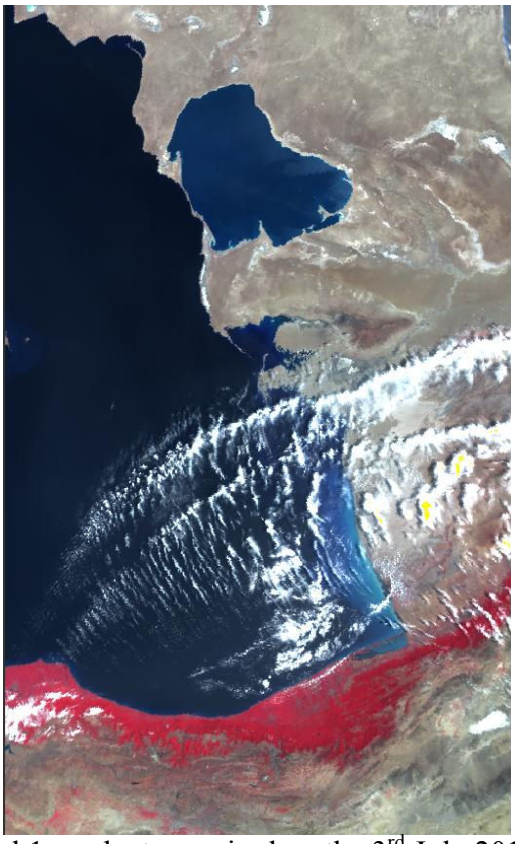
ENVISAT - AATSR

CYCLIC REPORT #90

	START	END
DATE	31ST MAY 2010	5TH JULY 2010
TIME	21:59:29	21:59:29
ORBIT #	43138	43638



Shown in this subset from a Level 1 product, acquired on the 3rd July 2010, is the southeast section of the Caspian Sea with the Turkmenistan coastline to the east and Iranian coastline to the south. This RGB image is composed of the 0.87, 0.67 and 0.55 micron channels which show the areas of vegetation as red, as seen along the Iranian coastline.

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

date of issue/*date d'édition* 15 July 2010
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 90	issue 1 *issue*	revision 0 *revision*
author *auteur*	Sophie Cowie and Paula Marti-Rocafull	date 15 July 2010 *date*	
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)*

TABLE OF CONTENTS

AATSR CYCLIC REPORT # 90

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: 90

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

Cycle End: 5th July 2010, 21:59:29 Orbit #: 43638

The main activities during the cycle have been as follows:

- **AATSR NRT Dissemination Delay**

  Kiruna – 23rd to 29th June due to system problems at the PDHS-K facility. Orbit 43477 has not yet been recovered.

  ESRIN – 21st June due to a software anomaly. The complete backlog was recovered.

- **ARTEMIS unavailability**

  On the 5th July 2010, 15.32.04z, the service failed due to an incomplete APC table. The APC was reset and ARTEMIS returned to operation on 5th July 2010, 15:39:57z.

- **Envisat Orbit Control Manoeuvre**

  An Envisat Orbit Control Manoeuvre (OCM) took place from 5th – 6th July 2010 and the following precise instrument unavailability period has been registered for AATSR: 5th Jul 2010, 23:53:50 to 6th Jul 2010, 06:59:50 UTC.

- **AATSR Outgassing**

  A scheduled AATSR outgassing was initiated on Tuesday, 29th June 2010 at 08:49:09, and was completed on Friday, 2nd July 2010 20:31:30. For this period (orbits 43548 to 43598), no Infra Red data are available; the products will only contain the reflectance channels (1600nm, 860nm, 670nm and 560nm) and will be affected by poor calibration.

- **AATSR L2P Archive now available**

  This newly completed archive presents the release of a large and complete ATSR-1/ATSR-2/AATSR consolidated data set. The archive will continue to be updated with AATSR data approximately 2 weeks after data is available at UK-MM-PAF. Access to the archive is via the MERCI ftp server; for further details please contact the Earth Observation helpdesk (eohelp@esa.int).

- **AATSR IPF Processor Update for Envisat Mission Extension**

  The AATSR IPF was updated to V6.03 on the 16th June 2010 for NRT Data, and 30th June 2010 for offline data, in preparation for the Envisat orbit change. This processor update also included a fix for PR: IDEAS-PR-09-04805, Inconsistent values in AST Confidence word, 17 and 50km cells.

3 SOFTWARE & AUX FILE VERSION CONFIGURATION

3.1 Software Version

AATSR IPF for Level 1 and Level 2: Version 6.03

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
29/06/2010 08:49	02/07/2010 20:31	Outgassing - Thermal channels unavailable	EN-UNA-2010/0109	Yes

Table 4-1 Instrument unavailability during cycle 90. The period covered by EN-UNA-2010/0109 is not included in the table below as only the thermal channels were unavailable.

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	May 31, 2010	43138	43237	0	0	0	100.00%	100.00%	100.00%
2	June 7, 2010	43238	43337	0	0	0	100.00%	100.00%	100.00%
3	June 14, 2010	43338	43438	0	5849	0	100.00%	99.03%	99.03%
4	June 21, 2010	43439	43538	0	5876	0	100.00%	99.03%	99.03%
5	June 28, 2010	43539	43638	0	0	0	100.00%	100.00%	100.00%

Table 4-2 Instrument and data unavailability weekly summary for cycle 90

The instrument was available for 100% of the time during the cycle.
The L0 data were available for 99.61% of the time during the cycle.
The L1b data were available for 99.61% 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
17/06/2010 10:10	17/06/2010 11:48	5849	43376	43377
24/06/2010 09:50	24/06/2010 11:28	5876	43476	43477

Table 4-3 ATS_NL__0P missing data during cycle 90

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, 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

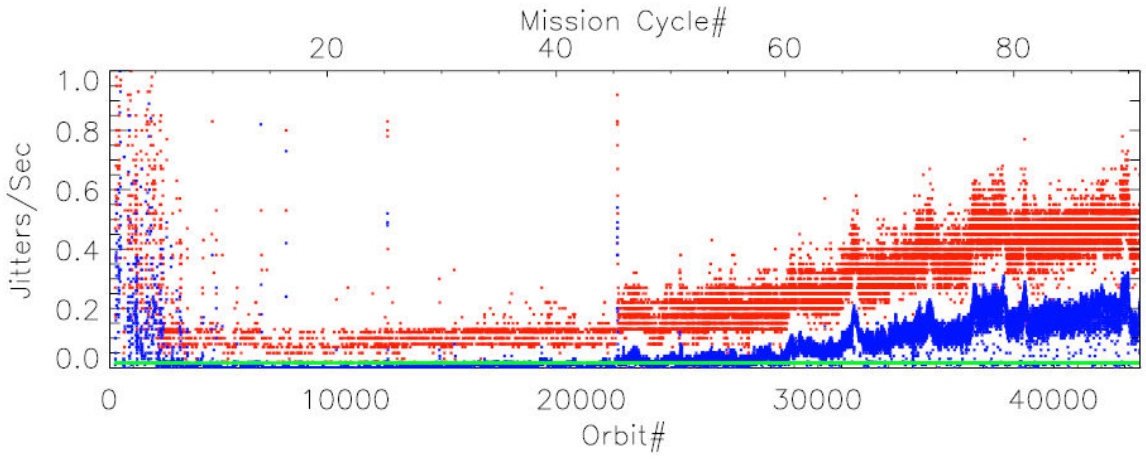


Figure 5-1 Jitter trend from mission start

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 plot shows a significant rate increase towards the end of Cycle 90.

5.1.2 SENSOR TEMPERATURE

The detector temperature plots for Cycle 90 can be found at:

http://zenith.ag.rl.ac.uk/data/zenith/EDS-X/CyclePlots/DetTemps90.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/VC1-90.txt

5.1.4 NEΔT

	Hot BB T = 301.59K		Cold BB T = 262.53K	
	Count	**NEΔT (mK)**	**Count**	**NEΔT (mK)**
12µm	1.65	34.5	1.22	35.6
11µm	1.54	31.3	1.13	33.9
3.7µm	2.52	31.7	1.21	75.4

Table 5-1 NEΔT data for 5th July, Cycle 90

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:

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 SPRs has been closed since the last Cyclic Report

Inconsistent values in AST Confidence word, 17 and 50km cells
IDEAS-PR-09-04805
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.
The fix for this PR was introduced to the IPF with the update to the processor on the 16th June 2010.

5.4 Monthly Level 3 Product

The following plots have been generated from the available Meteo products acquired in June 2010. This consists of 463 products taken from orbits 43142 to 43568. 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 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.

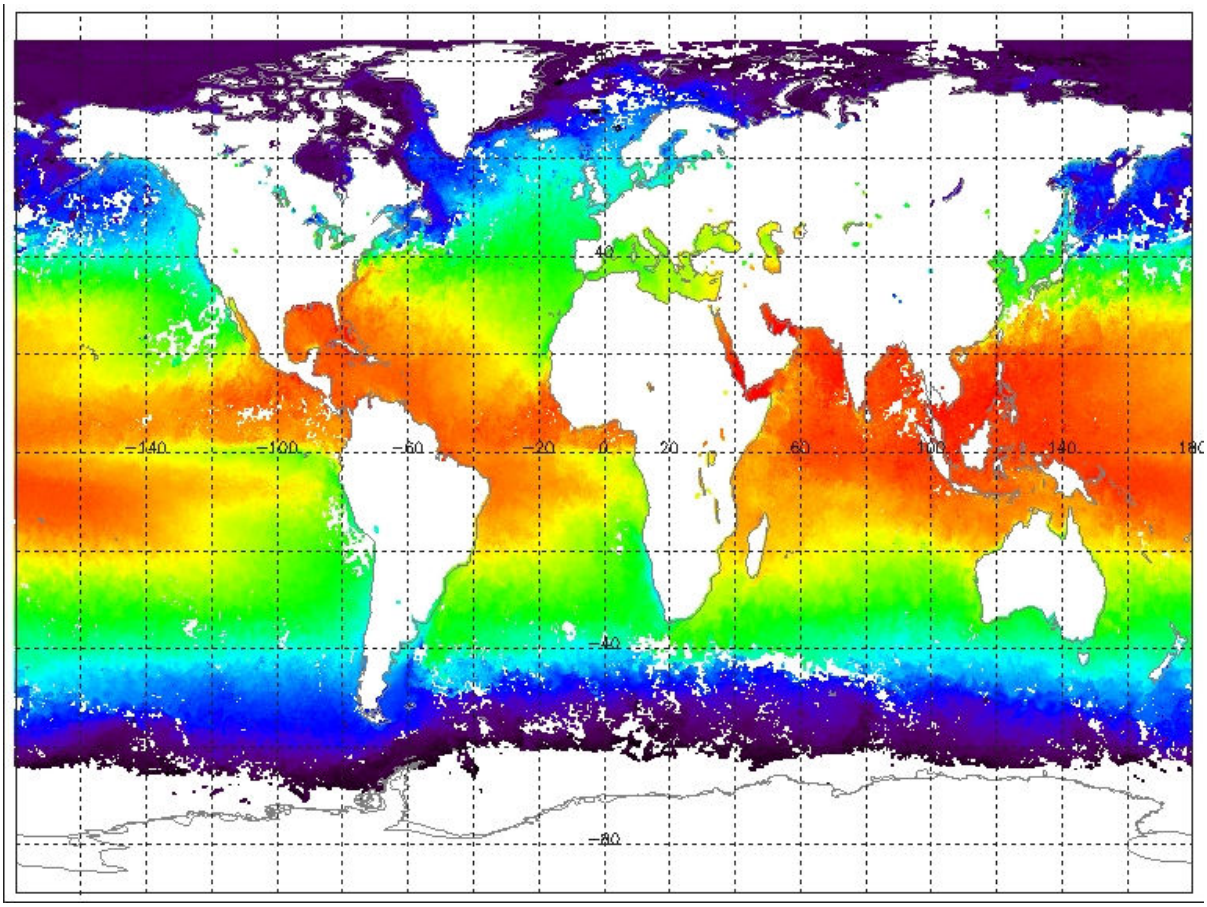


Figure 5-3 Monthly average Dual View SST, with a range of 270 - 305 Kelvin for June 2010

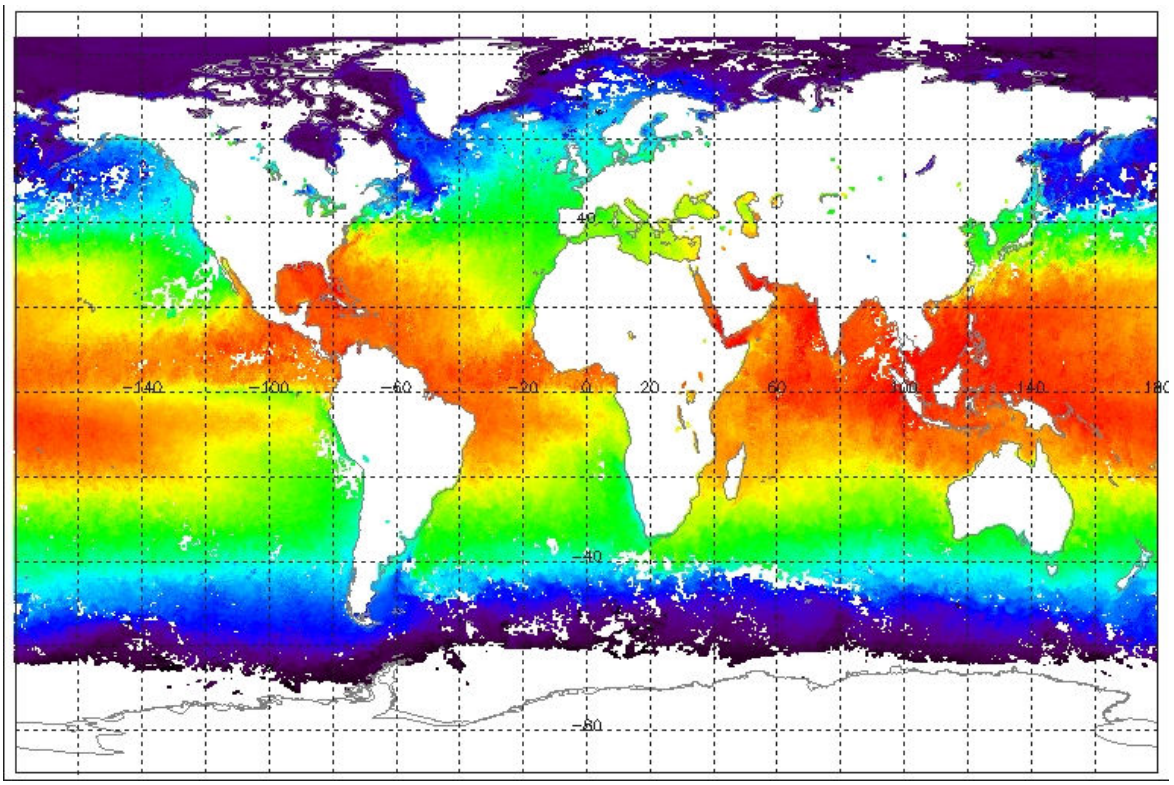


Figure 5-4 Monthly average Nadir SST, with a data range of 270 - 305 Kelvin for June 2010

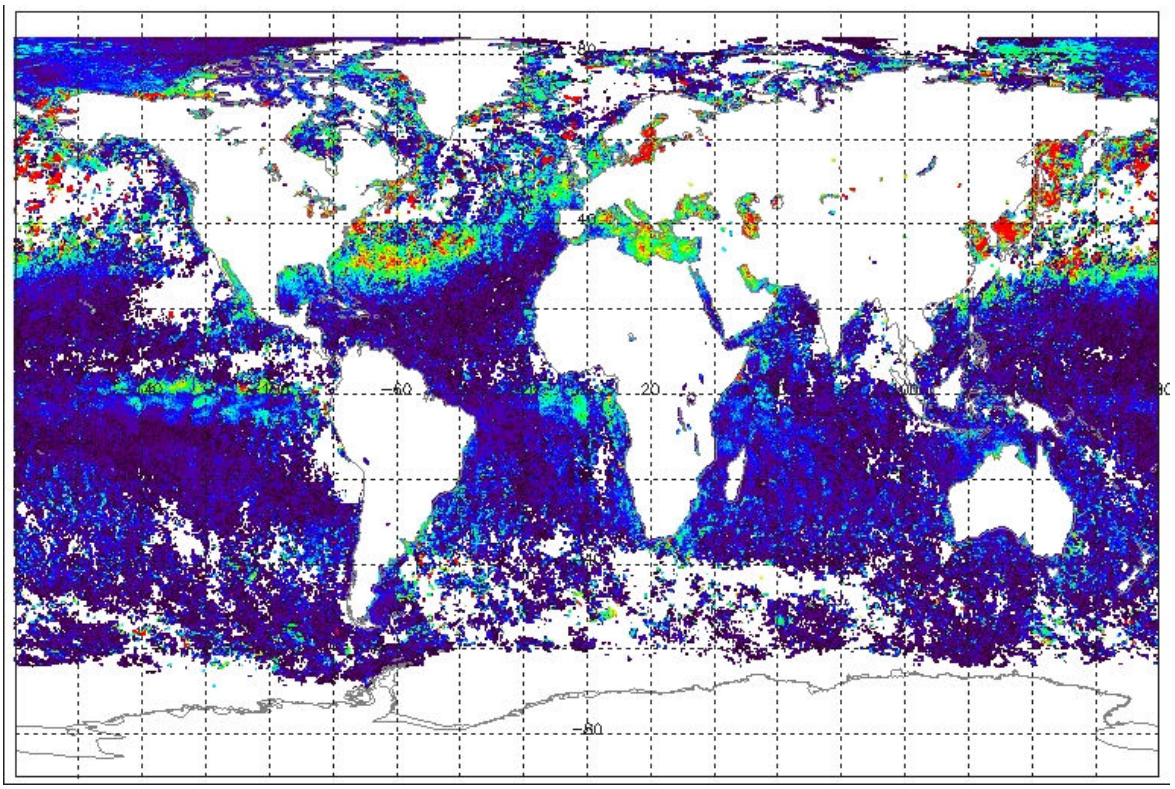


Figure 5-5 Standard deviation of the monthly average SST with a data range of 0 to 2 Kelvin for June 2010

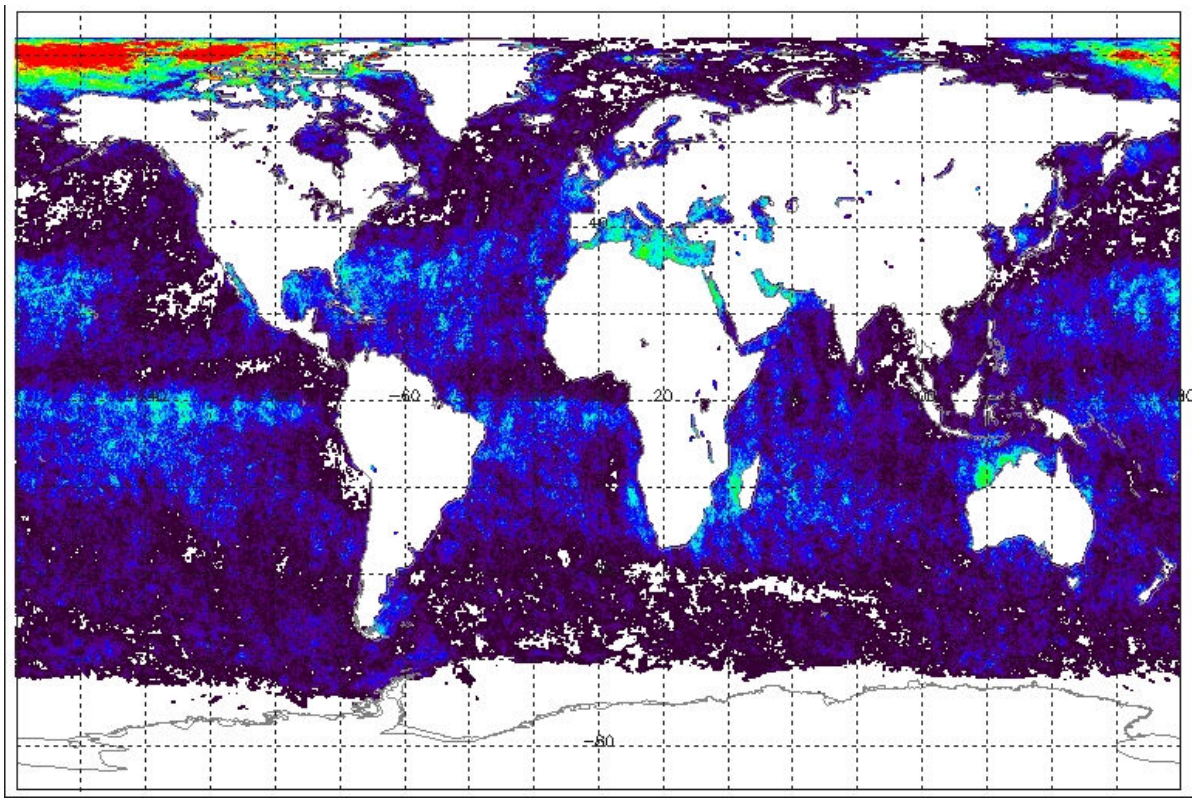


Figure 5-6 Number of contributory orbits to the calculation of the SST, with a range of 0 to 20 for June 2010

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

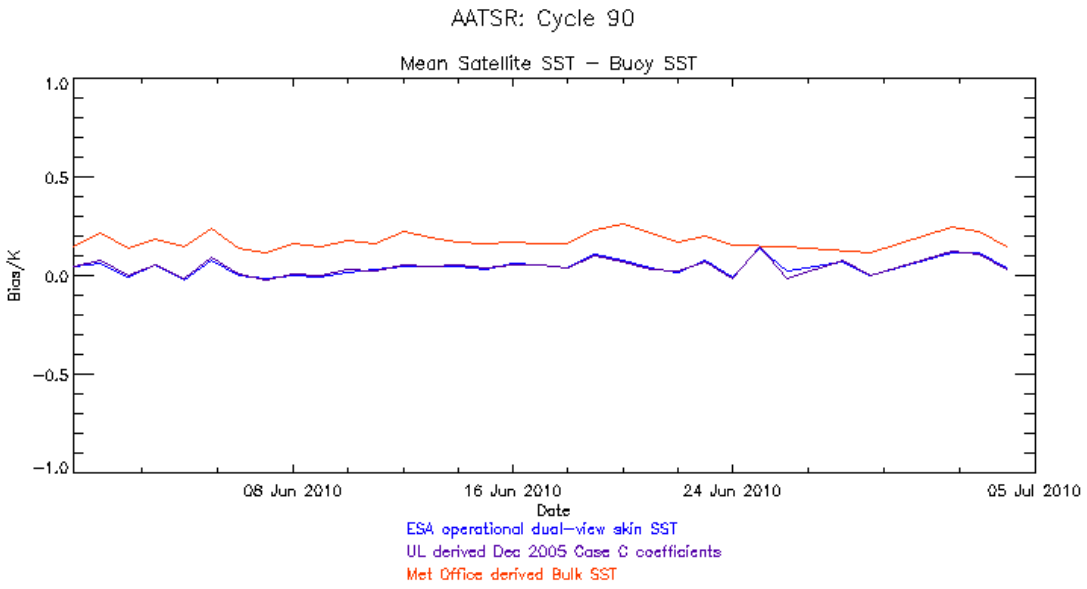


Figure 6-1 Comparison of daily mean difference between 10´ AATSR SST values and in situ drifting buoy SST for Cycle 90. Data provided by the Met Office.

During Cycle 90, there were 1509 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.001 K, standard deviation 0.26 K, and a mean (dual-view depth SST minus buoy SST) of +0.132 K, standard deviation 0.24 K. A total of 1397 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.079 K, standard deviation 0.31 K, and a mean (dual-view depth SST minus buoy SST) of +0.213 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.

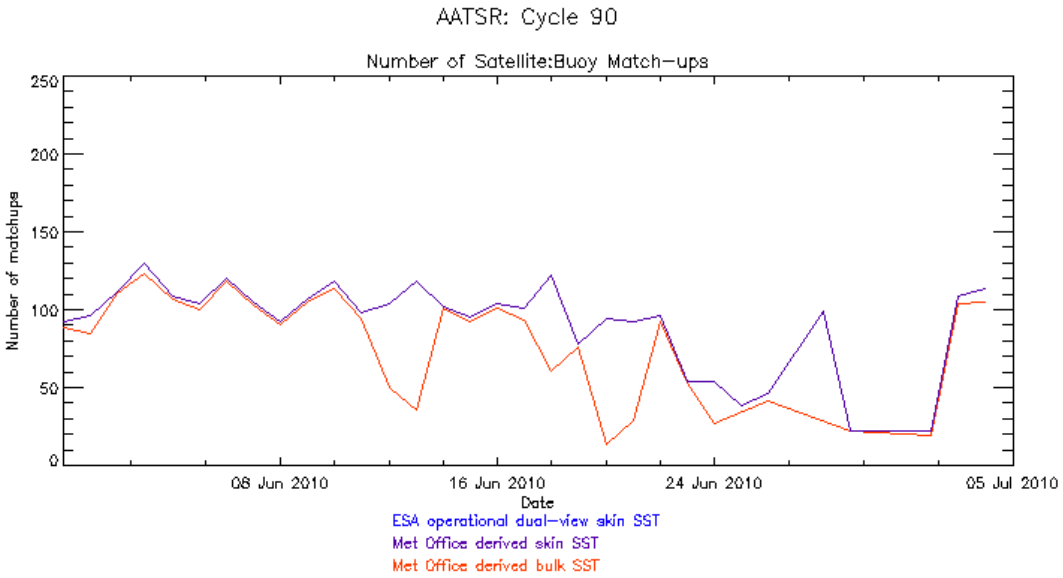


Figure 6-2 Plot of daily number of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 90. Data provided by the Met Office.

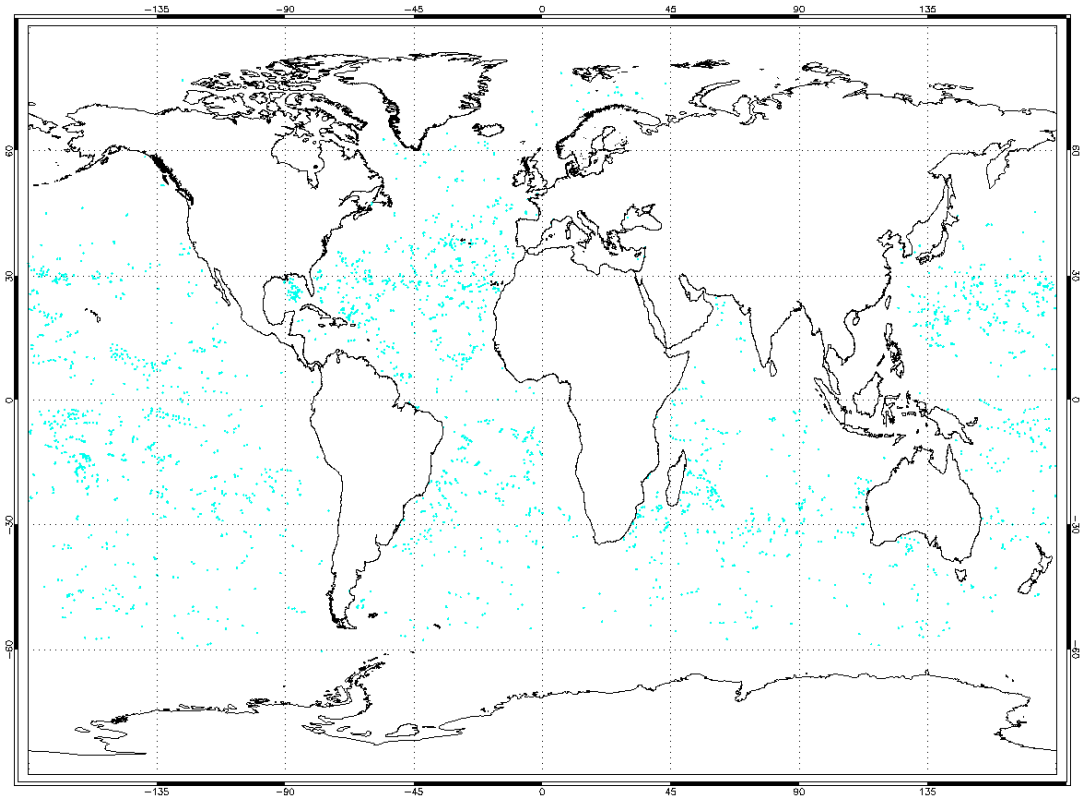


Figure 6-3 Map showing global distribution of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 90. The cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.