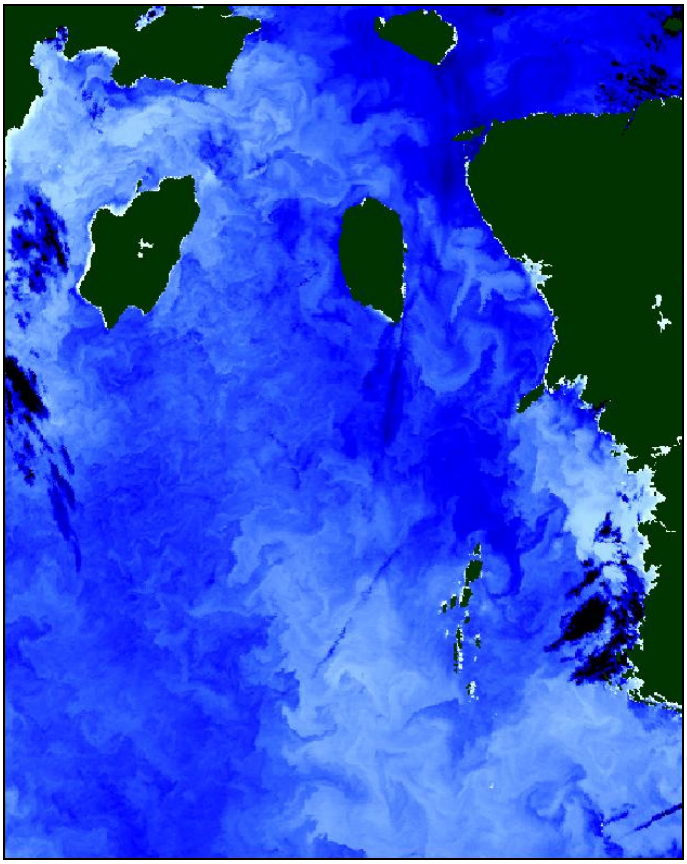
ENVISAT - AATSR

CYCLIC REPORT #104

	START	END
DATE	24TH JUNE 2011	24TH JULY 2011
TIME	22:02:15	22:02:42
ORBIT #	48722	49152



Hudson Bay, 23 July 2011. This subset of an AATSR L1B product shows brightness temperature data for the northern part of the Hudson Bay. Towards the top of the image Coats Island and Mansel Island can be seen, both of which are designated reindeer reserves. The image is composed of 11 micron nadir-view data, with a median brightness temperature of approximately 276K. Lighter colours indicate warmer waters.

prepared by/*préparé par* AATSR IDEAS and QWG team
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A P P R O V A L

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AATSR CYCLIC REPORT # 104

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: 104

Cycle Start: 24th June 2011, 22:02:43 Orbit #: 48722

Cycle End: 24th July 2011, 22:03:08 Orbit #: 49152

The main activities during the cycle have been as follows:

- **ESRIN downtimes and delays**
  There were no issues with production or dissemination from ESRIN this period.

- **Kiruna downtimes and delays**
  NRT Processing problems were experience at Kiruna on the following dates:
  - 27 June - 08 July 2011
  - 18 July 2011

- **Unavailabilities**
  There were several Artemis unavailabilities affecting Envisat NRT data during the cycle:
  - 01 July 2011: 09:49:20 to 10:19:46, and 11:24:51 to 11:47:28
  - 08 July 2011: 08:53:00 to 09:07:00
  - 24 July 2011: 21:38:27 to 22:24:58

- **AATSR Viscal monitor signal**
  As a result of the new orbit scenario implemented after the mission extension manoeuvres, the long term trends of the visible calibration monitor signal are showing a ~5% decrease for May/June 2011. This was an expected effect. There should be no impact on the thermal channel calibration; the impact on the calibration of the visible and shortwave infrared channels is being investigated. Further information can be found from:
  http://www.aatsrops.rl.ac.uk/EDSX/MissionTrends/Trends_Plots/

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	
25/06/2011	23/06/2011	30/06/2011	None
10/07/2011	28/07/2011	15/07/2011	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

There were no data unavailabilities due to instrument unavailabilities 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	24-Jun-2011 22:02:42	48722	48808	0	0	0	100.00%	100.00%	100.00%
2	30-Jun-2011 21:42:45	48808	48894	0	0	0	100.00%	100.00%	100.00%
3	06-Jul-2011 21:22:47	48894	48981	0	0	0	100.00%	100.00%	100.00%
4	12-Jul-2011 22:43:03	48981	49067	0	0	5882	100.00%	100.00%	98.87%
5	18-Jul-2011 22:23:05	49067	49153	0	446	0	100.00%	99.91%	99.91%

Table 4-1 Instrument and data unavailability weekly summary for Cycle 104

The instrument was available for 100.00% of the time during the cycle.
The L0 data were available for 99.98% of the time during the cycle.
The L1B data were available for 99.76% of the time during the cycle.

The following L0 data were missing from this cycle:

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
24-Jul-2011 06:15:37	24-Jul-2011 06:21:56	379	49143	49143
24-Jul-2011 20:40:48	24-Jul-2011 20:41:55	67	49152	49152

Table 4-2 ATS_NL__0P missing data during Cycle 104

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
16-Jul-2011 21:46:18	16-Jul-2011 23:24:20	5882	49037	49038

Table 4-3 ATS_TOA_1P missing data during Cycle 104

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, the following orbit contained frames suffering from bad/missing telemetry:

- 48945 (10 July 2011)

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

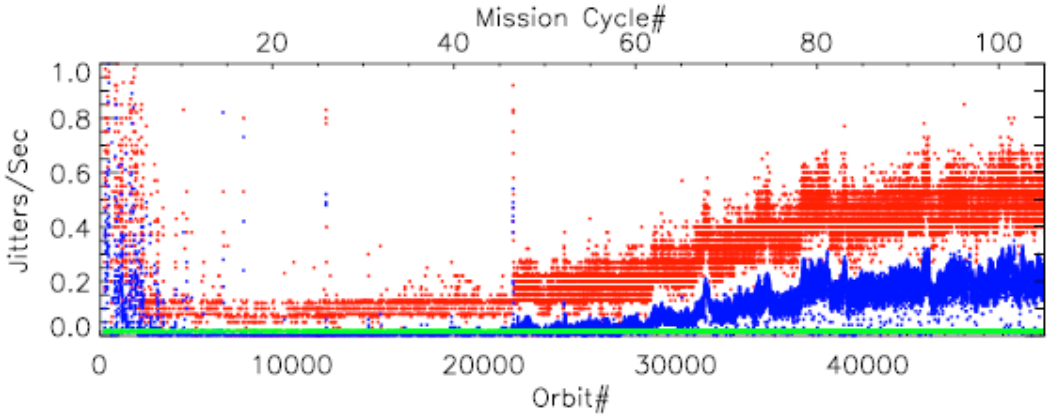


Figure 5-1 Jitter trend from mission start

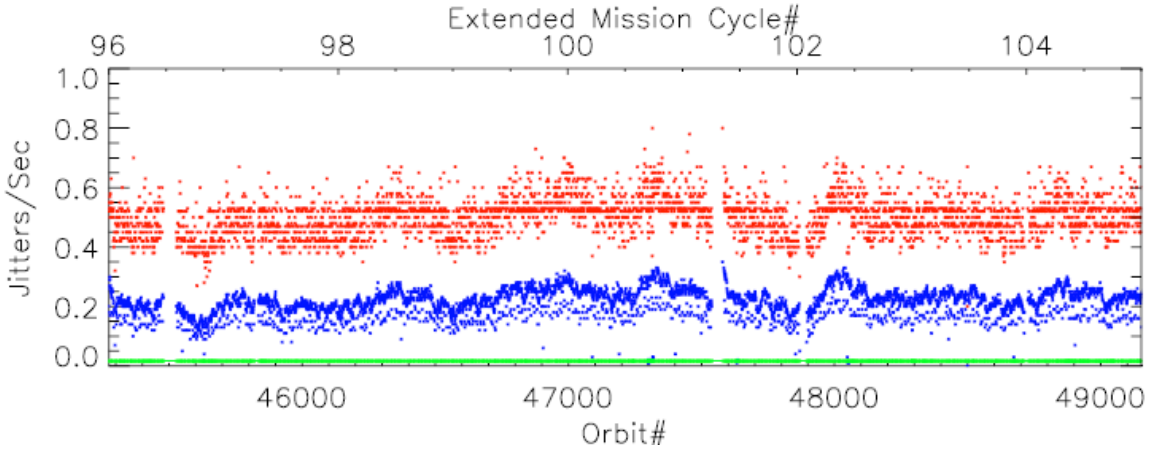


Figure 5-2 Jitter trend since the mission extension

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 little change with respect to mean jitter-rate over this cycle compared to recent cycles.

5.1.2 SENSOR TEMPERATURE

The detector temperature plots for Cycle 104 can be found at:
http://www.aatsrops.rl.ac.uk/EDSX/CyclePlots/DetTemps104.pdf

Detector temperatures have been nominal throughout this cycle.

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/VC-104.txt

5.1.4 NE∆T

Information on the NE∆T is shown in Table 5-1. Figure 5-3 shows the trend since launch.

	Hot BB		Cold BB	
	T = 302.09K		T = 263.12K	
	Count	**NE∆T (mK)**	**Count**	**NE∆T (mK)**
12µm	1.63	33.8	1.22	35.0
11µm	1.53	30.9	1.12	33.4
3.7µm	2.55	31.6	1.22	74.5

Table 5-1 NE∆T information for 27 July 2011 (Cycle 104)

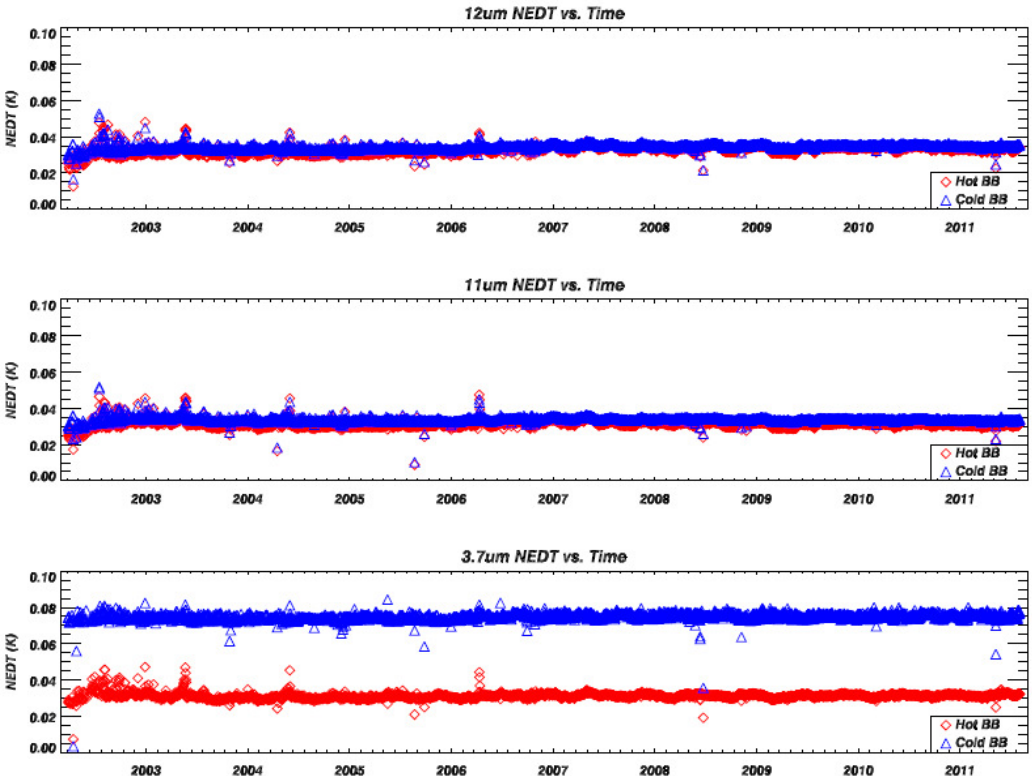


Figure 5-3 Time series of NEΔT since launch

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 then 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 (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."

Processing of L1/L2 fails with product ATS_NL__0PNPDE20100515_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__0PNPDE20100515_214836_000061722089_00272_42911_1524.N1.
Please consider that same error occurs also IN GAMME test environment.
19.08.2010 -Feedback from ELCA:"There is just a debug option that has to be removed from the optimization options while building AATSR IPF. When building the IPF with the correct options this error does not occur and the processing completes and generates L1/L2 products."

AATSR MPH OSV field does not agree with SPH auxiliary filename
IDEAS-PR-11-05568
We are noticing that, on occasion, the OSV source field in the MPH does not agree with the auxiliary data file name given in the SPH. For example: (1) in product ATS_TOA_1PRUPA20110527_222624_000065273103_00029_48319_8139.N1, the MPH gives the OSV source as "FR", while the SPH reports that the file used was actually an FPO file (AUX_FPO_AXVPDS20110528_102115_20110527_190825_20110606_212212); (2) in product ATS_TOA_1PNPDE20110526_021402_000066813103_00003_48293_4416.N1, the MPH gives the OSV source as "FP", while the SPH reports that the file used was actually an FRO file (AUX_FRO_AXVPDS20110528_102115_20110524_221000_20110527_005000).
Note that this does not always happen, but seems to be related to when files are processed using a non-anticipated file type, but not in every instance. ELCA's analysis: "The solution is to compute in output product's MPH the OSV value based on the orbit file passed in the job order instead of using the L0 MPH's value."

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 Products

The following plots have been generated from the available Meteo products acquired for July 2011. These consist of 445 products from orbits 48809 to 49253. 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 respectively.

Please note that individual colour scales for each plot are not available, 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,

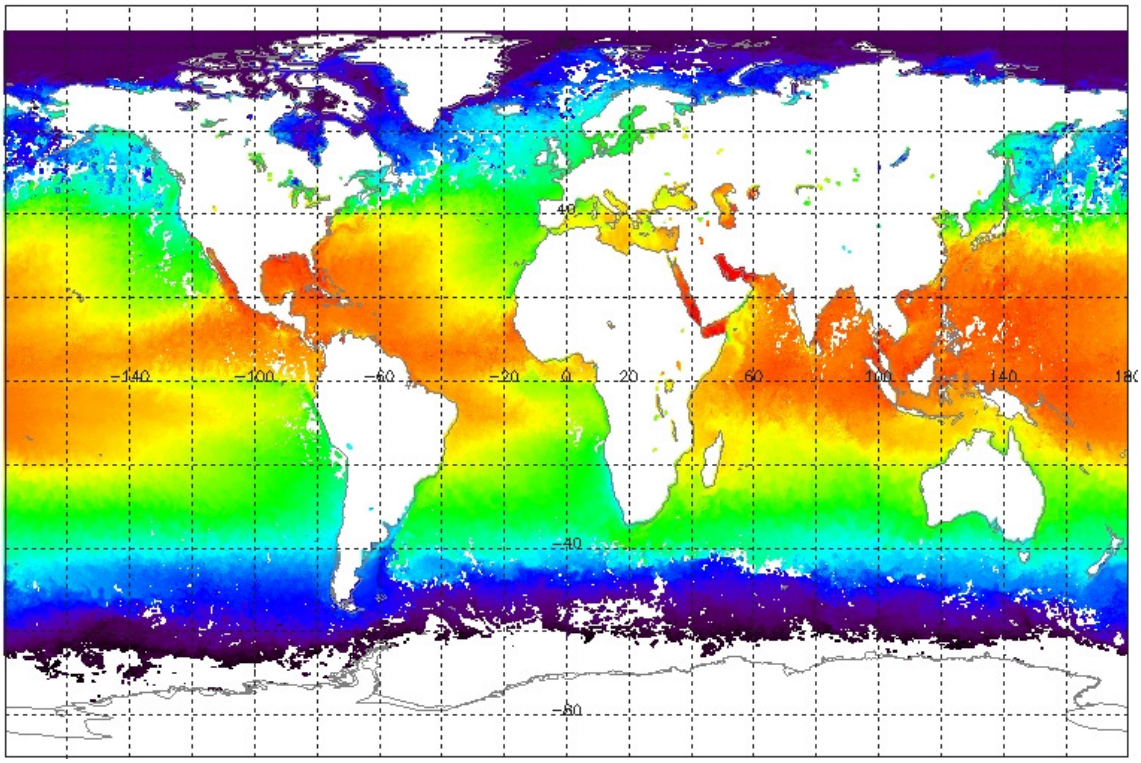


Figure 5-5 Monthly average Dual View SST, with a range of 270 - 305 Kelvin for July 2011

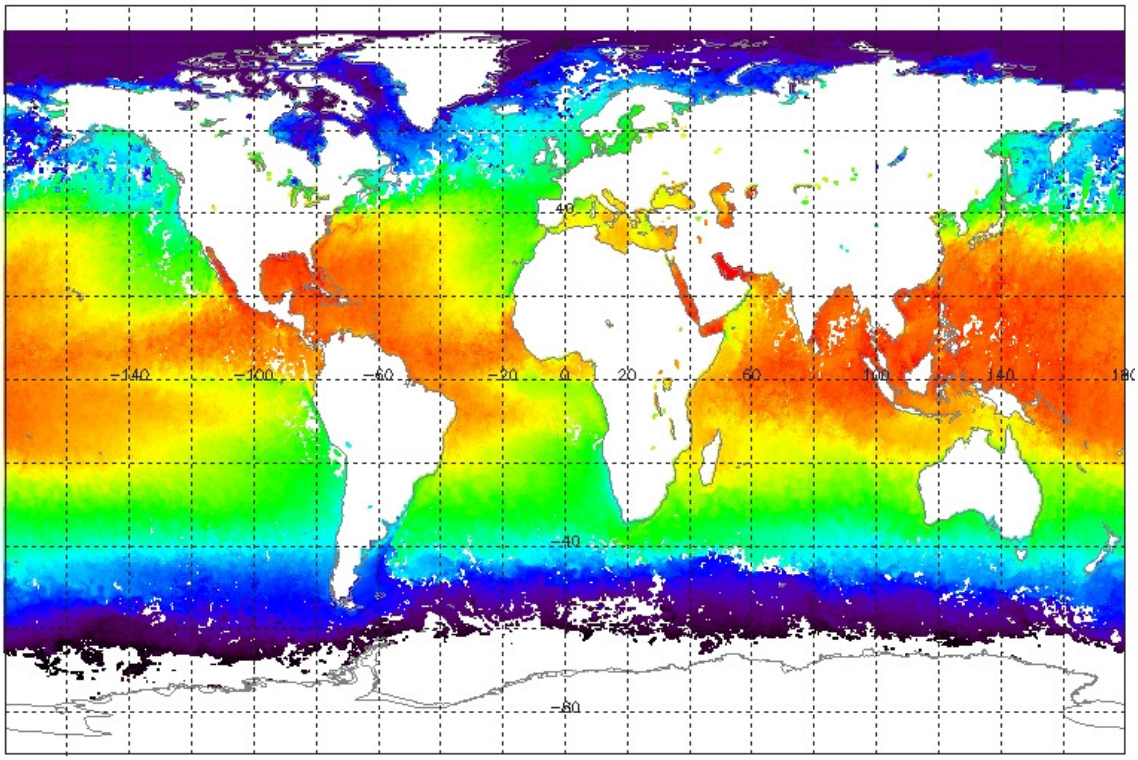


Figure 5-6 Monthly average Nadir SST, with a data range of 270 - 305 Kelvin for July 2011

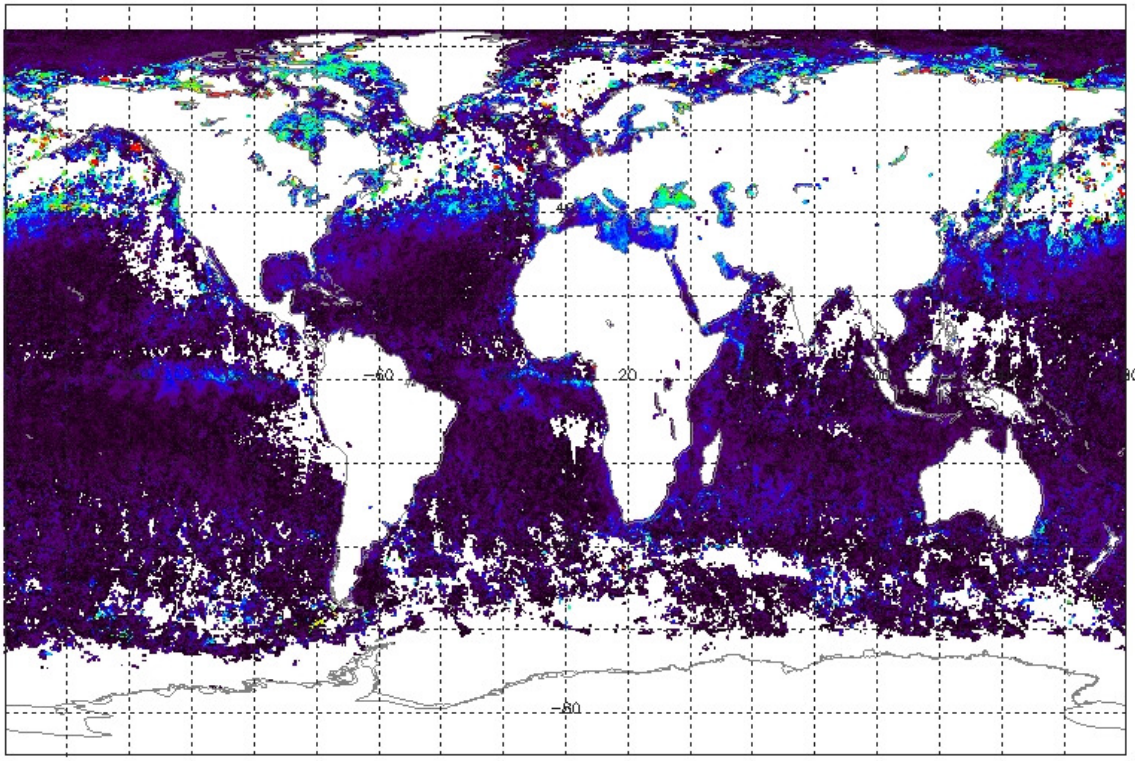


Figure 5-7 Standard deviation of the monthly average SST with a colour key range of 0 to 4.0 K, and a maximum data value of 9.5 K for July 2011

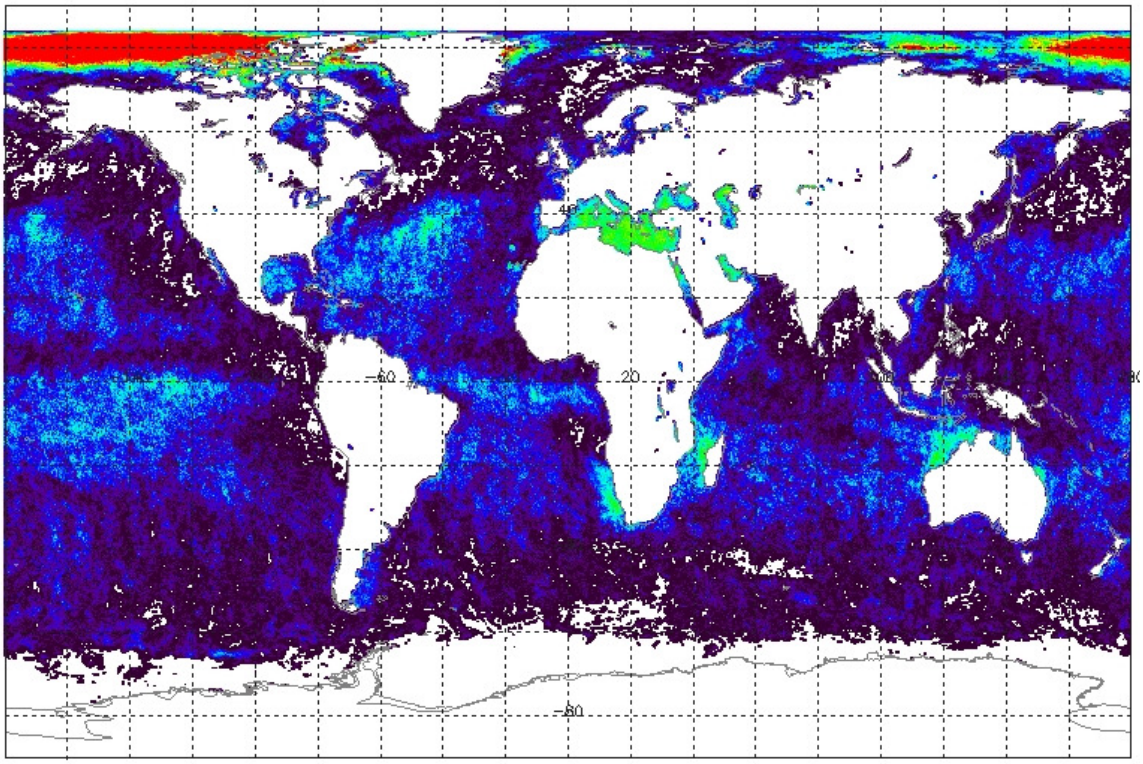


Figure 5-8 Number of contributory orbits to the calculation of the SST, with a colour key range of 0 to 20, and a maximum value of 56, for July 2011

6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

6.1 Calibration

No calibration results were reported during this cycle.

6.2 Validation

6.2.1 VALIDATION RESULTS FOR CYCLE 104

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

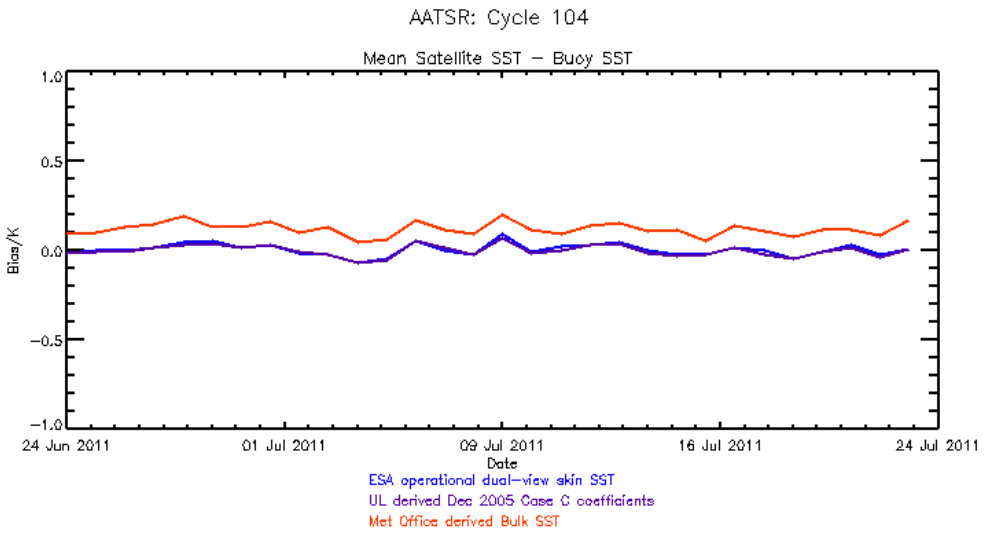


Figure 6-1: Comparison of daily mean difference between 10´ AATSR SST values and in situ drifting buoy SST for Cycle 104. Data provided by the Met Office.

During cycle 104, there were 1276 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of -0.02 K, standard deviation 0.24 K, and a mean (dual-view depth SST minus buoy SST) of +0.09 K, standard deviation 0.23 K. A total of 1172 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.02 K, standard deviation 0.31 K, and a mean (dual-view depth SST minus buoy SST) of +0.14 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.

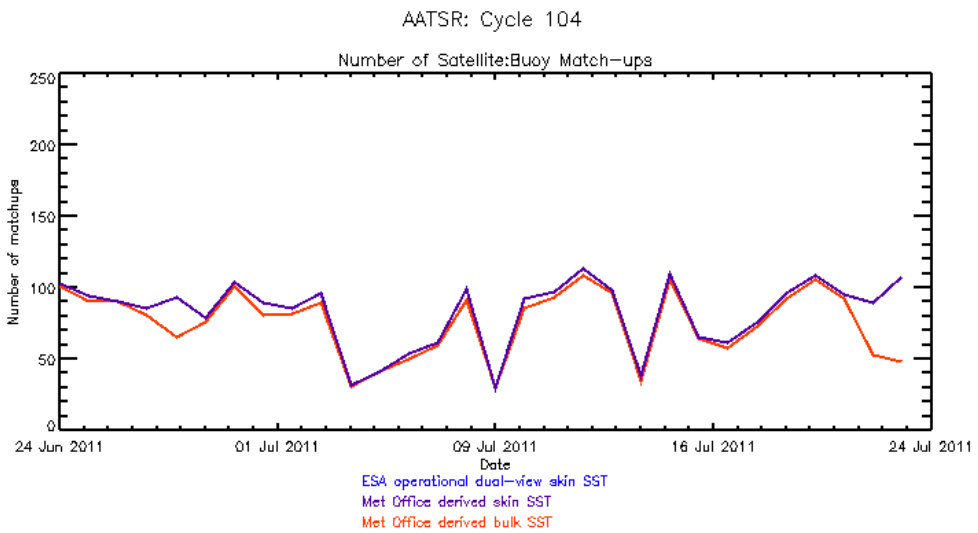


Figure 6-2: Plot of daily number of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 104. Data provided by the Met Office.

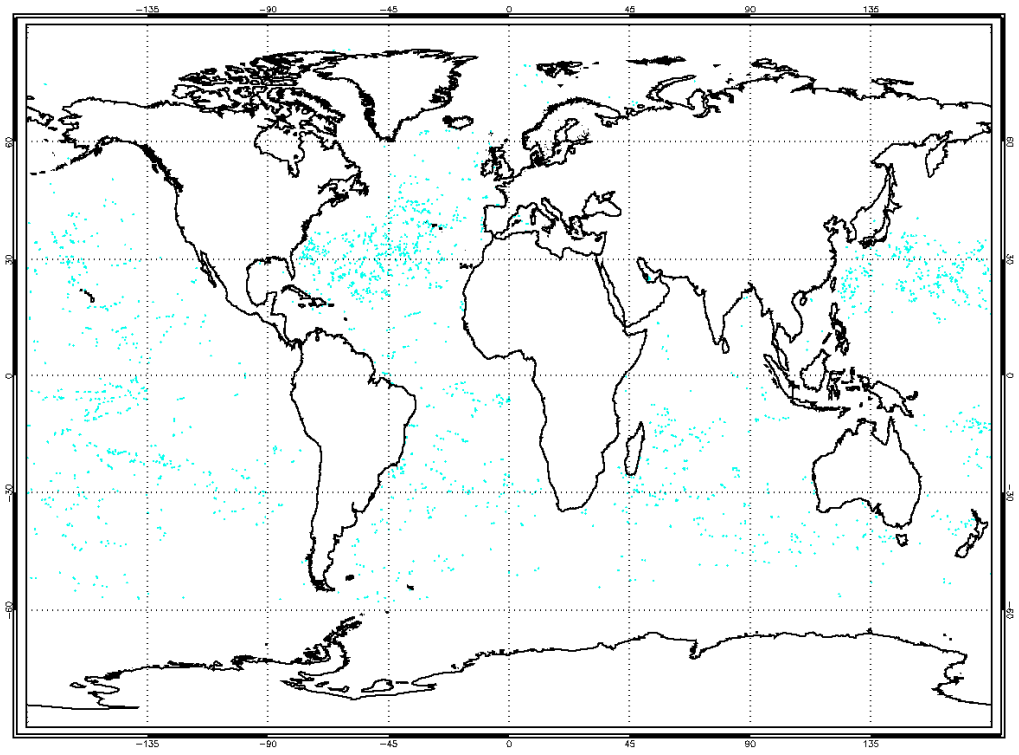


Figure 6-3: Map showing global distribution of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 104. The cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

6.2.2 VALIDATION RESULTS FOR CYCLE 103

The results for the previous Cycle, 103, are shown in Figure 6-1.

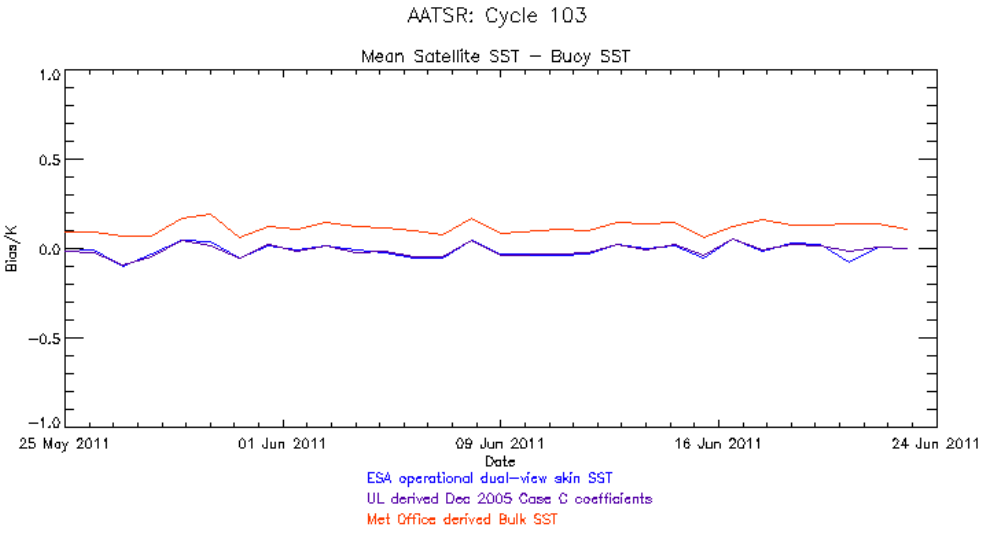
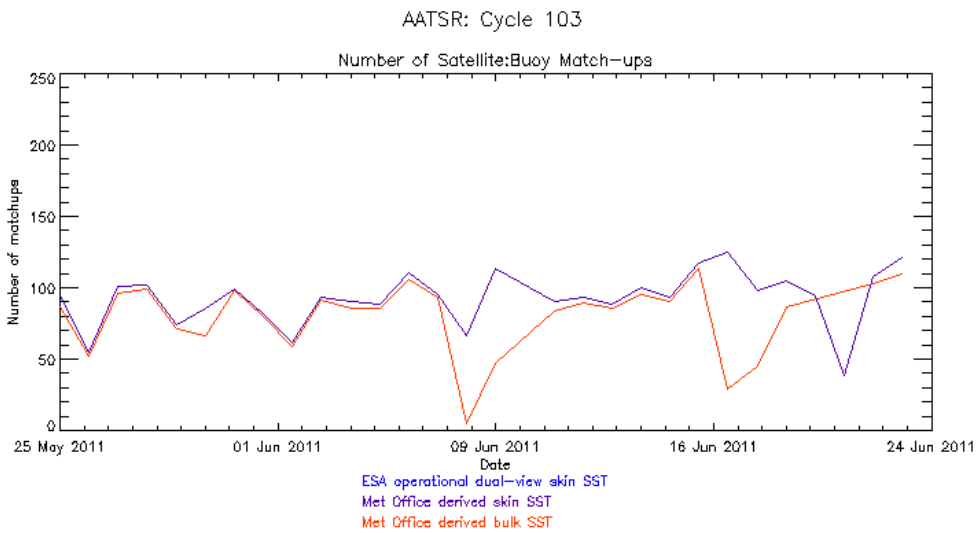


Figure 6-1: Comparison of daily mean difference between 10´ AATSR SST values and in situ drifting buoy SST for Cycle 104. Data provided by the Met Office.

During cycle 103, there were 1320 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of -0.04 K, standard deviation 0.24 K, and a mean (dual-view depth SST minus buoy SST) of +0.07 K, standard deviation 0.22 K. A total of 1310 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.03 K, standard deviation 0.30 K, and a mean (dual-view depth SST minus buoy SST) of +0.15 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.



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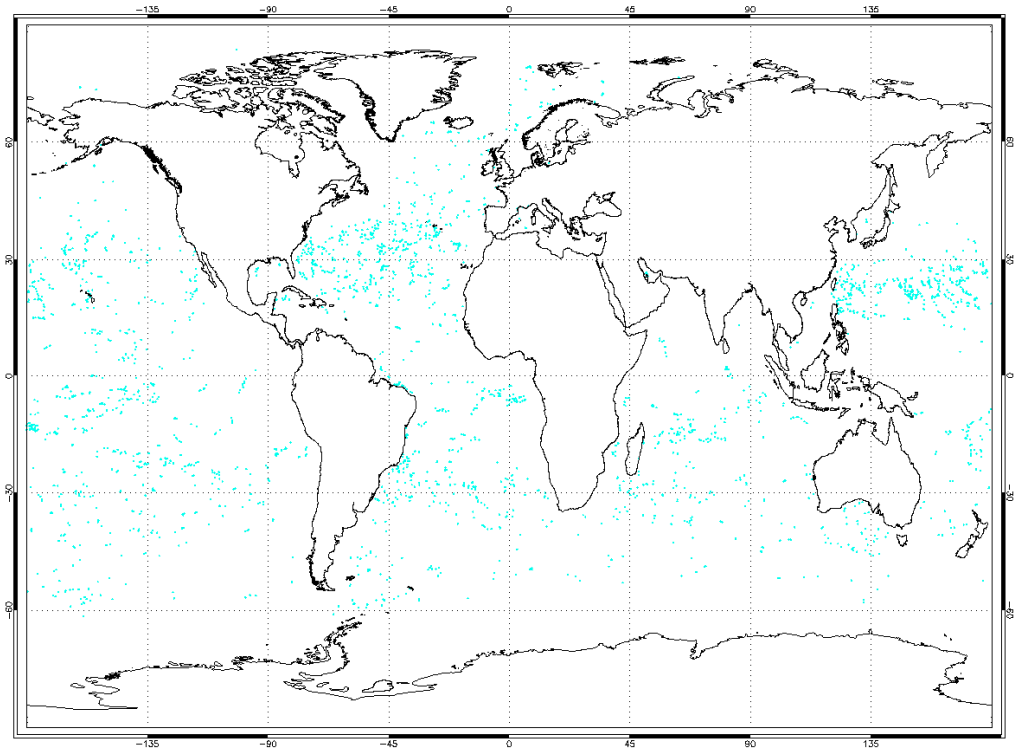

Figure 6-3: Map showing global distribution of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 103. The cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.