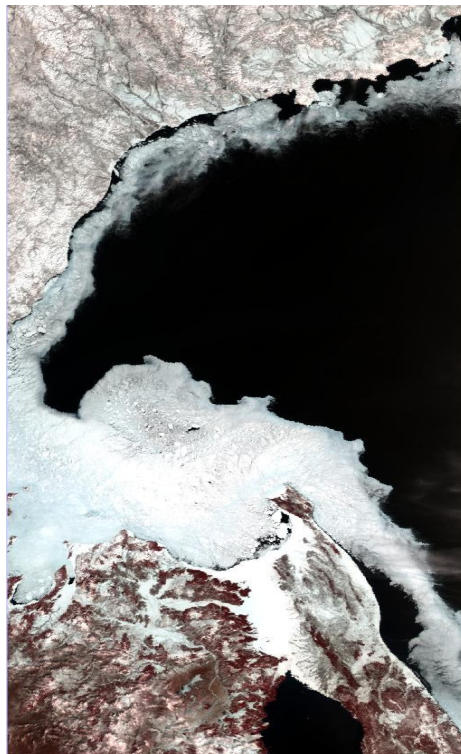

ENVISAT - AATSR

CYCLIC REPORT #79

	START	END
<i>DATE</i>	11 MAY 2009	15 JUNE 2009
<i>TIME</i>	21:59:29	21:59:29
<i>ORBIT #</i>	37630	38130



An RGB combination of 0.87, 0.67 and 0.55 micron channels shows ice forming in the Sea of Okhotsk, part of the western Pacific Ocean. The landmass to the bottom right of the image is the northern part of Sakhalin Island, which is the largest island in the Russian federation. It is separated from the mainland by the Mamiya Strait, which often freezes over in winter, as can be clearly seen in this image.

prepared by/*préparé par* AATSR IDEAS and QWG team
reference/*référence*
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AATSR CYCLIC REPORT # 79

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: 79

Cycle Start: 11 May 2009, 21:59:29 Orbit #: 37630

Cycle End: 15 June 2009, 21:59:29 Orbit #: 38130

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 – no change (6.01)

L2P processor – updated (1.5)

- **Envisat AATSR Outgassing:**

Due to the execution of a planned outgassing for the AATSR instrument, the following unavailability period has been registered: 26-May-2009 09:32:08 to 29-May-2009 21:09:00 UTC. For this period no Infra Red data was available; the products only contain the reflectance channels (860nm, 670nm and 560nm) and were affected by poor calibration.

- **L2P Processor Update:**

Version 1.5 of the AATSR L2P processor was implemented on 29 May 2009. Consequently, all orbits from 37885 onwards are being processed using the new software. The new version of the processor implements the following changes:

- Inclusion of AOD information (field aerosol_optical_depth).
- Inclusion of satellite observation minus SST analysis (field DT_analysis).
- Latitude and longitude coordinates are now provided for the pixel centre.
- UTC keyword now contained in start_time and stop_time fields in MPH.
- The view difference dataset (atsr_dual_nadir_diff) has been masked so as to provide values only for pixels where the SST is provided.

- **PDHS-E (ESRIN) Network switch failure:**

PDHS-E (ESRIN) was not reachable due to a network switch failure on 13 May 2009. Data was being disseminated nominally but could not be retrieved. This anomaly impacted all users who have access to ESRIN Rolling Archive and on-line systematic disseminations.

- **ESRIN EWFS (Envisat Web File Server) unavailability:**

The EWFS at ESRIN (PDHS-E) was unavailable due to a failure on the file system which occurred during the week-end of 30-31st May 2009. A major hardware

intervention was required to solve the problem which was resolved on 4 June 2009 and all backlogs were recovered.

- **Envisat NRT dissemination delays at PDHS-K (Kiruna):**

Due to required interventions at the PDHS-K (KIRUNA) facilities, there was an interruption to the Envisat NRT production/dissemination services on Tuesday 12 May 2009 from 08:00-10:00 UTC. The Kiruna Rolling Archive (RA) and Envisat Web File Server (EWFS) were also unavailable during that time.

Due to a failure on one of the DDS servers at the Kiruna station (PDHS-K), no data was disseminated from Friday 15 May 2009 - 16:00 UTC to Sunday 17 May 2009 - 12:00 UTC, after which DDS operations at Kiruna was successfully resumed. The data backlog was processed during the next few days.

Due to required interventions at the PDHS-K (KIRUNA) facilities, there was an interruption to the Envisat NRT production/dissemination services on Monday 25 May 2009 from 09:00-10:00 UTC. Envisat acquisitions and L0 data productions were not impacted during the intervention.

3 SOFTWARE & AUX FILE VERSION CONFIGURATION

3.1 Software Version

AATSR IPF for Level 1 and Level 2: Version 6.01

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 VISIBLE CALIBRATION FILES

3.2.1.1 *VC1 File Availability*

The daily reflectance channel calibration files were available for all dates during the reporting period for this cycle.

The orbital VC1 files continued to be generated from the available L0 data.

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
26/05/2009 09:32:08	29/05/2009 21:09:00	AATSR Outgassing	EN-UNA-2009/0093	Yes

Table 4-1 Instrument unavailability during cycle 79

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 11, 2009	37630	37729	0	0	0	100.00%	100.00%	100.00%
2	May 18, 2009	37730	37829	0	33741	0	100.00%	94.42%	94.42%
3	May 25, 2009	37830	37930	301012	0	0	50.23%	50.23%	50.23%
4	June 1, 2009	37931	38030	0	0	0	100.00%	100.00%	100.00%
5	June 8, 2009	38031	38130	0	0	0	100.00%	100.00%	100.00%

Table 4-2 Instrument and data unavailability weekly summary for cycle 79

The instrument was available for 90.05% of the time during the cycle.
The L0 data were available for 88.93% of the time during the cycle.
The L1b data were available for 88.93% 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
25-May-2009 07:15:41	25-May-2009 16:38:02	33741	37820	37826

Table 4-3 ATS_NL__0P missing data during cycle 79

No L1 data was missing from this cycle that was not associated with the missing L0 data reported above.

An AATSR planned outgassing took place from 26/05/2009 to 29/05/2009. No AATSR infrared channels were unavailable during this period.

4.2.1 ORBITS AFFECTED BY POOR DATA QUALITY

During this cycle, the following orbits contained frames suffering from bad/missing telemetry:

- 37638 (12th May 2009)
- 37661, 37668 (14th May 2009)
- 37706, 37710, 37714 (17th May 2009)

- 37754 (20th May 2009)
- 37793 (23rd May 2009)
- 37811 (24th May 2009)
- 37926 (1st June 2009)
- 37938, 37939 (2nd June 2009)
- 37969 (4th June 2009)
- 38026 (8th June 2009)
- 38069 (11th June 2009)
- 38085 (12th June 2009)
- 38098, 38099 (13th June 2009)
- 38110 (14th June 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

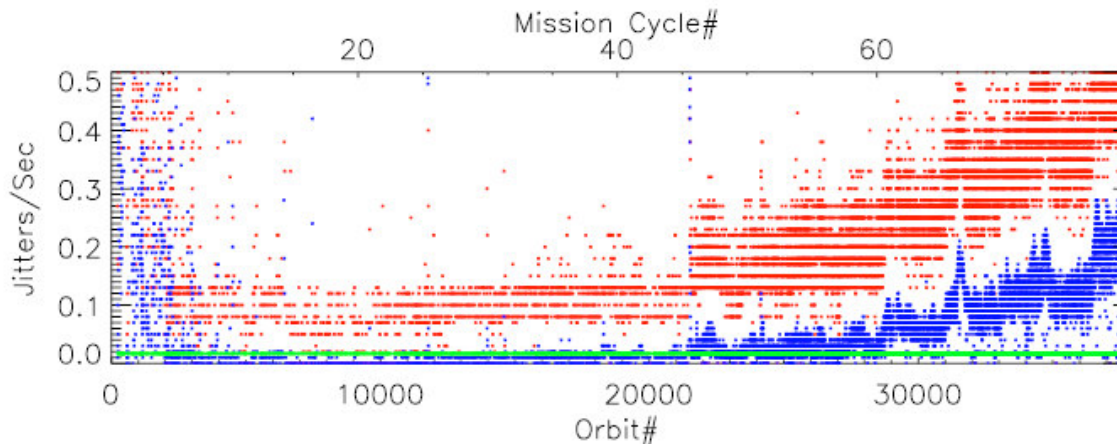


Figure 5.1 Jitter trend from mission start

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 plot shows the mean jitter-rate has improved wrt the previous cycle especially since the outgassing towards the end of May.

5.1.2 SENSOR TEMPERATURE

The detector temperature plots for cycle 79 can be found at:

<http://aatsr2.ag.rl.ac.uk/data2/aatsr2/EDS-X/CyclePlots/DetTemps79.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.

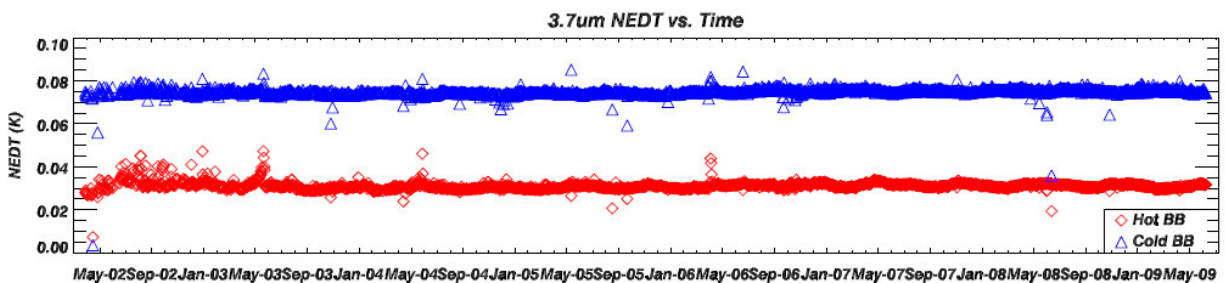
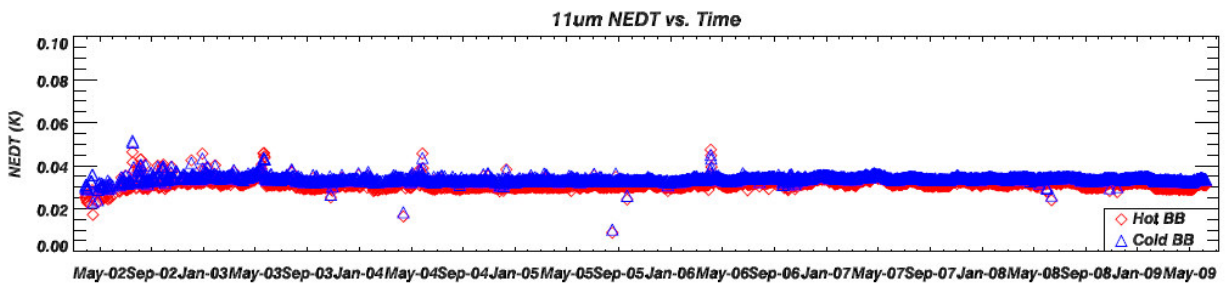
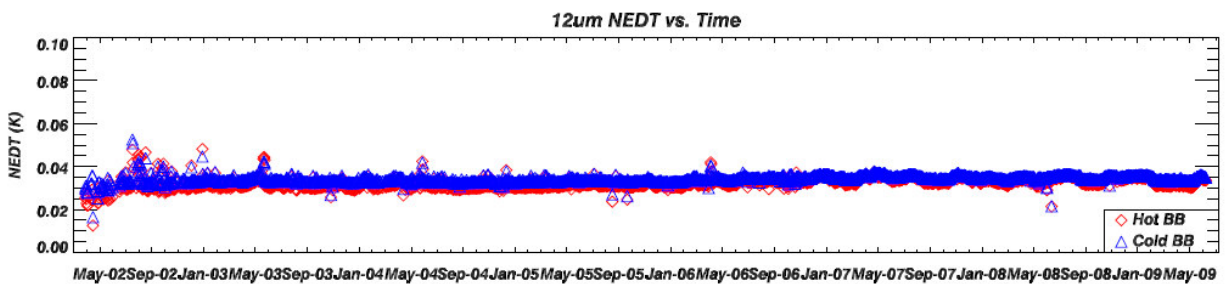
In addition, the following set of “orbital” VC1 files was delivered:

<http://aatsr2.ag.rl.ac.uk/data2/aatsr2/EDS-X/CyclePlots/VC1-79.txt>

5.1.4 NE Δ T

	Hot BB T = 301.93K		Cold BB T = 263.03K	
	Count	NE Δ T (mK)	Count	NE Δ T (mK)
12 μ m	1.65	34.3	1.23	35.5
11 μ m	1.54	31.4	1.14	33.9
3.7 μ m	2.53	31.8	1.21	74.7

Table 5-1 NE Δ T data for cycle 79



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.

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."

Missing AATSR Coverage – March 2007

NA-PR-09-04382

Systematic gaps are present in the consolidated L0 data in the AATSR archive between the 27th of February 2007 and the 28th of March 2007. Typically 2 orbits of data are missing each day, for example on the 6th of March where orbits 26211 and 26219 are missing. On this day orbits 26208-26210 were acquired at Esrin,

orbits 26212-26218 were acquired at Kiruna, then orbits 26220+ were acquired at Esrin again.

This behaviour - 2 orbits missing at the switch between acquisition sites - was not observed in NRT and therefore the data should be available. L0 data covering the gaps has been obtained by reconsolidating the unconsolidated products. The consolidated L0 products are being sent to UK-MM-PAF for processing.

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 April 2009. This consists of 493 products taken from orbits 37473 to 37916. 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 May 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.

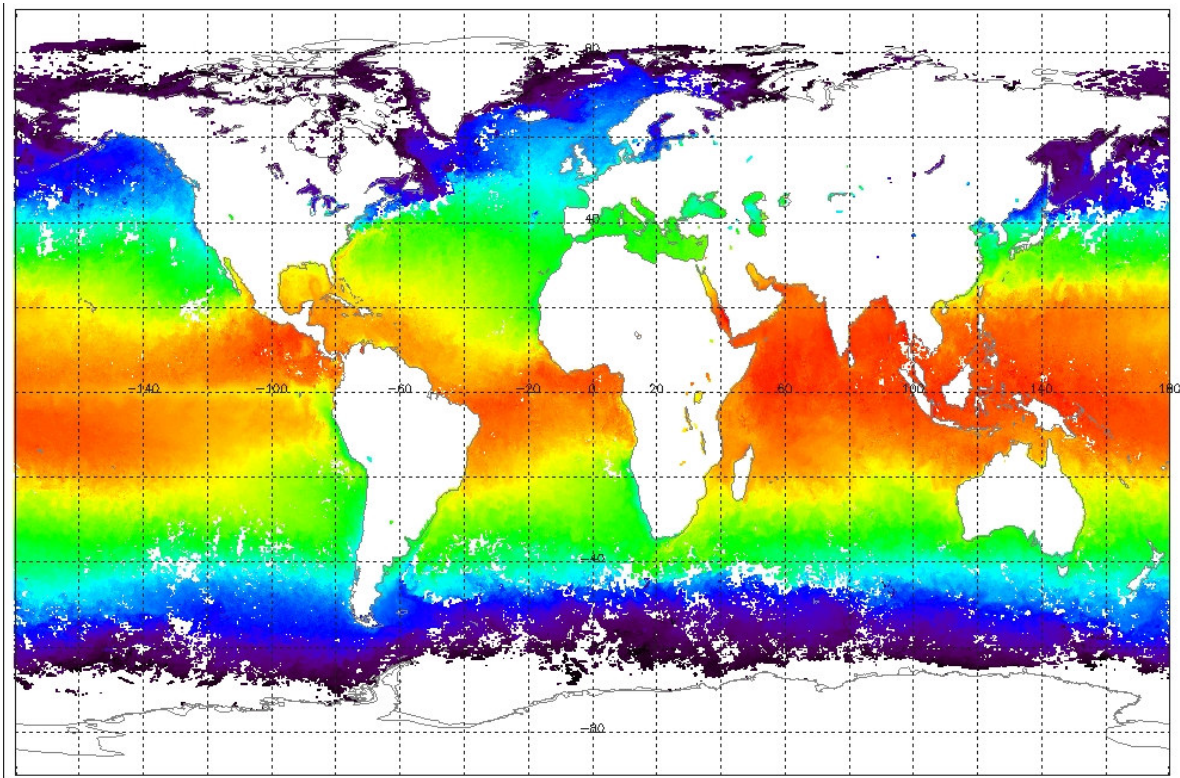


Figure 5.3 - This figure gives the monthly average Dual View SST, with a range of 270 - 305 Kelvin for May 2009.

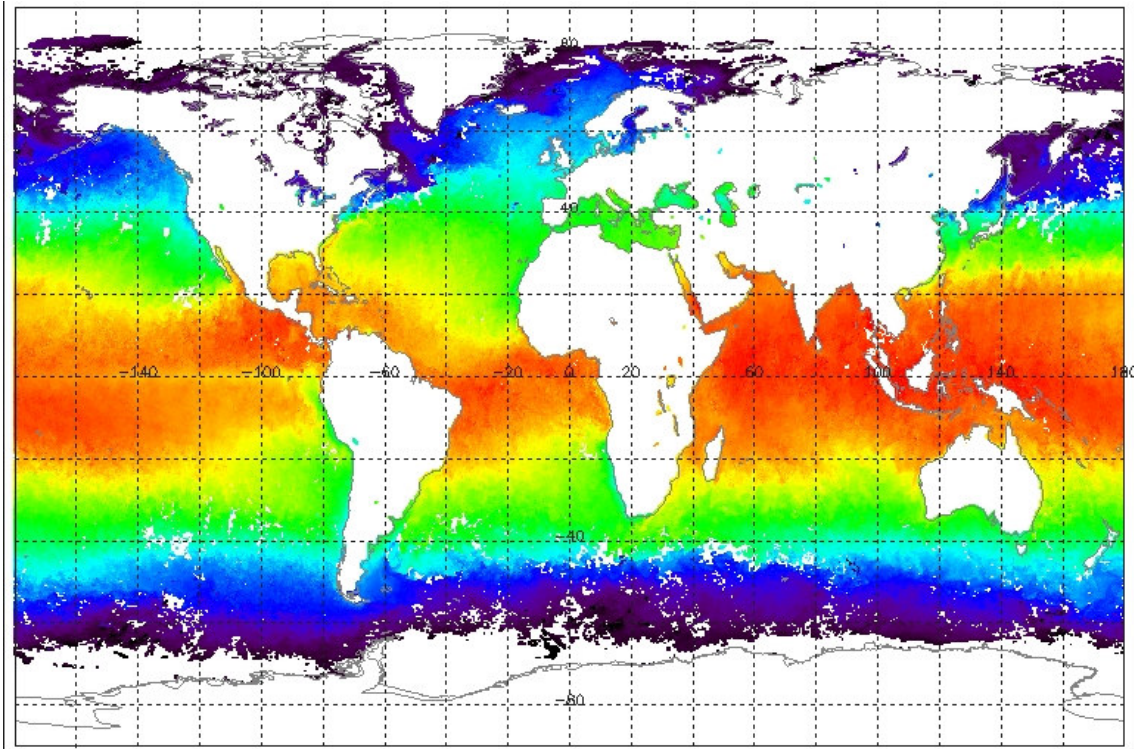


Figure 5.4 - This figure gives the monthly average Nadir SST, with a data range of 270 - 305 Kelvin for May 2009.

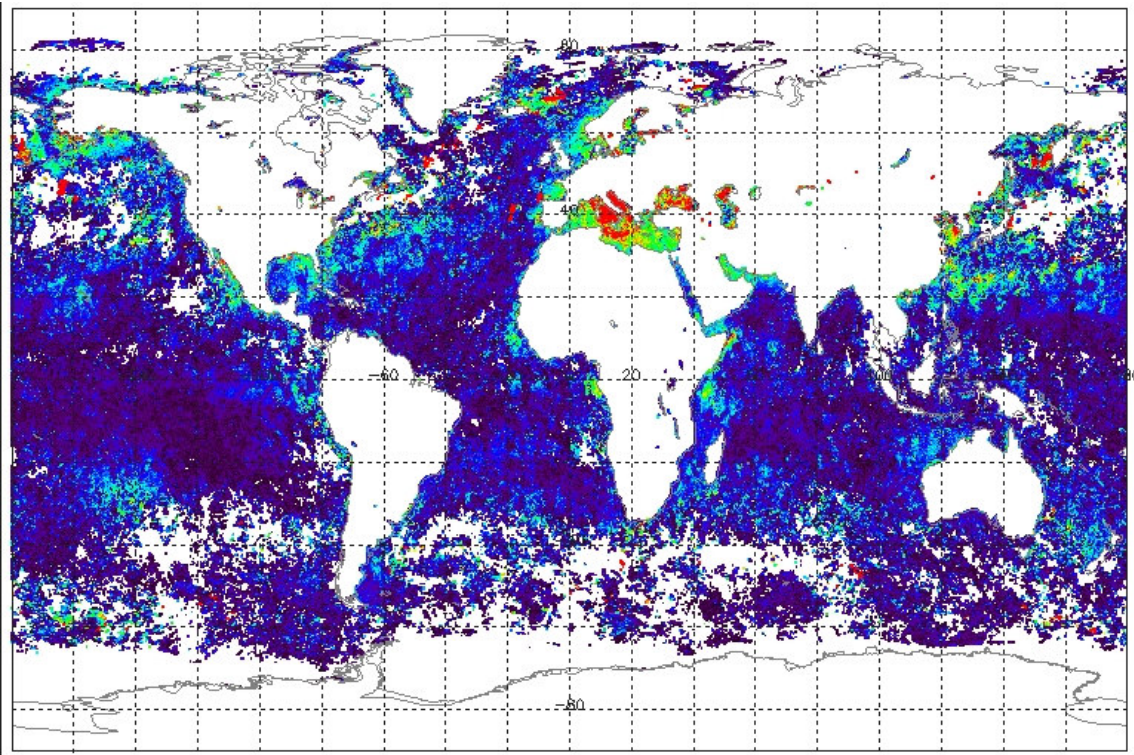


Figure 5.5 - The standard deviation of the monthly average in SST with a data range of 0 to 2 Kelvin for May 2009.

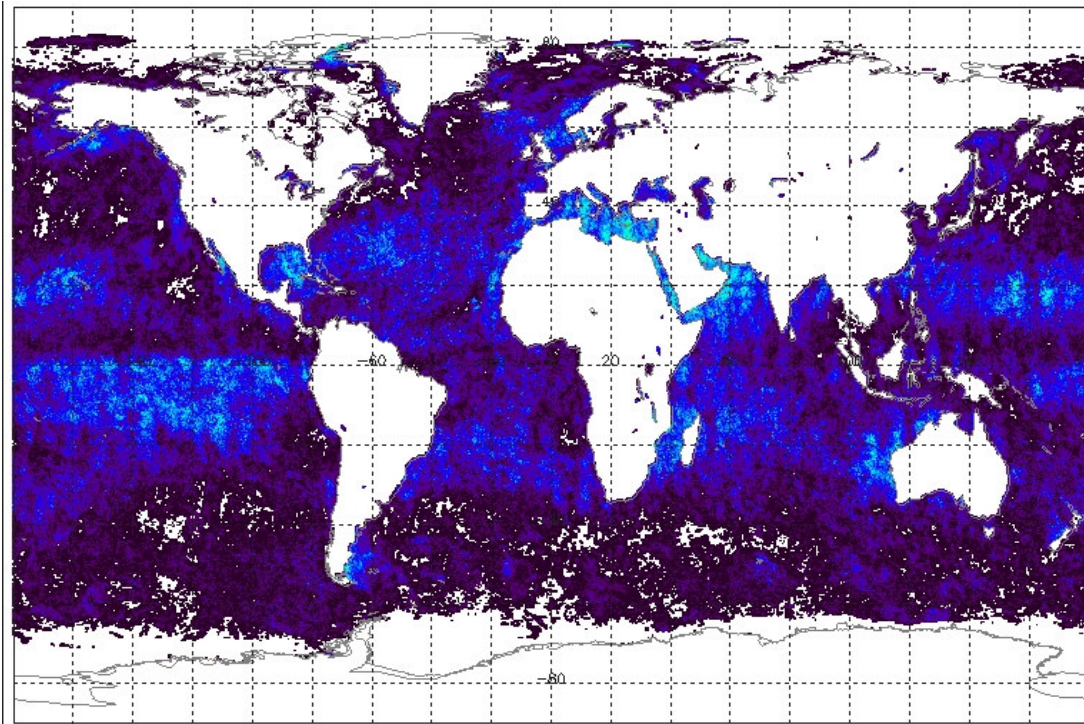


Figure 5.6 – The number of contributory orbits to the calculation of the SST, with a range of 0 to 24 for May 2009.

6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

6.1 Calibration

No calibration results were reported during this cycle.

6.2 Validation

No validation results were reported during this cycle. These will be provided within the next Cyclic Report.

A complete update on the status of the instrument validation can be found in Section 1.6.2 of Cyclic Report 28.

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.