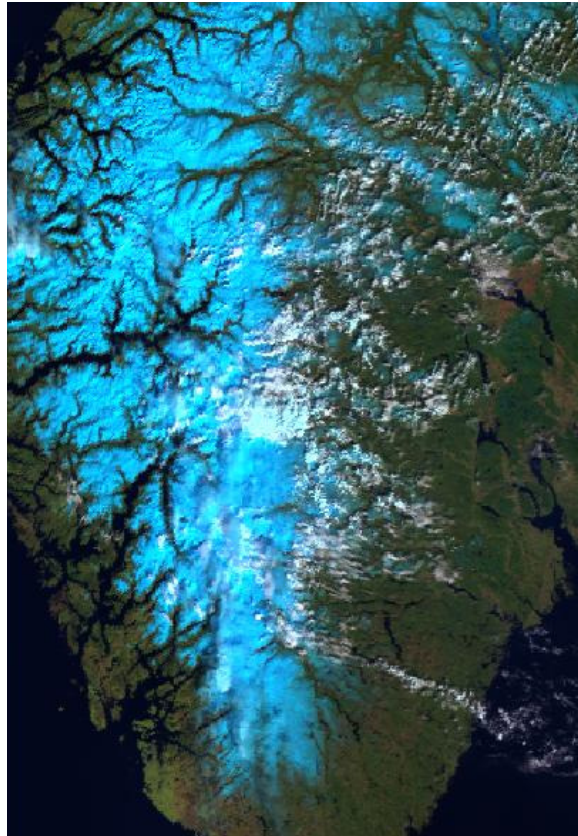

ENVISAT - AATSR

CYCLIC REPORT #101

	START	END
DATE	26TH MARCH 2011	25TH APRIL 2011
TIME	22:01:10	22:01:44
ORBIT #	47429	47860



This subset from a Level 1B product acquired on 23 April 2011 shows snow (as blue) on the mountains of Norway. This RGB image is composed of data from the 0.87, 0.67 and 0.55 micron channels for the nadir view.

prepared by/préparé par AATSR IDEAS and QWG team

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AATSR CYCLIC REPORT # 101

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 2010+ cycle, which consists of 431 complete orbits over the course of 30 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: 101

Cycle Start: 26th March 2011, 22:01:10 Orbit #: 47429

Cycle End: 25th April 2011, 22:01:44 Orbit #: 47860

The main activities during the cycle have been as follows:

- **ESRIN downtimes and delays**

22 April 2011: Envisat NRT dissemination was delayed; resolved same day

- **Kiruna downtimes and delays**

22 March 2011: Envisat NRT production and distribution was affected due to system problems; not resolved until 08 April 2011.

- **Unavailabilities**

There were two Artemis unavailabilities affecting Envisat NRT data during the cycle:

- 27 Mar 2011 00:46:51 to 01:18:05z
- 22 Apr 2011 07:35:43 to 11:09:16z

- **Envisat anomaly/unavailability**

An anomaly occurred on-board Envisat, causing an unavailability (payload switch off) for:

- 03 Apr 2011 15:51:36 to 04 Apr 2011 13:50:00z.

- **AATSR outgassing/unavailability**

The opportunity was taken during the Envisat unavailability for AATSR outgassing, causing an unavailability for:

- 04 Apr 2011 13:50:01 to 06 Apr 2011 15:41:32z.

For this period (orbits 47553 to 47583), no Infra Red data are available. During outgassing, the products only contain the reflectance channels (1600nm, 860nm, 670nm and 560nm) and are affected by poor calibration.

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)

Because the PC1 file contains the orbit period, two versions now need to be maintained after the mission extension orbit manoeuvres.

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_AXVIEC20101015_104659_20020301_000000_20200101_000000
ATS_GC1_AXVIEC20070720_093834_20020301_000000_20200101_000000
ATS_INS_AXVIEC20070720_094014_20020301_000000_20200101_000000
See below for VC1 files
ATS_LST_AXVIEC20101018_094830_20020301_000001_20200101_000000
ATS_PC1_AXVIEC20101015_101827_20020301_000000_20101021_235959
ATS_PC1_AXVIEC20101015_100604_20101022_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	
16/04/2011	14/04/2011	21/04/2011	None
17/04/2011	15/04/2011	22/04/2011	None
18/04/2011	16/04/2011	23/04/2011	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

The following AATSR data were not available due to instrument unavailabilities during the cycle:

UTC Start	UTC Stop	Reason	Reference	Planned
03-Apr-2011 15:51:36	04-Apr-2011 13:50:00	Payload switch-off due to Service Module Anomaly	EN-UNA-2011/0055	No
04-Apr-2011 13:50:01	06-Apr-2011 15:41:32	AATSR Outgassing	EN-UNA-2011/0063	Yes

Table 4-1 Instrument unavailability for cycle 101

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	26-Mar-2011 22:01	47429	47515	0	25504	0	100.00%	95.08%	95.08%
2	01-Apr-2011 21:41	47515	47601	258956	0	5712	50.05%	50.05%	48.95%
3	07-Apr-2011 21:21	47601	47688	0	0	0	100.00%	100.00%	100.00%
4	13-Apr-2011 22:41	47688	47774	0	0	6251	100.00%	100.00%	98.79%
5	19-Apr-2011 22:21	47774	47860	0	5898	0	100.00%	98.86%	98.86%

Table 4-2 Instrument and data unavailability weekly summary for cycle 101

The instrument was available for 90.01% of the time during the cycle.

The L0 data were available for 88.80% of the time during the cycle.

The L1B data were available for 88.34% of the time during the cycle.

The following L0 data were additionally missing from this cycle (not including instrument unavailabilities):

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
26/03/2011 23:31	27/03/2011 01:09	5906	47429	47429
28/03/2011 07:54	28/03/2011 09:35	6046	47449	47449
29/03/2011 20:28	29/03/2011 23:20	10326	47471	47471
31/03/2011 19:14	31/03/2011 20:07	3226	47499	47499
25/04/2011 18:59	25/04/2011 20:38	5898	47858	47858

Table 4-3 ATS_NL_0P missing data during cycle 101

Data missing at L0 are also missing at L1B. The following L1B data were additionally missing from this cycle:

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
06/04/2011 15:41	06/04/2011 17:16	5712	47583	47584
18/04/2011 02:10	18/04/2011 03:54	6251	47747	47748

Table 4-4 ATS_TOA_1P missing data during cycle 101

4.2.1 ORBITS AFFECTED BY POOR DATA QUALITY

The information reported in Section 4.2 does not consider the quality of the data, only whether or not it is available.

During this cycle, there were no 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

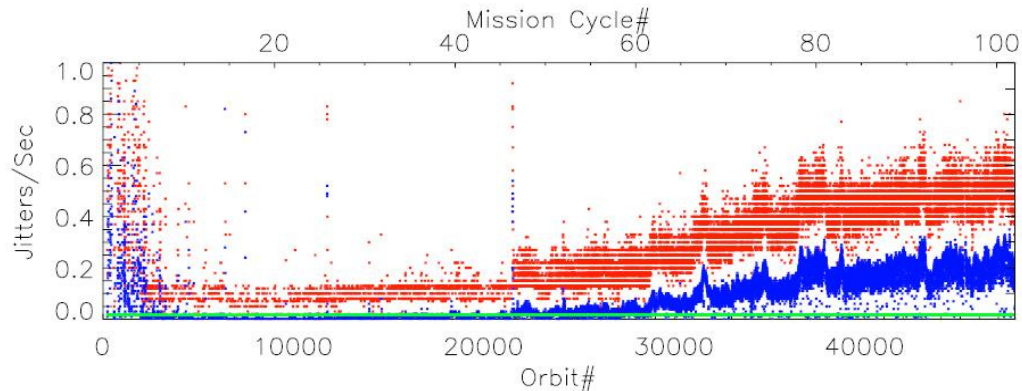


Figure 5-1 Jitter trend from mission start

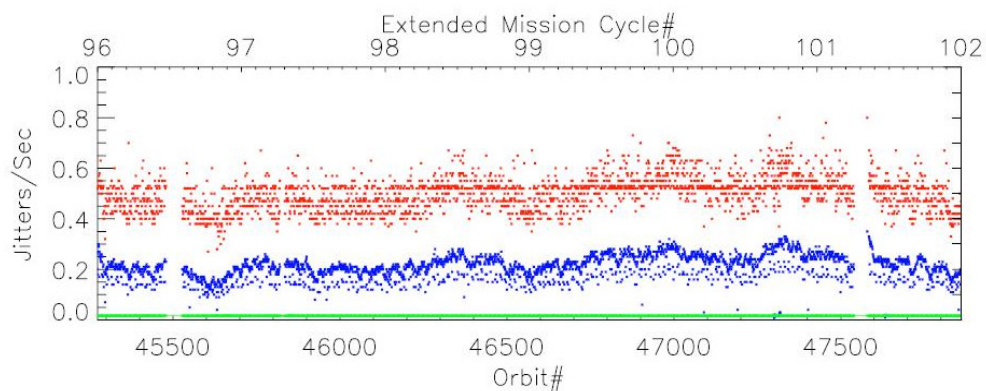


Figure 5-2 Jitter trend covering the mission extension

The plots show the jitter-trend since the start of the mission and since the recent mission extension, 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 for the extended mission shows some slight improvement during this cycle.

5.1.2 SENSOR TEMPERATURE

The detector temperature plots for Cycle 101 can be found at:
<http://www.aatsrops.rl.ac.uk/EDSX/CyclePlots/DetTemps101.pdf>

Detector temperatures have been nominal throughout this cycle, given the outgassing.

5.1.3 VISCAL

NRT calibration quality for the AATSR reflectance channels has been maintained throughout the cycle. The list of "orbital" VC1 files delivered for this cycle can be found at: <http://www.aatsrops.rl.ac.uk/EDSX/CyclePlots/VC1-101.txt>

5.1.4 NE Δ T

Information on the NE Δ T for Cycle 101 is shown in Table 5-1. Figure 5-3 shows the trend since launch.

	Hot BB		Cold BB	
	T = 302.03K		T = 263.07K	
	Count	NE Δ T (mK)	Count	NE Δ T (mK)
12 μ m	1.61	33.5	1.20	34.6
11 μ m	1.50	30.4	1.11	32.9
3.7 μ m	2.53	31.3	1.22	73.8

Table 5-1 NE Δ T information for 25 April 2011 (cycle 101)

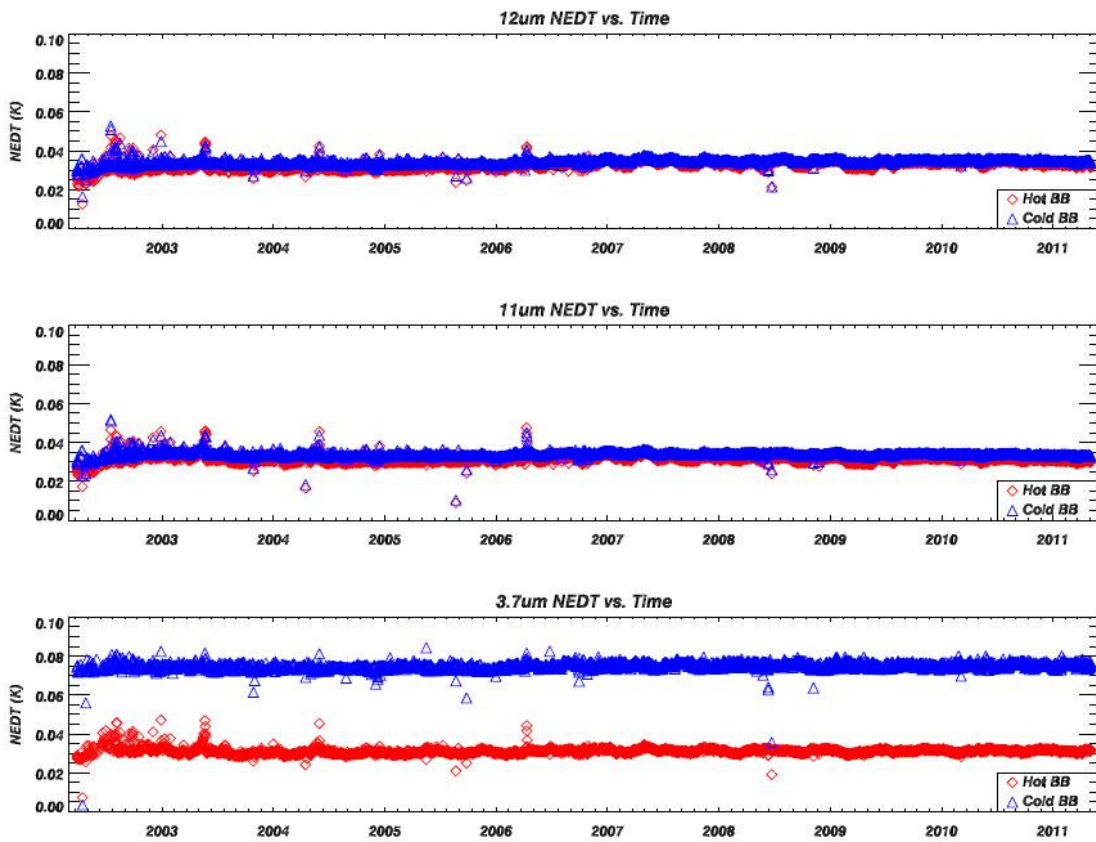


Figure 5-3 Time series of NEDT since launch

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. We would like to enquire as to the current definition applied to consolidated products and ask that a change be proposed and the impact of such a change evaluated.

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 (t_0) 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 t_0 . The last DSR extracted from each DS is the one immediately preceding t_1 ."

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 (t_0) 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 t_0 . The last DSR extracted from each DS is the one immediately preceding t_1 .

For AATSR data, the last ADS DSR extracted from each DS is the one whose time label is equal to or greater than t_1 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 from 08 to 30 April 2011 (328 products from orbits 47605 to 47930). Figure 5-5, Figure 5-6, Figure 5-7 and Figure 5-8 show the SST average in dual and nadir views, the standard deviation and the number of contributory orbits for 08-30 April 2011. Please note we are not able to provide individual colour scales at this time, however the scheme used is given in Figure 5-4, and the data ranges of each plot are specified in the accompanying caption.



Figure 5-4 This is the colour scheme used for the following plots, running linearly from left to right with increasing magnitude.

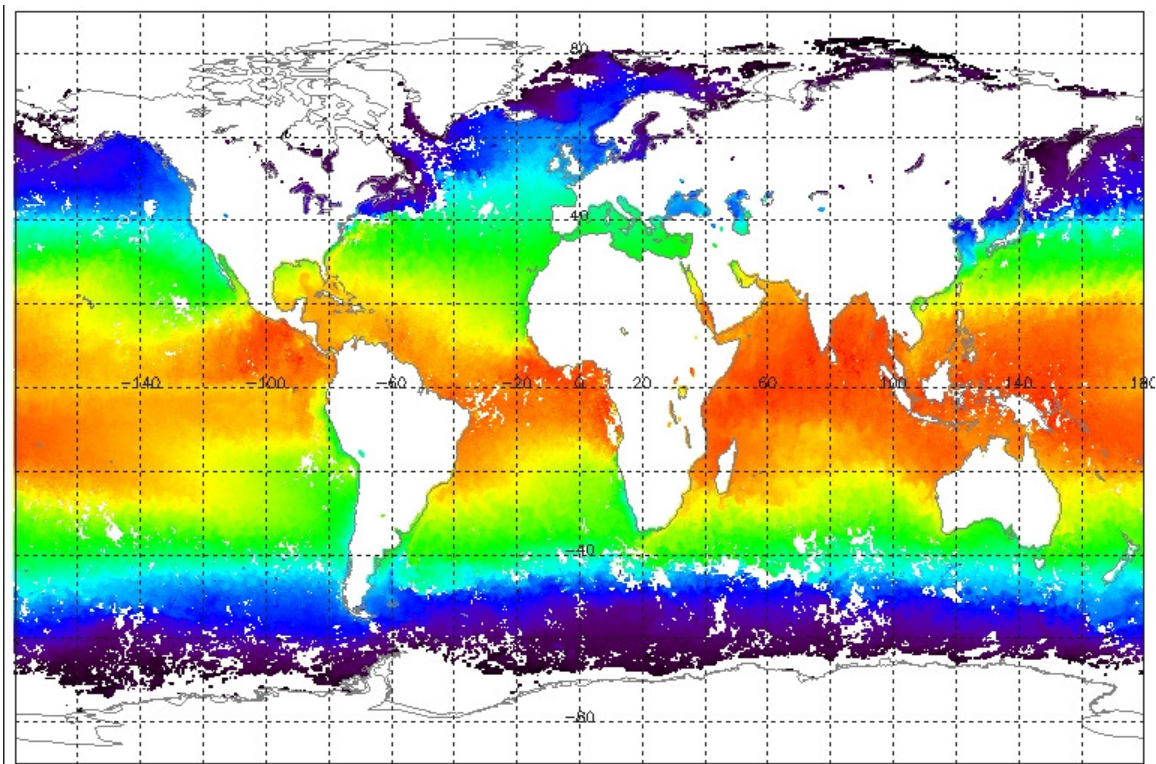


Figure 5-5 Monthly average Dual View SST, with a range of 270 - 305 Kelvin for 08-30 April 2011

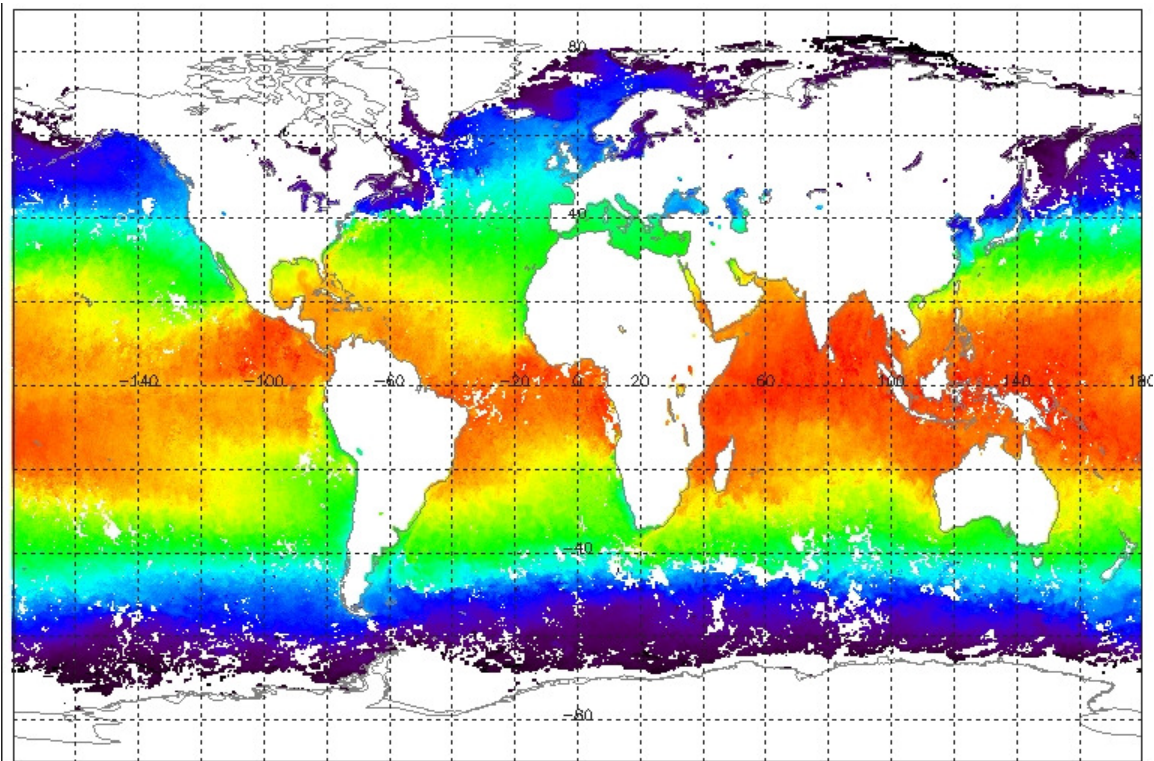


Figure 5-6 Monthly average Nadir SST, with a data range of 270 - 305 Kelvin for 08-30 April 2011

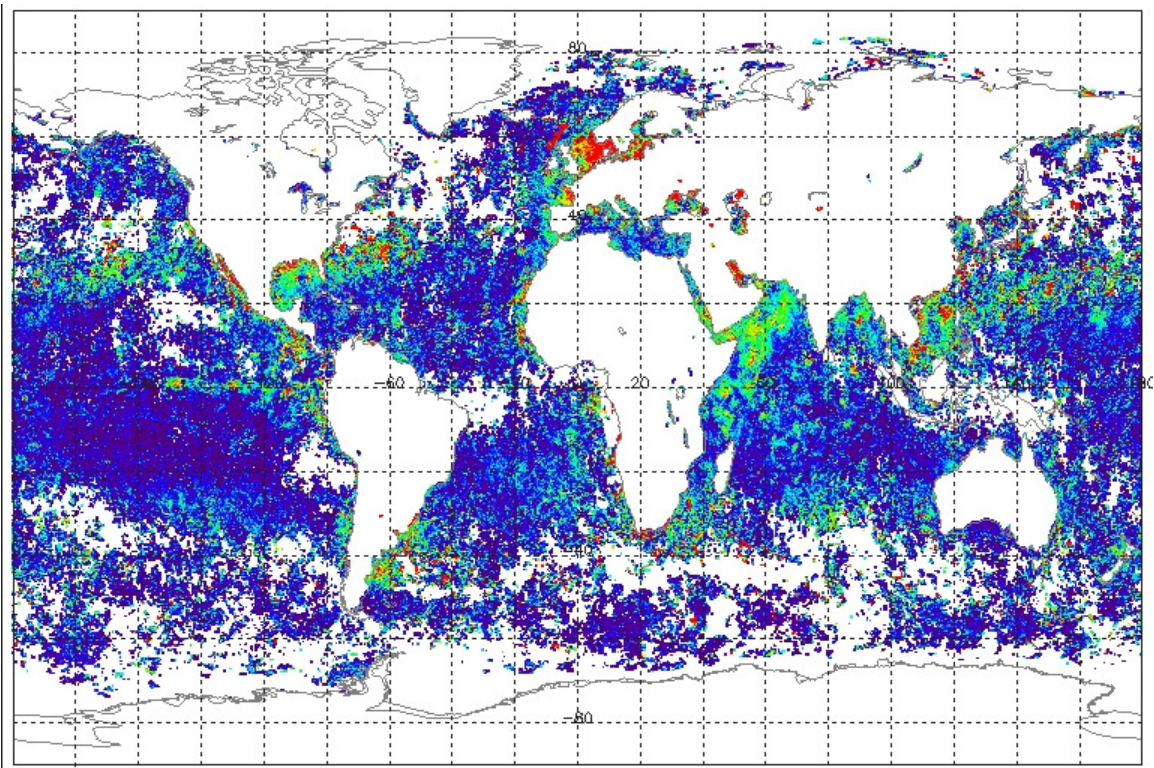


Figure 5-7 Standard deviation of the monthly average SST with a colour key range of 0 to 1.0 K, and a maximum value of 6.5 K for 08-30 April 2011

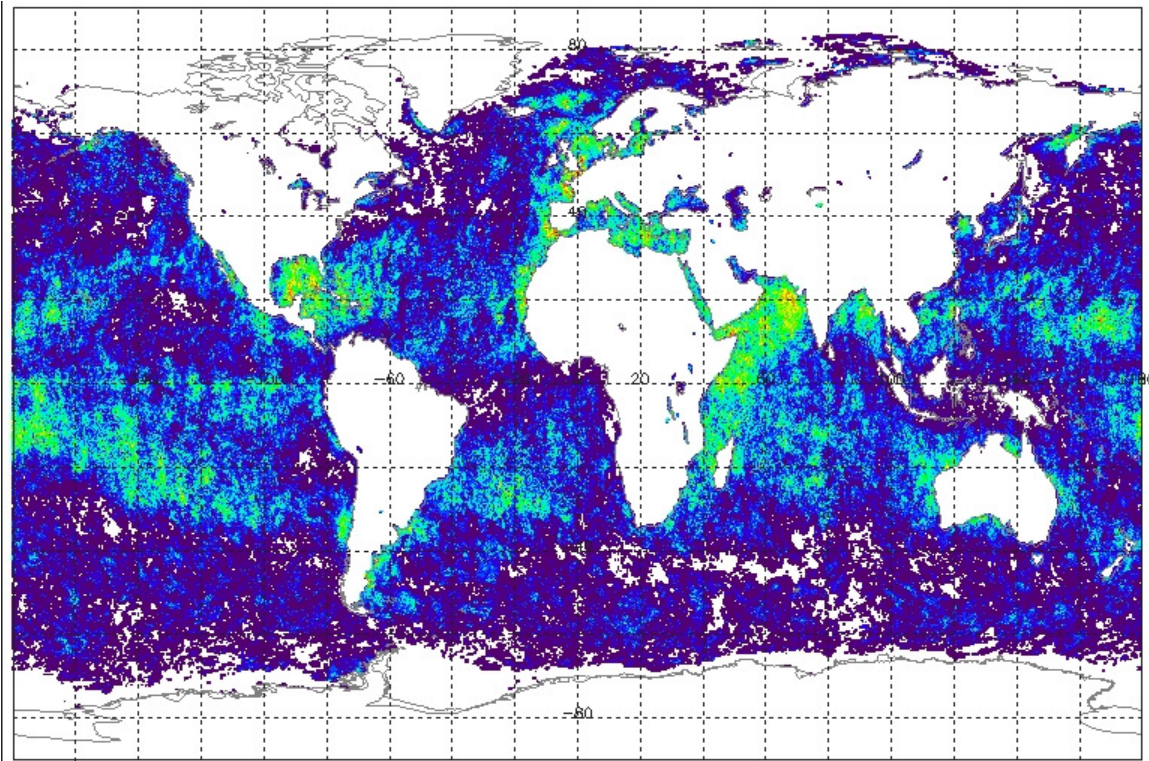


Figure 5-8 Number of contributory orbits to the calculation of the SST, with a colour key range of 0 to 10, and a maximum value of 11, for 08-30 April 2011

6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

6.1 Calibration

No calibration results were reported during this cycle.

6.2 Validation

6.2.1 CYCLE 101

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

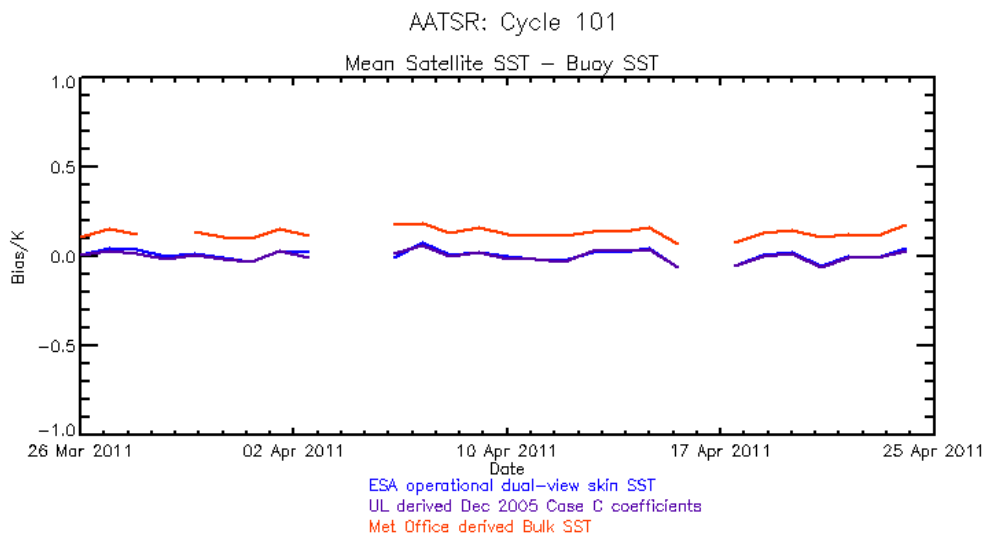


Figure 6-1 Comparison of daily mean difference between 10' AATSR SST values and *in situ* drifting buoy SST for Cycle 101. Data provided by the Met Office

During cycle 101, there were 1283 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of -0.04 K, standard deviation 0.25 K, and a mean (dual-view depth SST minus buoy SST) of +0.09 K, standard deviation 0.24 K. A total of 1251 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.04 K, standard deviation 0.31 K, and a mean (dual-view depth SST minus buoy SST) of +0.18 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.

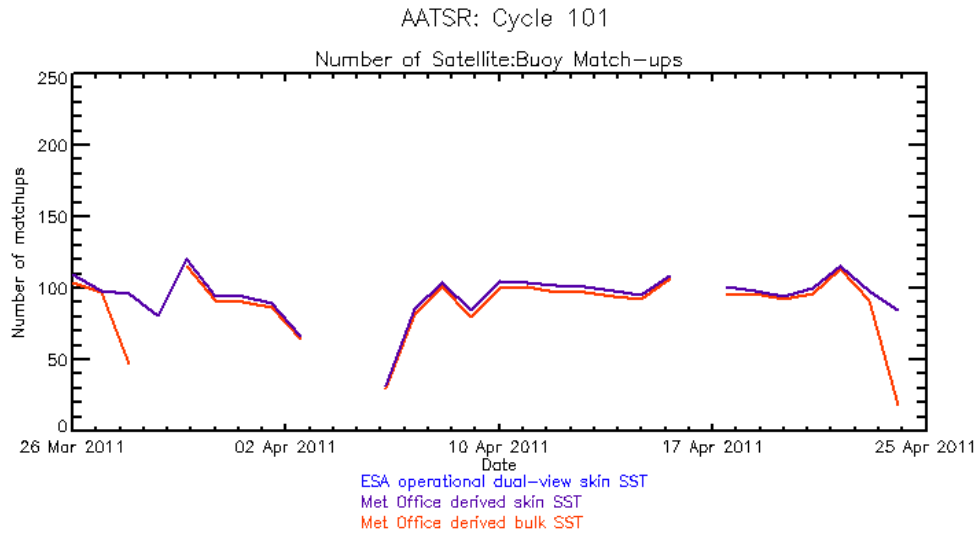


Figure 6-2 Plot of daily number of match-ups between 10' AATSR SST values and *in situ* buoy SST for Cycle 101. Data provided by the Met Office

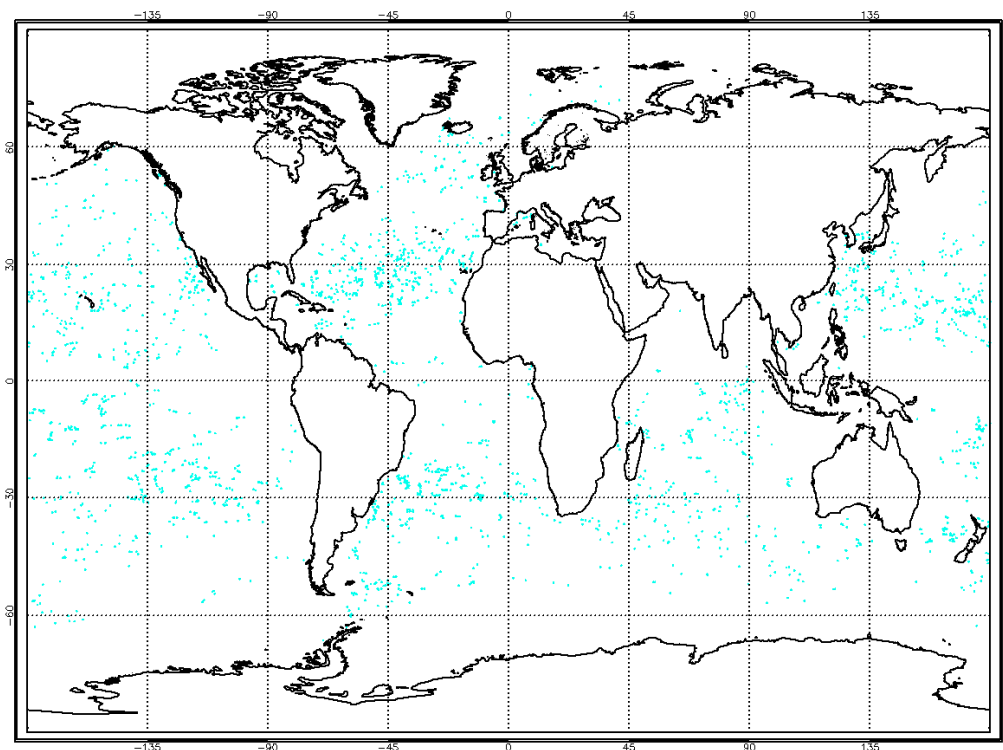


Figure 6-3 Map showing global distribution of match-ups between 10' AATSR SST values and *in situ* buoy SST for Cycle 101. The cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.