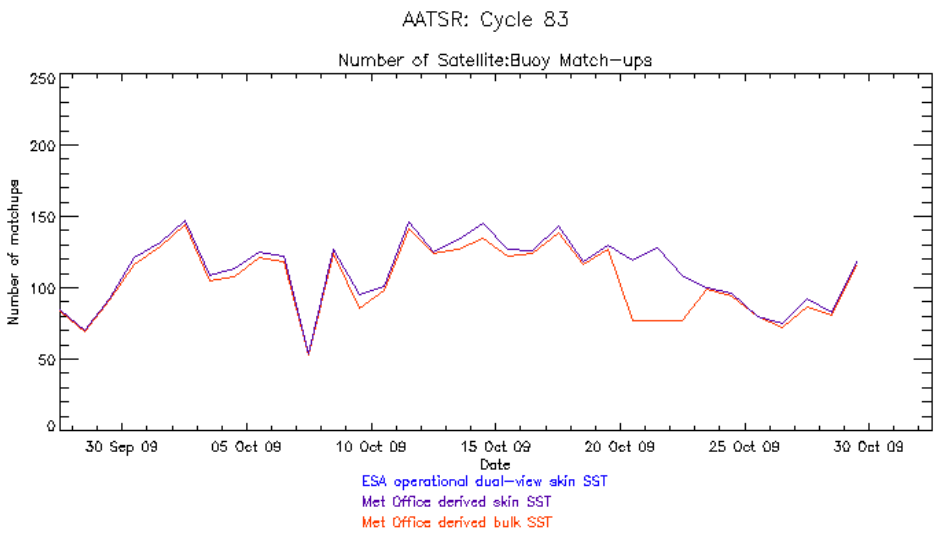

Figure 6-2 - Plot of daily number of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 83. Data provided by the Met Office.

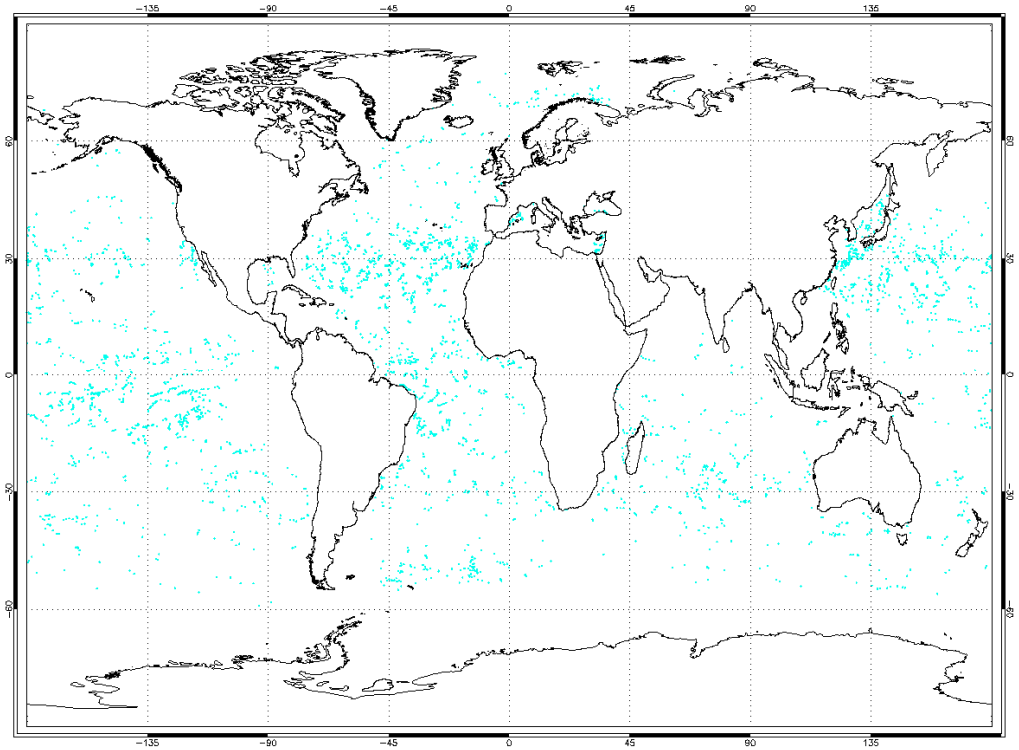

Figure 6-3 - Map showing global distribution of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 83. The cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.