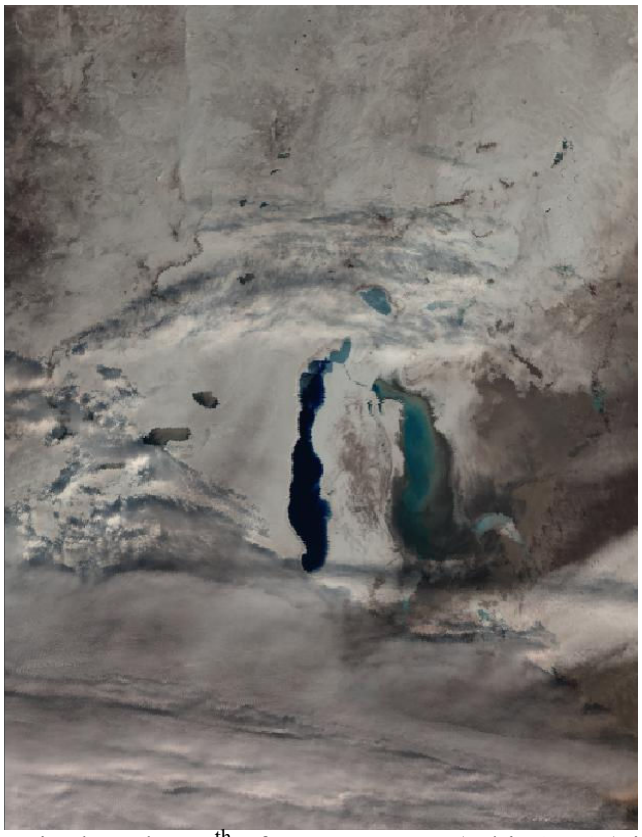
ENVISAT - AATSR

CYCLIC REPORT #86

	START	END
DATE	11TH JANUARY 2010	15TH FEBRUARY 2010
TIME	21:59:29	21:59:29
ORBIT #	41137	41136



This RGB combination acquired on the 19th of January 2010 (orbit 41241) is composed of the 0.87, 0.67 and 0.55 micron channels. The image shows the steadily shrinking Aral Sea in Uzbekistan; once the world's fourth-largest inland saline body of water. Regional experts claim that dust storms formed from the dried bottom, as a result of the desiccation and salinization could be having a significant impact on global climate change.

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AATSR CYCLIC REPORT # 86

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: 86

Cycle Start: 11th January 2010, 21:59:29 Orbit #: 41137

Cycle End: 15th February 2010, 21:59:29 Orbit #: 41136

The main activities during the cycle have been as follows:

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

  AATSR was unavailable from 15th February 2010 22:04:51 to 16th February 2010 06:59:52 UTC due to a planned OCM.

- **IR-Channels Unavailable Due to Out-gassing**

  AATSR IR-Channels were unavailable from the 11th January 2010, 09:01 to 14th January 2010, 14:07 due to a scheduled out-gassing. Orbits 41129 – 41180 are affected.

- **ARTEMIS/ENVISAT Unavailability**

  - At 2010/01/31 11.19.12z, ARTEMIS triggered a spurious APC switch OFF, which disconnected the APC from the bus. The APC was reset and put back operative at 11:56:03z.
  - At 2010/02/02 02.34.22z, ARTEMIS triggered a spurious platform anomaly Level2A, which disconnected the APC from the bus. The APC has been reset and put back operative at 2010/02/02 06:33:11z (without harmonic bias compensation). Harmonic bias set back nominal at 2010/02/02 07.14.42z

- **NRT Dissemination Disruptions**

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

  - 15th January 2010 at ESRIN due to hardware failure. Dissemination resumed the same day and all backlogs were recovered.

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
11-Jan-2010 09:01:00	14-Jan-2010 14:07:00	AATSR IR-CHANNELS not available due to Outgassing	EN-UNA-2010/0013	Yes
31-Jan-2010 11:19:12	31-Jan-2010 11:56:03	Artemis Unavailability	ART-ENV-UNA-2010-001	No
2-Feb-2010 02:34:22	2-Feb-2010 06:33:11	Artemis Unavailability	ART-ENV-UNA-2010-002	No
6-Feb-2010 22:33:17	6-Feb-2010 23:05:07	Artemis Unavailability	ART-ENV-UNA-2010-003	No
6-Feb-2010 23:27:57	7-Feb-2010 12:17:55	Artemis Unavailability	ART-ENV-UNA-2010-003	No
15-Feb-2010 22:05:00	16-Feb-2010 07:00:00	OCM	EN-UNA-2010/0047	Yes

Table 4-1 Instrument unavailability during cycle 86

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	January 11, 2010	41137	41236	277560	4049	0	54.11%	53.44%	53.44%
2	January 18, 2010	41237	41336	0	4587	0	100.00%	99.24%	99.24%
3	January 25, 2010	41337	41437	2211	0	0	99.63%	99.63%	99.63%
4	February 1, 2010	41438	41537	62437	4564	0	89.68%	88.92%	88.92%
5	February 8, 2010	41538	41637	32100	0	0	94.69%	94.69%	94.69%

Table 4-2 Instrument and data unavailability weekly summary for cycle 86

The instrument was available for 87.62% of the time during the cycle.
The L0 data were available for 87.19% of the time during the cycle.
The L1b data were available for 87.19% 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
15/01/2010 03:04	15/01/2010 04:11	4049	41182	41183
22/01/2010 02:34	22/01/2010 03:51	4587	41282	41283
02/02/2010 06:16	02/02/2010 06:23	392	41442	41442
05/02/2010 20:48	05/02/2010 21:58	4172	41494	41494

Table 4-3 ATS_NL__0P missing data during cycle 86

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:

- 41337 (25th Jan 2010)
- 41612 (14th Feb 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

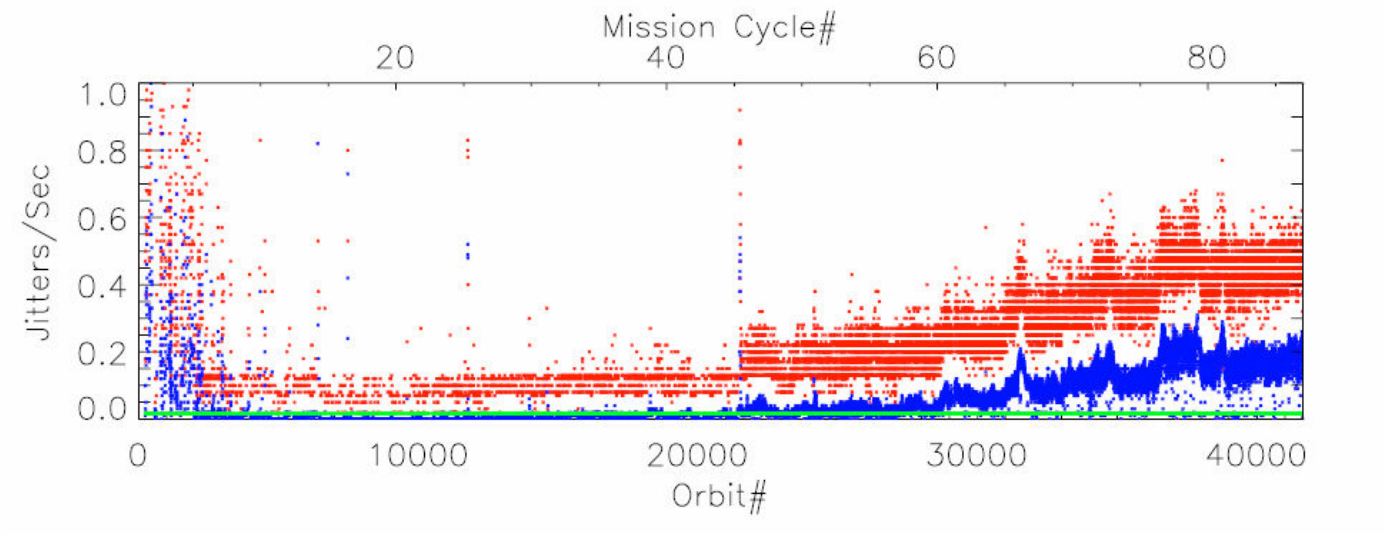

Figure 5-1 Jitter trend from mission start

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

5.1.2 SENSOR TEMPERATURE

The detector temperature plots for cycle 86 can be found at:

http://aatsr2.ag.rl.ac.uk/data2/aatsr2/EDS-X/CyclePlots/DetTemps86.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/VC1-86.txt

5.1.4 NE∆T

NE∆T results for this cycle 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 has been migrated to a new PR (IDEAS-PR-09-04805) on the current Linux IPF version. This will be further discussed at the next AATSR QWG in January 2010.

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 January 2010. This consists of 473 products taken from orbits 40980 to 41423. 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 January 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.

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Figure 5-2 – This is the colour scheme used for the following plots, running linearly from left to right with increasing magnitude.

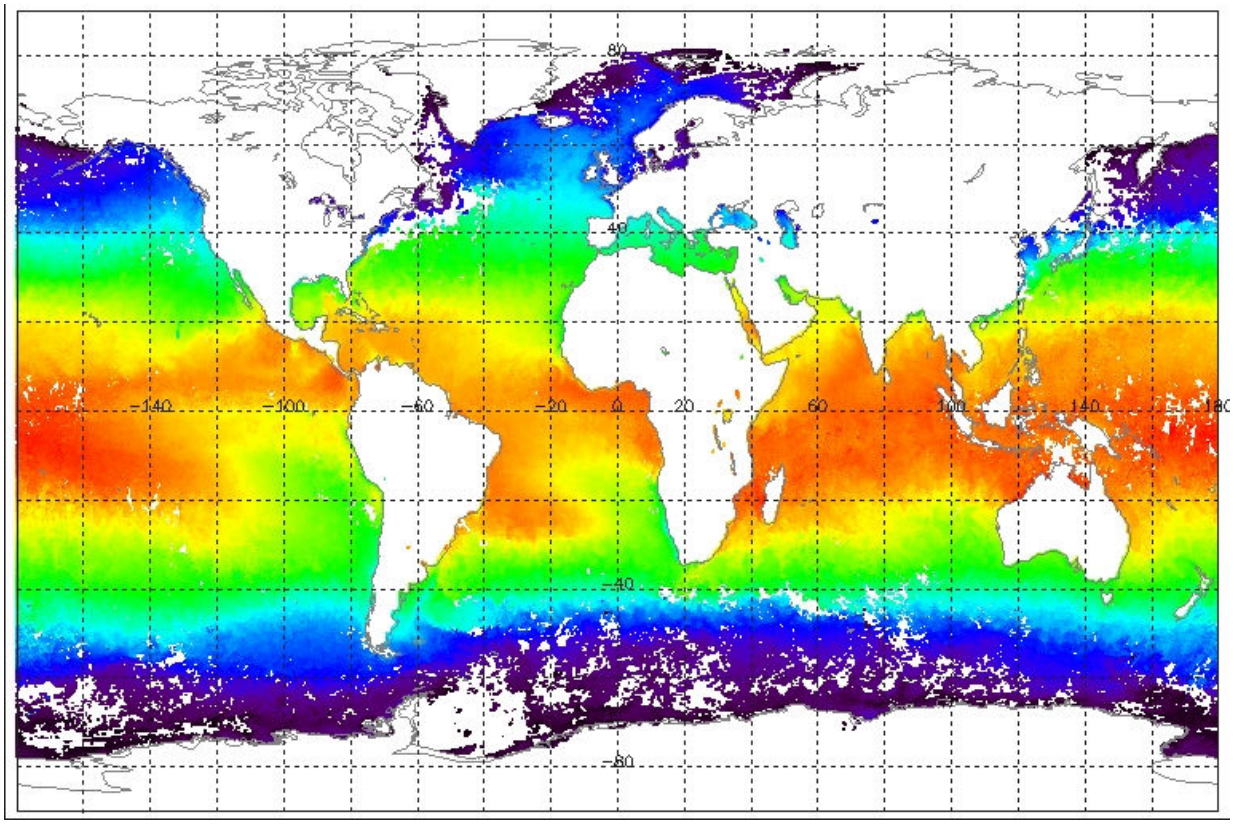

Figure 5-3 - This figure gives the monthly average Dual View SST, with a range of 270 - 305 Kelvin for January 2010.

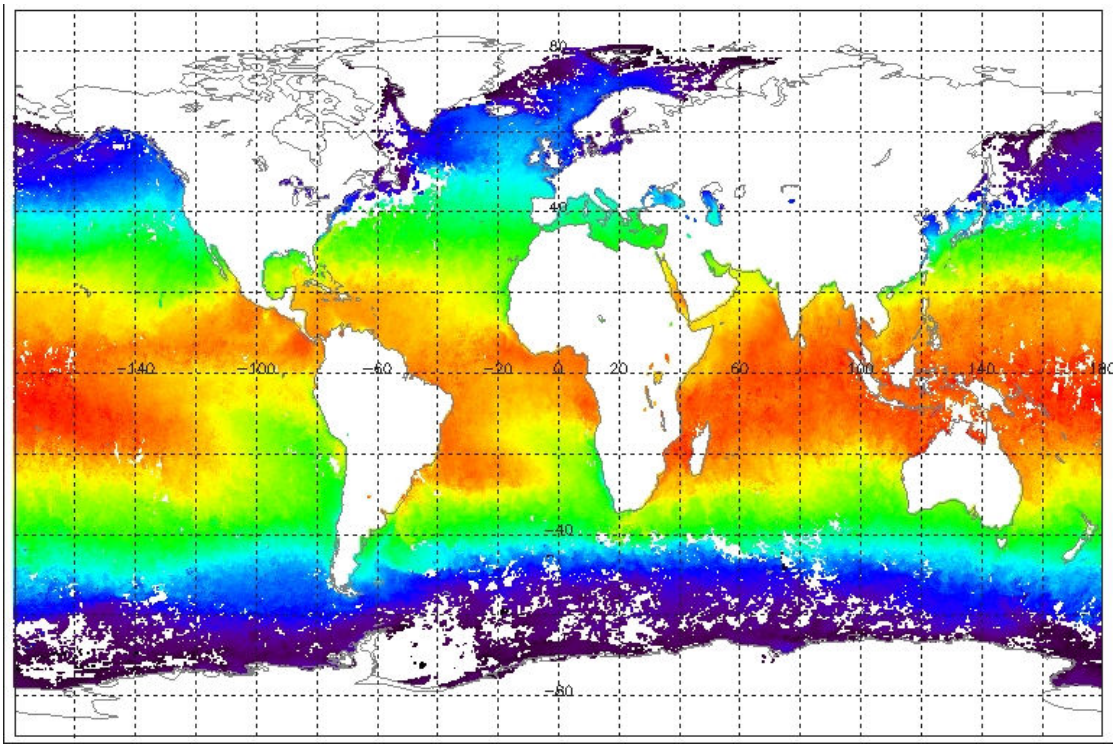

Figure 5-4 This figure gives the monthly average Nadir SST, with a data range of 270 - 305 Kelvin for January 2010.

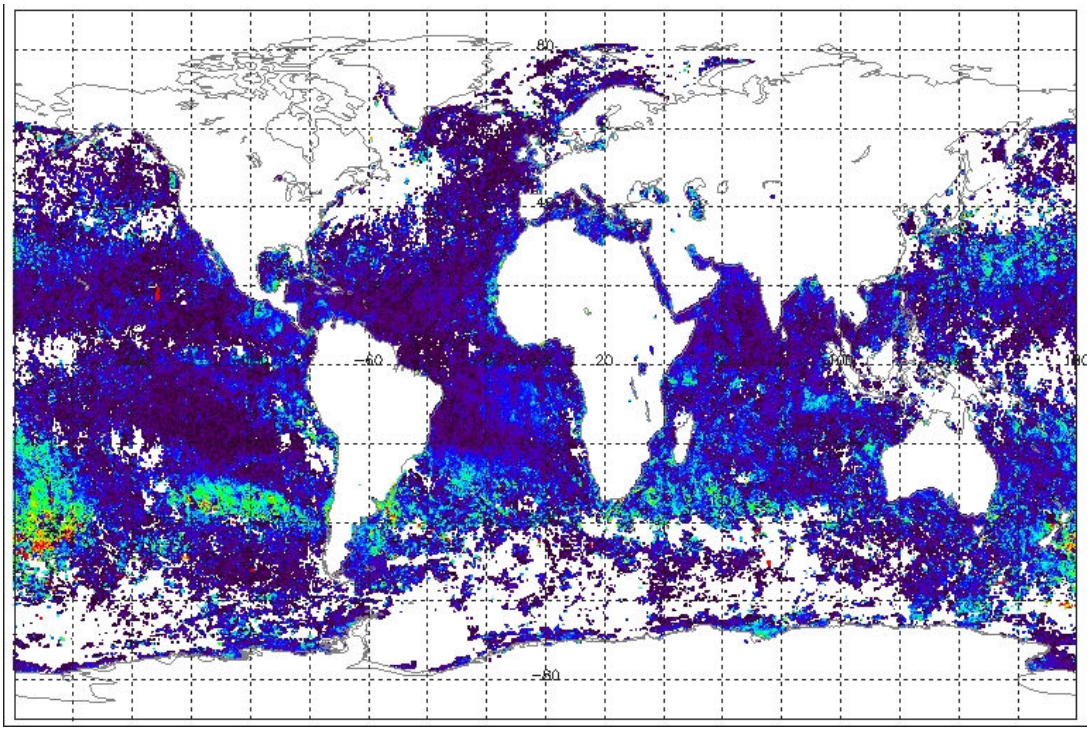

Figure 5-5 The standard deviation of the monthly average in SST with a data range of 0 to 2 Kelvin for January 2010.

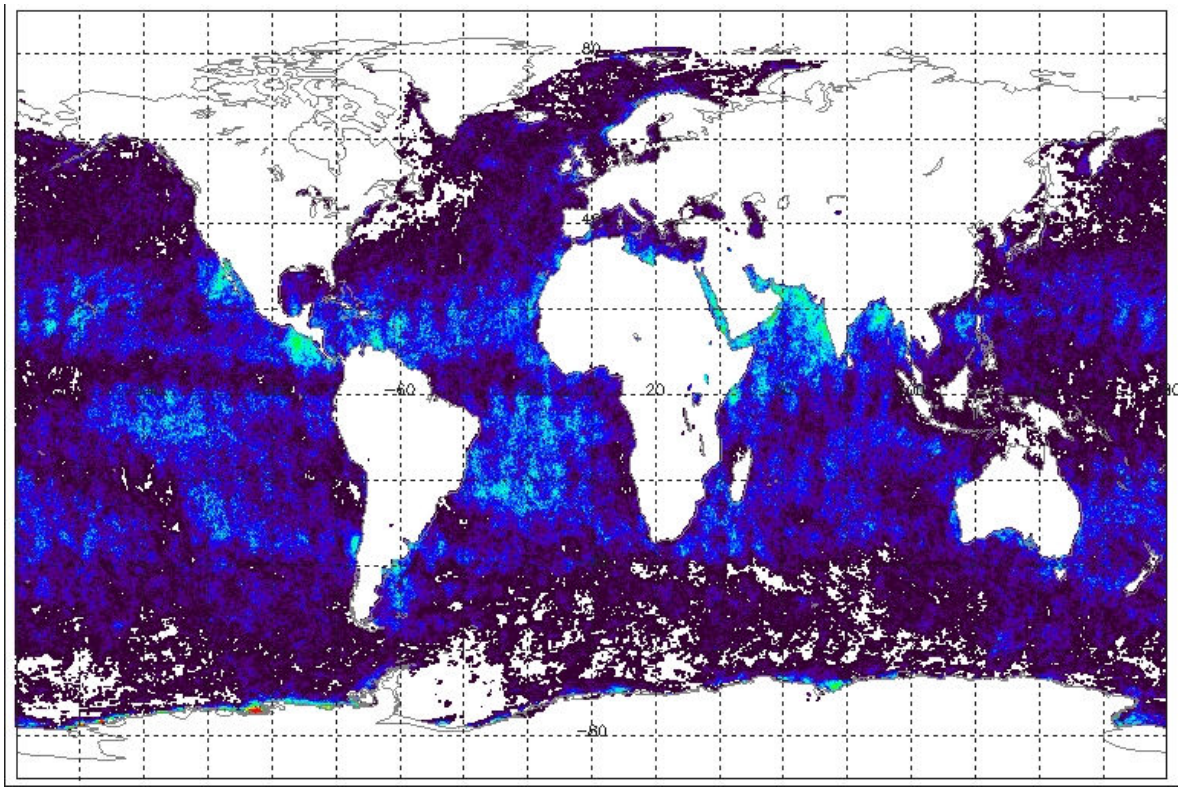

Figure 5-6 The number of contributory orbits to the calculation of the SST, with a range of 0 to 20 for January 2010

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

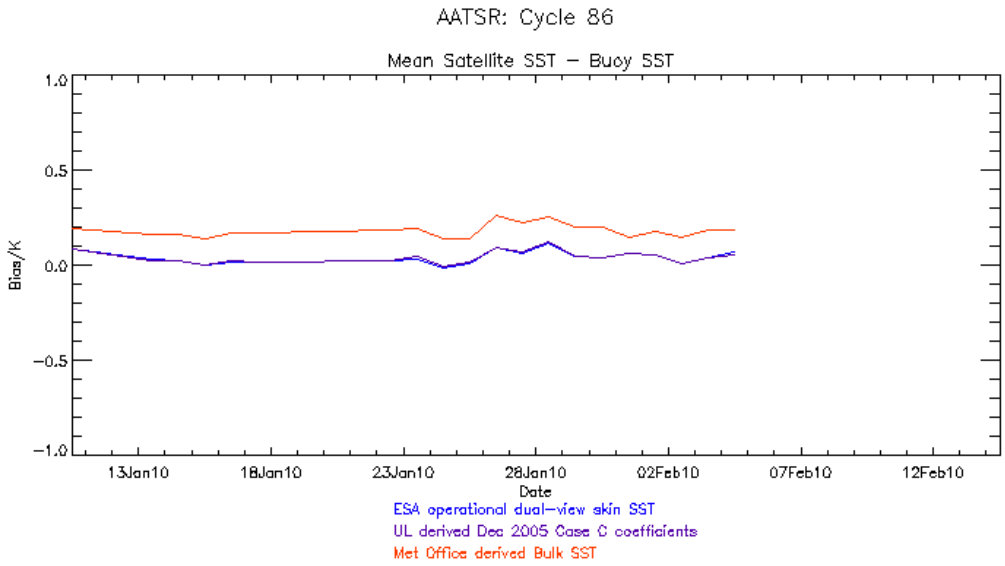

Figure 6-1 - Comparison of daily mean difference between 10´ AATSR SST values and in situ drifting buoy SST for Cycle 86. Data provided by the Met Office.

During cycle 86, there were 9621 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.008 K, standard deviation 0.22 K, and a mean (dual-view bulk SST minus buoy SST) of +0.149 K, standard deviation 0.21 K. A total of 765 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.077 K, standard deviation 0.29 K, and a mean (dual-view bulk SST minus buoy SST) of +0.230 K, standard deviation 0.28 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.

A processing fault means validation data is not yet available for the entire cycle at the date this report is generated.

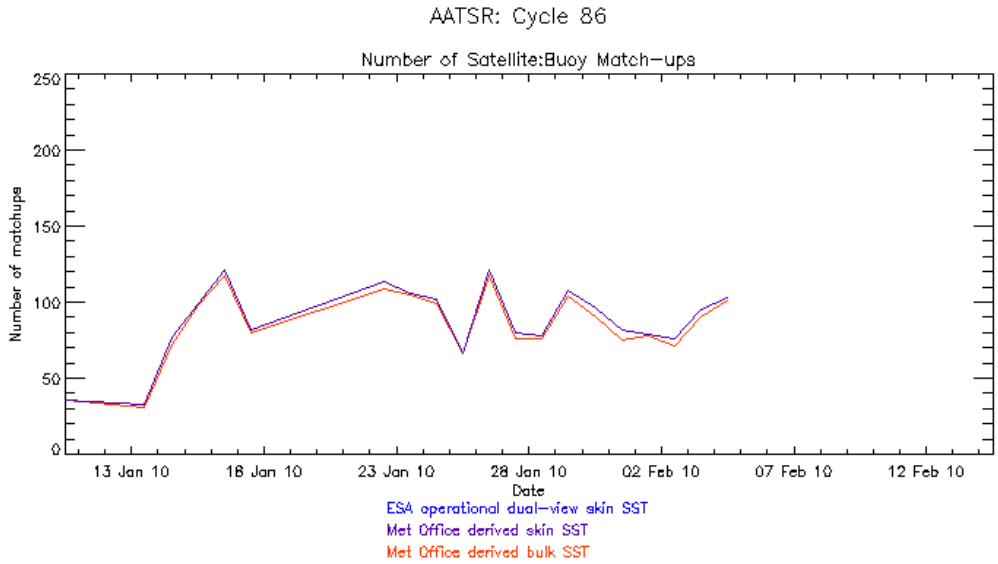

Figure 6-2 - Plot of daily number of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 86. Data provided by the Met Office.

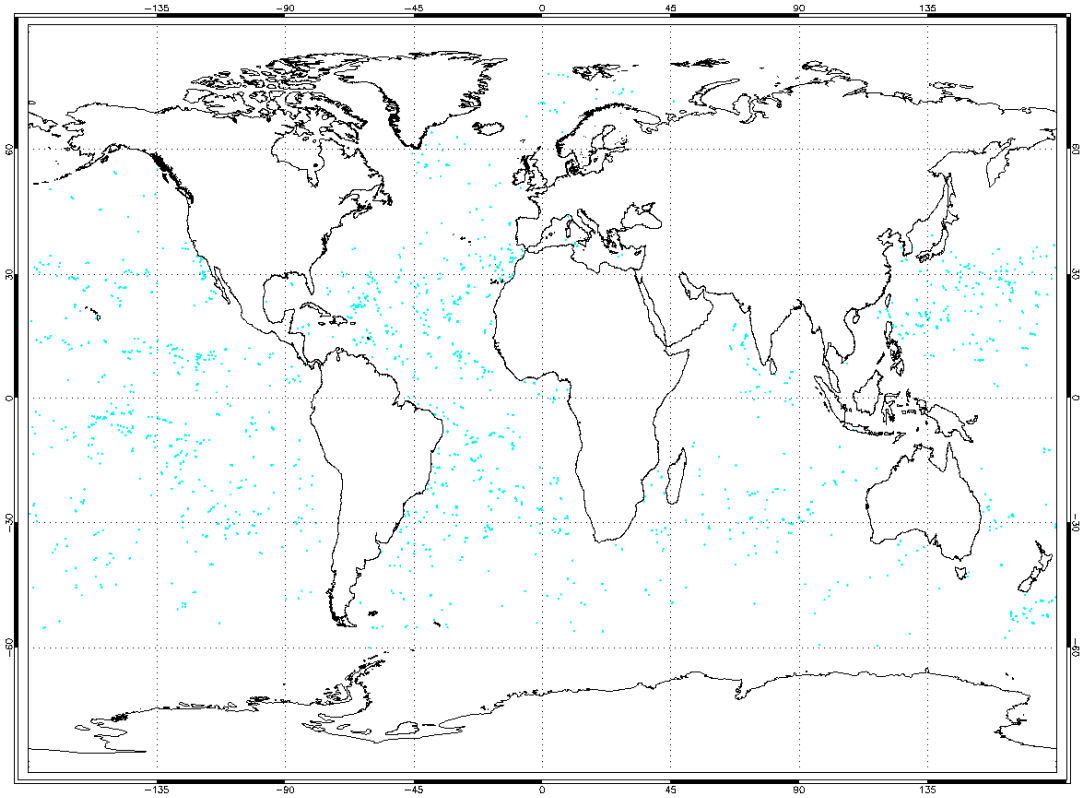

Figure 6-3 - Map showing global distribution of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 86. The cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.