ENVISAT - AATSR

CYCLIC REPORT #99

	START	END
DATE	25TH JANUARY 2011	24TH FEBRUARY 2011
TIME	21:59:53	22:00:33
ORBIT #	46567	46998
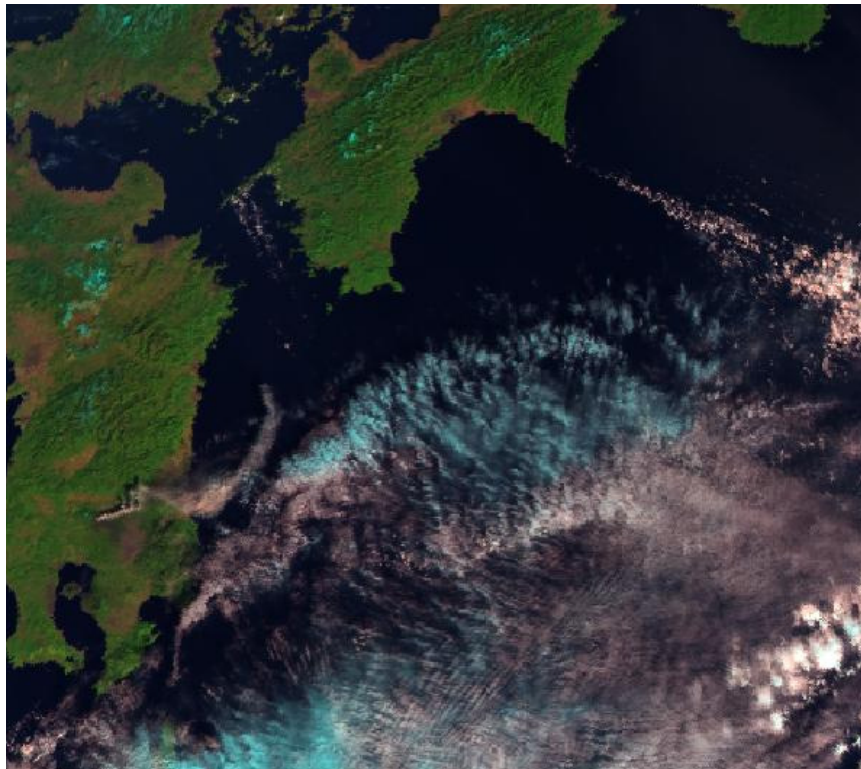
This subset from a Level 1B product acquired on 4th February 2011 shows the volcanic plume from Mt Shinmoedake, Japan (bottom left), after it erupted for the first time in 52 years. This RGB image is composed of data from the 1.6, 0.87 and 0.55 micron channels for the nadir view.

A P P R O V A L

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author *auteur*	Pauline Cocevar	date *date*	10 March 2011
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T A B L E   O F   C O N T E N T S

AATSR CYCLIC REPORT # 99

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: 99

Cycle Start: 25th January 2011, 21:59:53   Orbit #: 46567

Cycle End: 24th February 2011, 22:00:33   Orbit #: 46998

The main activities during the cycle have been as follows:

- **ESRIN downtimes and delays**

28 January 2011: An anomaly prevented the generation and dissemination of Envisat NRT data towards the ESRIN on-line archive and EOLI-SA; the on-line archive was recovered that day, EOLI-SA returned to nominal service on 09 February 2011.

08 February 2011: Due to problems on the archiving system at the PDHS-E (ESRIN) facility, there was a delay in the Envisat NRT production and distribution to users; resumed 10 February 2011.

10 February 2011: A network outage caused a delay in the recovery of the latest NRT production; resumed 11 February 2011.

- **Kiruna downtimes and delays**

09 February 2011: Envisat NRT production and distribution to users were affected due to system problems; resumed 10 February 2011.

- **Unavailabilities**

There were a number of Artemis/Envisat unavailabilities affecting NRT data during the cycle:

- 06 Feb 2011 11:08:38 to 11:53:10z
- 16 Feb 2011 23:04:25 to 23:50:00z
- 18 Feb 2011 15:44:08 to 15:57:30z
- 20 Feb 2011 23:18:50 to 21 Feb 2011 11:42:22z
- 21 Feb 2011 15:39:24 to 15:52:38z.

Some of these affected the acquisition of Level 0 data (see section 4.2).

- **Non-acquisition of data**

Orbits 46973 (from 04:41 to 05:18 UTC) and 46974 (from 06:20 to 06:59 UTC) from 23 February 2011 have not been acquired therefore they will not be available to the user community. The cause is currently under investigation.

- **Visible calibration VC1 files**

After recent disruption to VC1 file delivery and distribution, all was nominal this cycle.

- **AATSR IPF Change Log updated**

The AATSR IPF Change Log, which summarises the changes made to the AATSR Instrument Processing Facility since launch, including the L2P processor, was updated and published on the AATSR PCS website, and also on the ESA Earth Observation User Services Web Library:
http://earth.eo.esa.int/pcs/envisat/aatsr/events/
http://earth.esa.int/resources/documentation/

- **AATSR Daily Reports updated**

The AATSR Daily Report, provided on the AATSR PCS website, has been updated and streamlined. The report contains more QC information on consolidated data and VC1 files: http://earth.eo.esa.int/pcs/envisat/aatsr/reports/daily/

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 file was not available during this cycle:

Date	Validity range		Comments
	From	**To**	
06/02/2011	04/02/2011	11/02/2011	

Table 3-2 Unavailable VC1 file

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 losses of AATSR data 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 Un av	L0 gaps	L1 gaps	Instrument	L0	L1
1	25 January 2011	46567	46653	0	0	0	100.00%	100.00%	100.00%
2	31 January 2011	46653	46739	0	0	0	100.00%	100.00%	100.00%
3	06 February 2011	46739	46826	0	0	7756	100.00%	100.00%	98.50%
4	12 February 2011	46826	46912	0	6122	0	100.00%	98.82%	98.82%
5	18 February 2011	46912	46998	0	40459	0	100.00%	92.20%	92.20%

Table 4-1 Instrument and data unavailability weekly summary for cycle 99

The instrument was available for 100.00% of the time during the cycle.
The L0 data were available for 98.20% of the time during the cycle.
The L1B data were available for 97.90% 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
16/02/2011 21:41	16/02/2011 23:23	6122	46882	46882
20/02/2011 22:36	21/02/2011 06:29	28355	46940	46940
23/02/2011 03:33	23/02/2011 06:55	12104	46972	46972

Table 4-2 ATS_NL__0P missing data during cycle 99

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

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
10/02/2011 02:00	10/02/2011 03:09	4165	46784	46785
11/02/2011 01:25	11/02/2011 02:25	3591	46798	46799

Table 4-3 ATS_TOA_1P missing data during cycle 99

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.

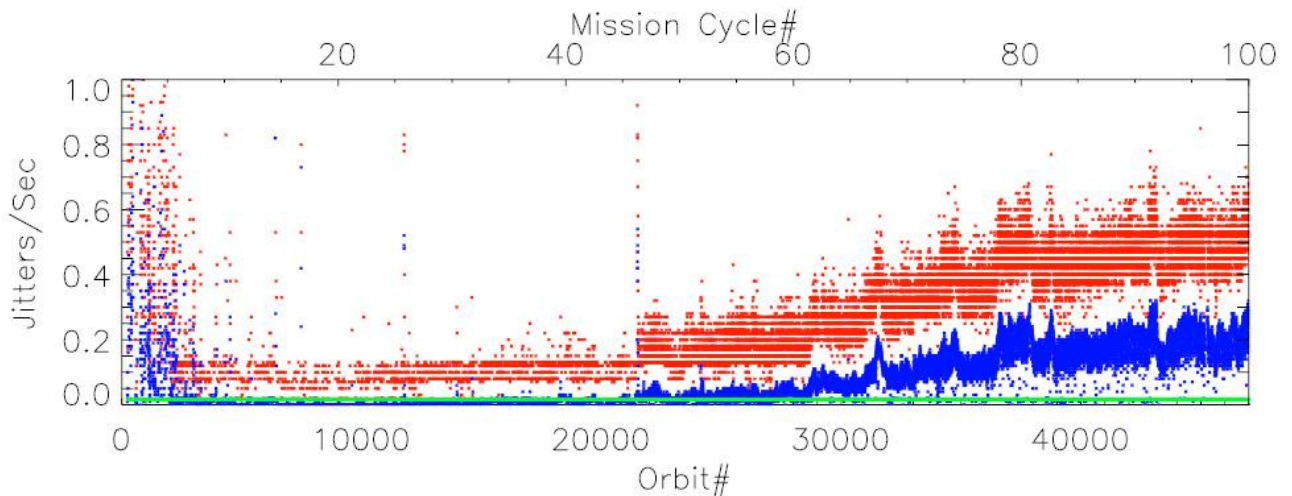There were no orbits containing frames suffering from bad/missing telemetry this cycle.

4.3   L0 and L1B Backlog Processing Status

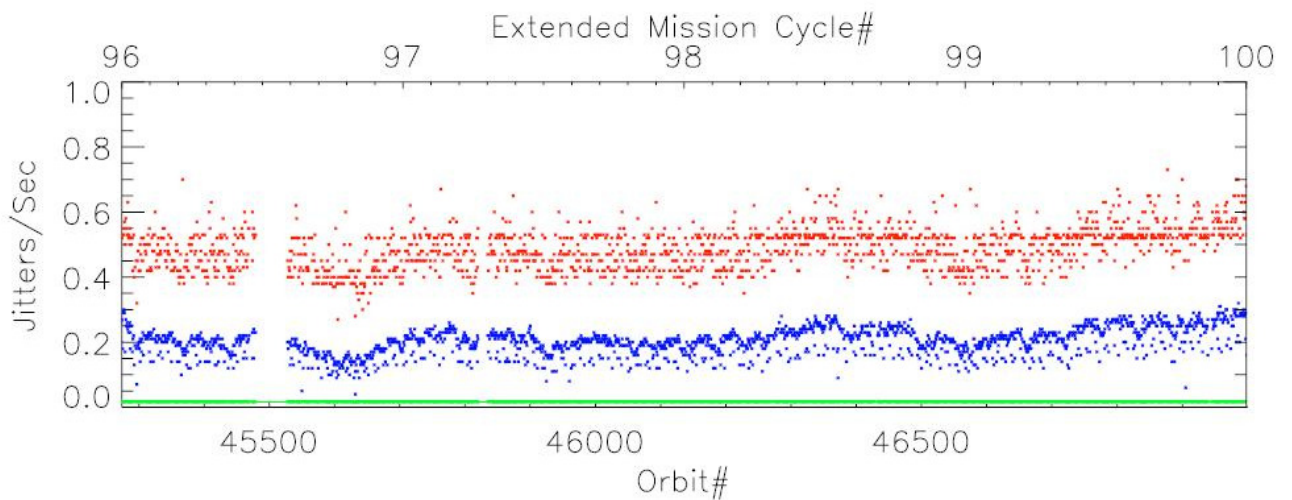There is no update available on the status of backlog processing.

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 plots show the mean jitter-rate deteriorating slightly during this cycle.

5.1.2   SENSOR TEMPERATURE

The detector temperature plots for Cycle 99 can be found at:
http://www.aatsrops.rl.ac.uk/EDSX/CyclePlots/DetTemps99.pdf

Detector temperatures have remained nominal during routine operations.

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/VC1-99.txt

5.1.4   NEΔT

Information on the NEΔT was not available at the time of publishing; the information will be included in a subsequent report when available.

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."

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 January 2011. This consists of 484 products taken from orbits 46209 to 46653. Figure 5-4, Figure 5-5, Figure 5-6 and Figure 5-7 show the SST average in dual and nadir views, the standard deviation and the number of contributory orbits for January 2011. Please note we are not able to provide individual colour scales at this time, however the scheme used is given in Figure 5-3, and the colour-key ranges of each plot are specified in the accompanying caption.

Figure 5-3 This is the colour scheme used for the following plots, running linearly from left to right with increasing magnitude.
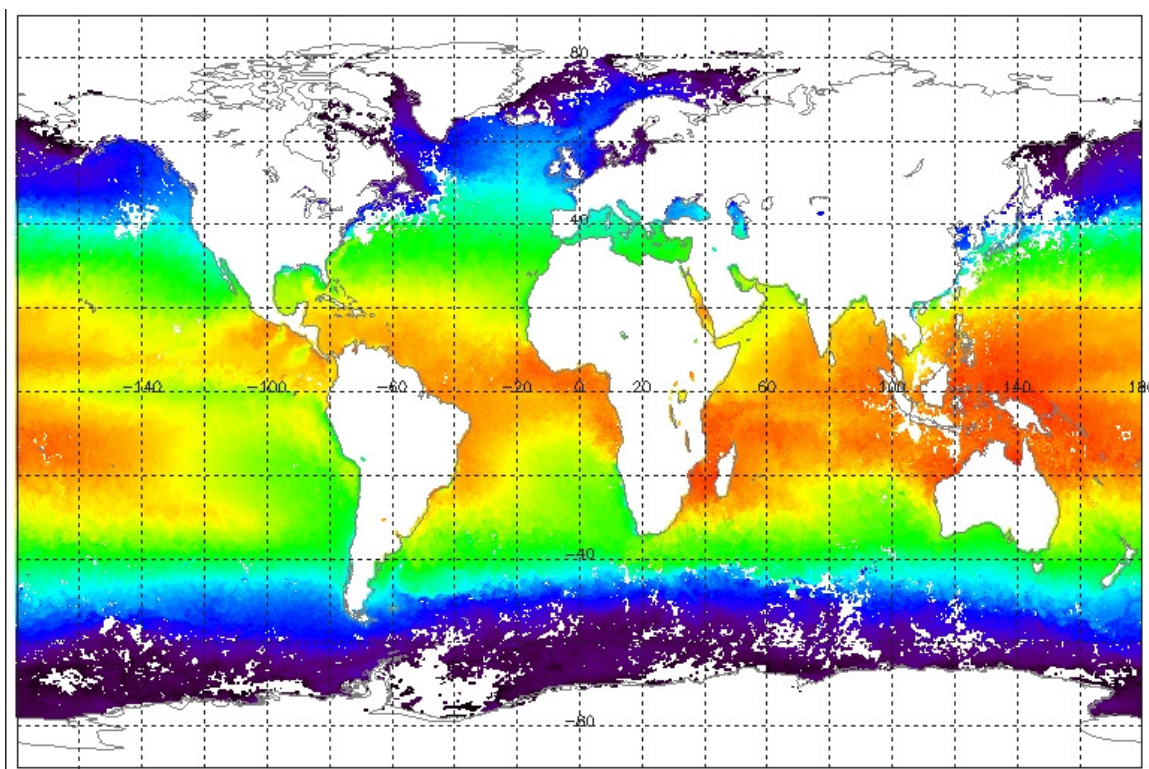
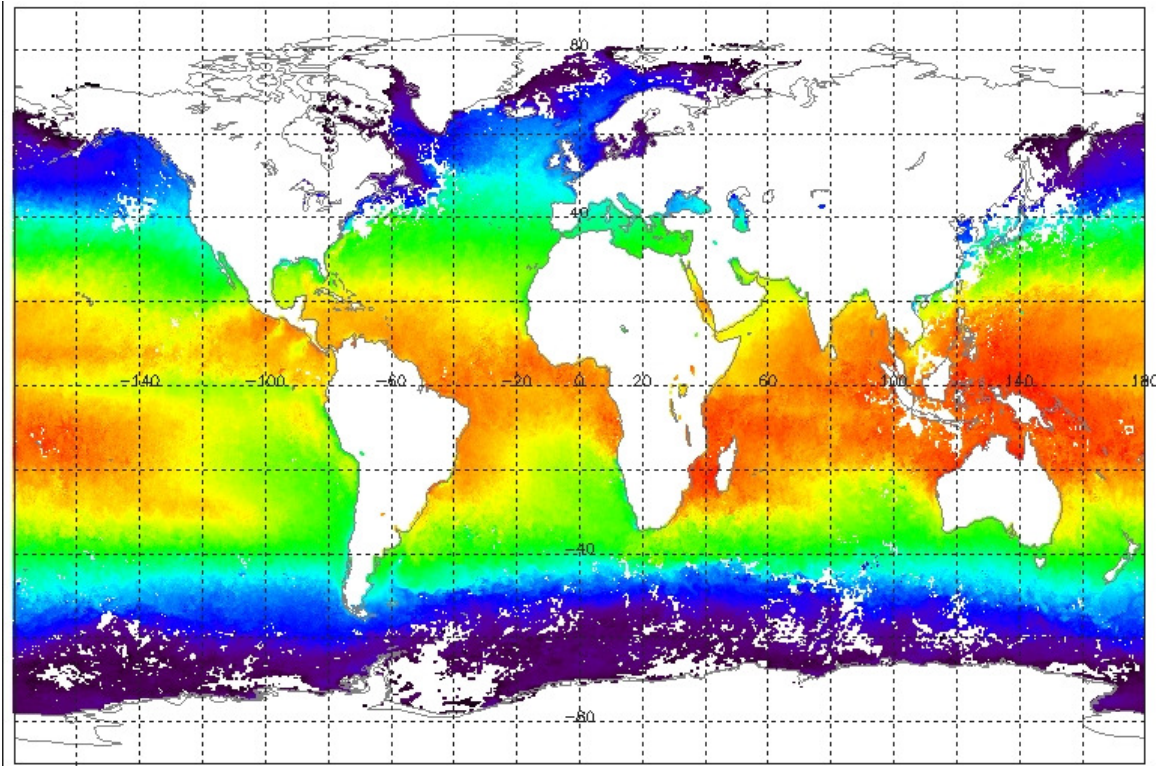**Figure 5-4 Monthly average Dual View SST, with a colour-key range of 270 - 305 Kelvin, for January 2011**

Figure 5-5 Monthly average Nadir SST, with a colour-key range of 270 - 305 Kelvin, for January 2011
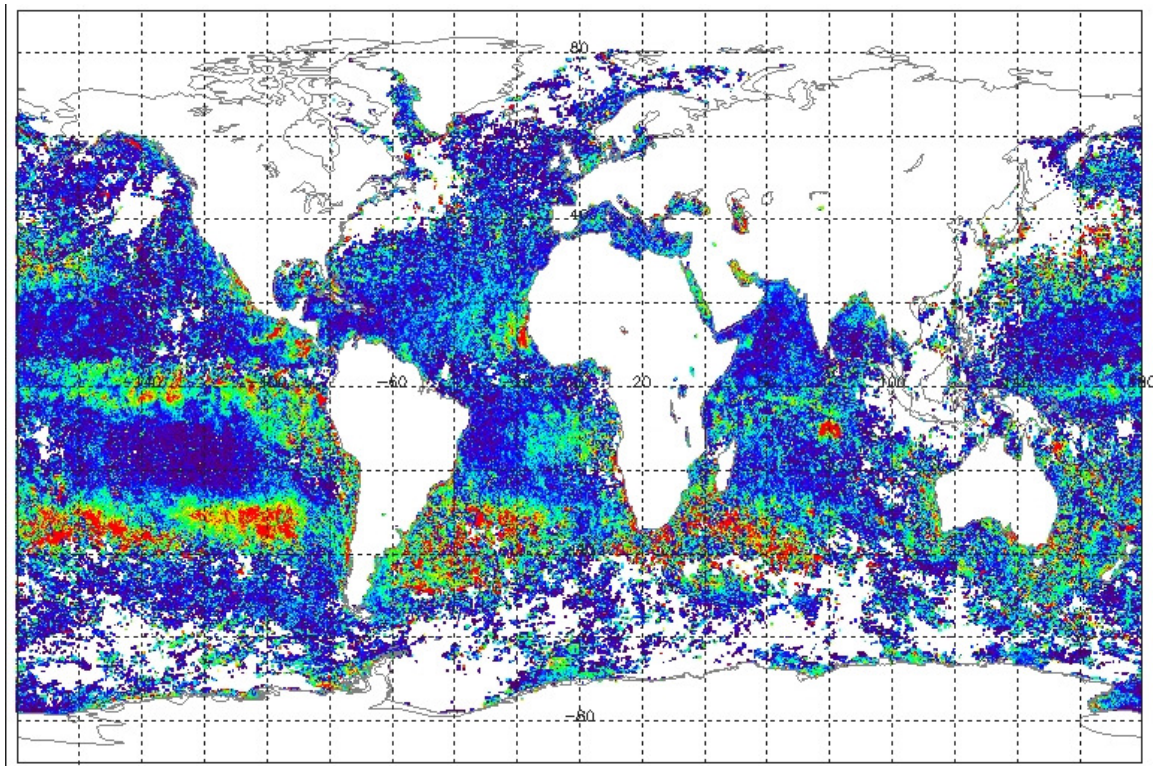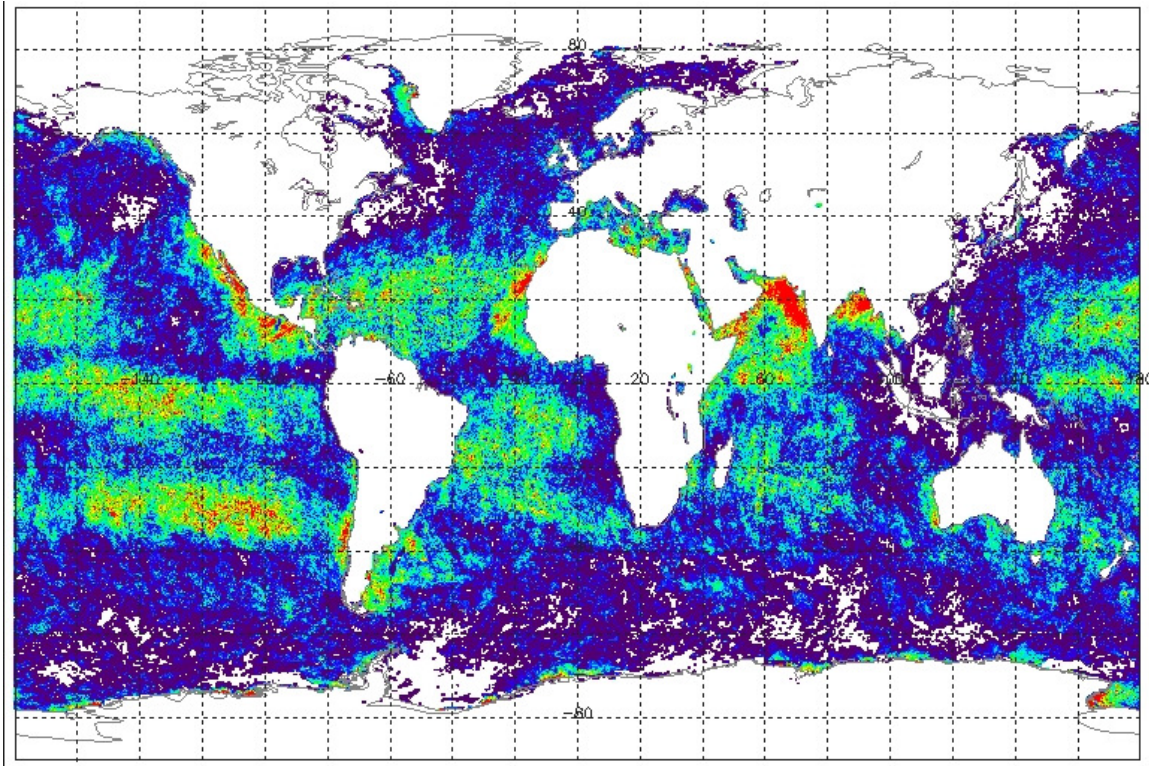

Figure 5-6 Standard deviation of the monthly average SST, with a colour-key range of 0 to 1.0 K and a maximum value of 7.2 K, for January 2011

Figure 5-7 Number of contributory orbits to the calculation of the SST, with a colour-key range of 0 to 10 and a maximum value of 23, for January 2011

6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

6.1 Calibration

No calibration results were reported during this cycle.

6.2 Validation

There were no validation results for this cycle available at the time of publishing; the information will be included in a subsequent report.

7   DISCLAIMERS

No new disclaimers have been issued during this cycle.