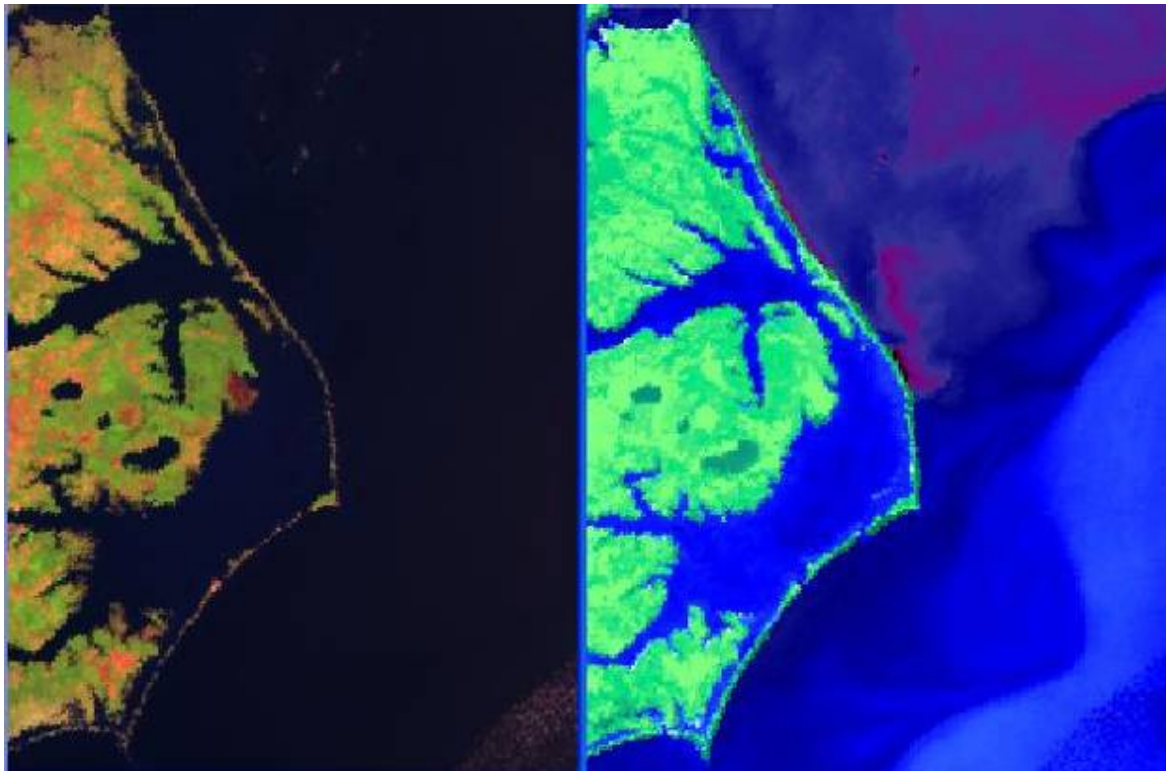
ENVISAT - AATSR

CYCLIC REPORT #103

	START	END
DATE	25TH MAY 2011	24TH JUNE 2011
TIME	22:02:15	22:02:42
ORBIT #	48291	48722



This subset from a Level 1B product acquired on 26 May 2011 shows the Outer Banks barrier islands of North Carolina, U.S.A. The RGB image (left) is composed of data from the 1.6, 0.87 and 0.55 micron channels for the nadir view, and the false colour right-hand image shows the 11 micron channel, nadir view.

prepared by/*préparé par* AATSR IDEAS and QWG team
reference/*réference*
issue/*édition* 1
revision/*révision* 0
date of issue/*date d'édition* 08 July 2011
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 103	issue 1 *issue*	revision 0 *revision*
author *auteur*	Pauline Cocevar	date 08 July 2011 *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 # 103

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: 103

Cycle Start: 25th May 2011, 22:02:15 Orbit #: 48291

Cycle End: 24th June 2011, 22:02:42 Orbit #: 48722

The main activities during the cycle have been as follows:

- **ESRIN downtimes and delays**
  - 26 May 2011: Due to a software problem, the online archive was not being updated with Envisat NRT data; resolved same day.
  - 27 May 2011: Hardware problems caused NRT production and dissemination delays; resolved 01 June 2011.
- **Kiruna downtimes and delays**
  - 25 May 2011: System problems (continuing from 16 May 2011) affected Envisat NRT production and distribution; resolved 02 June 2011.
  - 14 June 2011: Network downtime due to scheduled maintenance from 10:00 to 14:00 CET.
  - 21 June 2011: Required intervention caused interruptions to Envisat NRT production/dissemination from 21 June 2011 07:30 UTC to 23 June 2011 16:00 UTC; resumed 24 June 2011.
- **Unavailabilities**

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

- 02 June 2011 06:16:40 to 12:17:46z, 15:40:35 to 15:51:36z, and 15:53:30 to 20:59:30z
- 02 June 2011 21:41:10z to 03 June 2011 07:22:47z
- 08 June 2011 04:20:41 to 04:37:51z and 05:31:29 to 06:17:46z
- 16 June 2011 02:19:02 to 02:46:55z and 02:50:45 to 04:18:44z.

- **AATSR Blackbody Crossover Test**

An AATSR Blackbody Crossover Test was carried out:

- 25 May 2011 10:46:03z to 27 May 2011 11:12:11z. Scientific data for orbits 48284 – 48313 are not optimally calibrated as a result.

.

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

All daily reflectance channel calibration files were available during this cycle, with the following extended-range VC1 file also supplied:

Date	Validity range		Comments
	From	To	
16/06/2011	14/06/2011	01/07/2011	Extended-range VC1

Table 3-2 Extended-range 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 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	25-May-2011 22:02	48291	48377	0	0	9904	100.00%	100.00%	98.09%
2	31-May-2011 21:42	48377	48463	0	28227	0	100.00%	94.55%	94.55%
3	06-Jun-2011 21:22	48463	48550	0	12085	0	100.00%	97.67%	97.67%
4	12-Jun-2011 22:42	48550	48636	0	4348	0	100.00%	99.16%	99.16%
5	18-Jun-2011 22:22	48636	48722	0	0	0	100.00%	100.00%	100.00%

Table 4-1 Instrument and data unavailability weekly summary for Cycle 103

The instrument was available for 100.00% of the time during the cycle.
The L0 data were available for 98.28% of the time during the cycle.
The L1B data were available for 97.89% 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
02-Jun-2011 04:47:34	02-Jun-2011 06:26:50	5956	48395	48395
02-Jun-2011 20:45:44	03-Jun-2011 01:15:15	16171	48405	48405
03-Jun-2011 04:08:38	03-Jun-2011 04:10:44	126	48409	48409
03-Jun-2011 04:11:25	03-Jun-2011 05:50:59	5974	48409	48410
08-Jun-2011 02:46:21	08-Jun-2011 06:07:46	12085	48480	48480
16-Jun-2011 01:39:39	16-Jun-2011 02:52:07	4348	48594	48594

Table 4-2 ATS_NL__0P missing data during Cycle 103

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
27-May-2011 05:09:34	27-May-2011 06:46:50	5836	48309	48310
31-May-2011 06:00:25	31-May-2011 07:08:13	4068	48367	48368

Table 4-3 ATS_TOA_1P missing data during Cycle 103

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 orbits contained frames suffering from bad/missing telemetry:

- 48284-48313 (25-27 May 2011) Due to the Blackbody Crossover test, the data for these orbits are not optimally calibrated
- 48409 (03 June 2011)
- 48428 (04 June 2011)
- 48499 (09 June 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

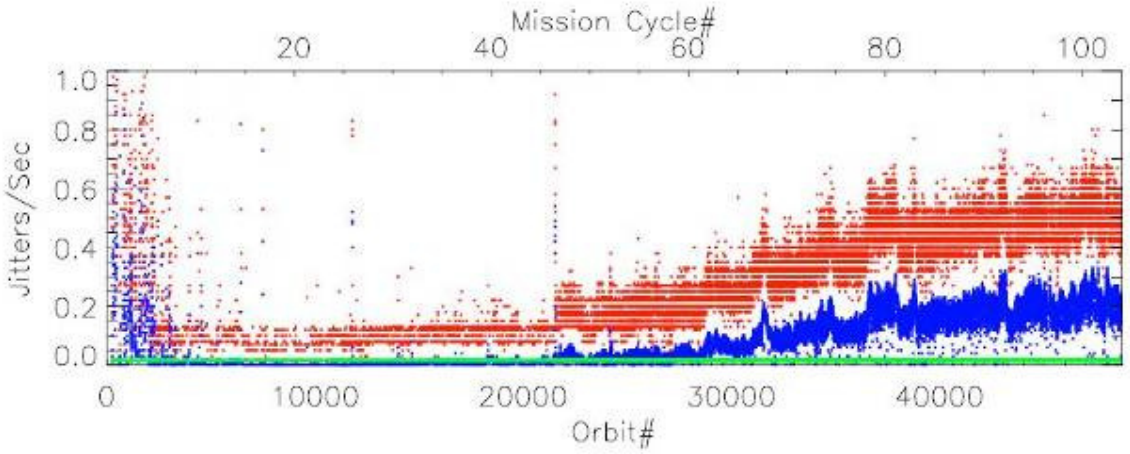


Figure 5-1 Jitter trend from mission start

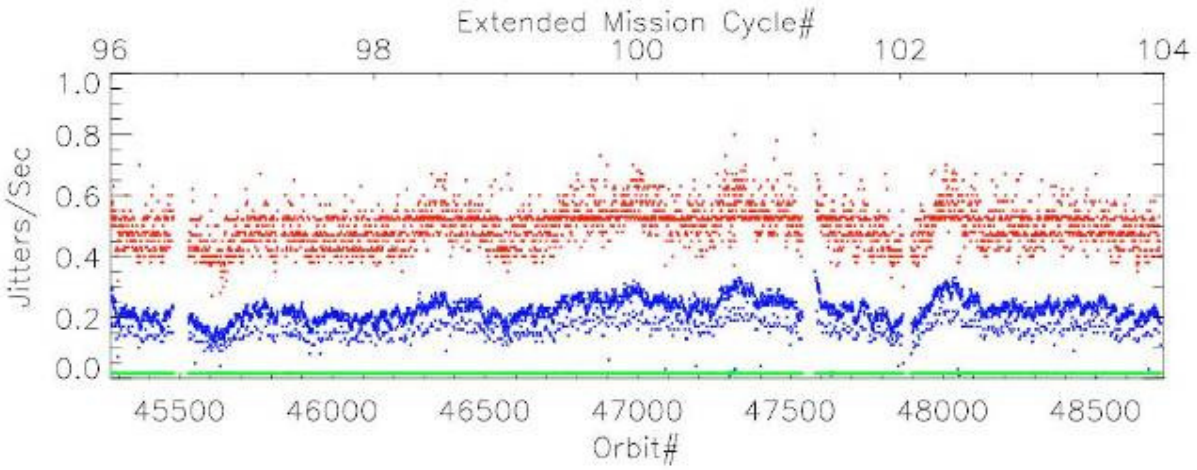


Figure 5-2 Jitter trend covering the mission extension

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 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 103 can be found at:
http://www.aatsrops.rl.ac.uk/EDSX/CyclePlots/DetTemps103.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/VC1-103.txt

5.1.4 NE∆T

Information on the NE∆T for Cycle 102 is shown in Table 5-1 and for Cycle 103 in Table 5-2. Figure 5-3 shows the trend since launch.

	Hot BB		Cold BB	
	T = 302.38K		T = 263.74K	
	Count	NE∆T (mK)	Count	NE∆T (mK)
12µm	1.59	33.1	1.22	35.2
11µm	1.52	30.8	1.13	33.7
3.7µm	2.54	31.8	1.25	76.7

Table 5-1 NE∆T information for 25 May 2011 (Cycle 102)

	Hot BB		Cold BB	
	T = 302.80K		T = 264.15K	
	Count	NE∆T (mK)	Count	NE∆T (mK)
12µm	1.63	33.8	1.23	35.0
11µm	1.54	31.2	1.14	33.5
3.7µm	2.58	32.8	1.23	73.2

Table 5-2 NE∆T information for 25 June 2011 (Cycle 103)

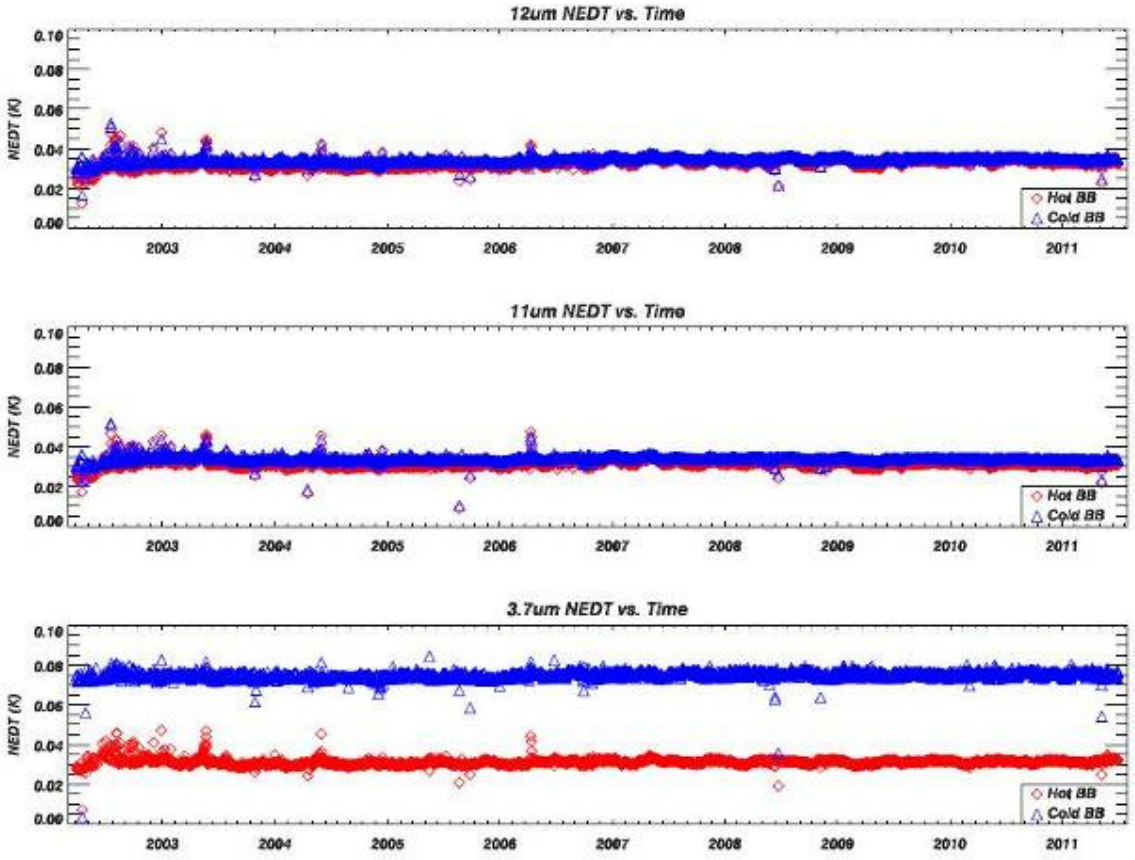


Figure 5-3 Time series of NEΔT since launch

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."

The following SPR is being reinstated in this list, since another instance occurred:

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."

5.3.2 NEW SPRS SINCE THE LAST CYCLIC REPORT

The following new SPR has been opened since the last Cyclic Report:

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."

5.3.3 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 June 2011. These consist of 468 products from orbits 48378 to 48808. 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 June 2011. 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,

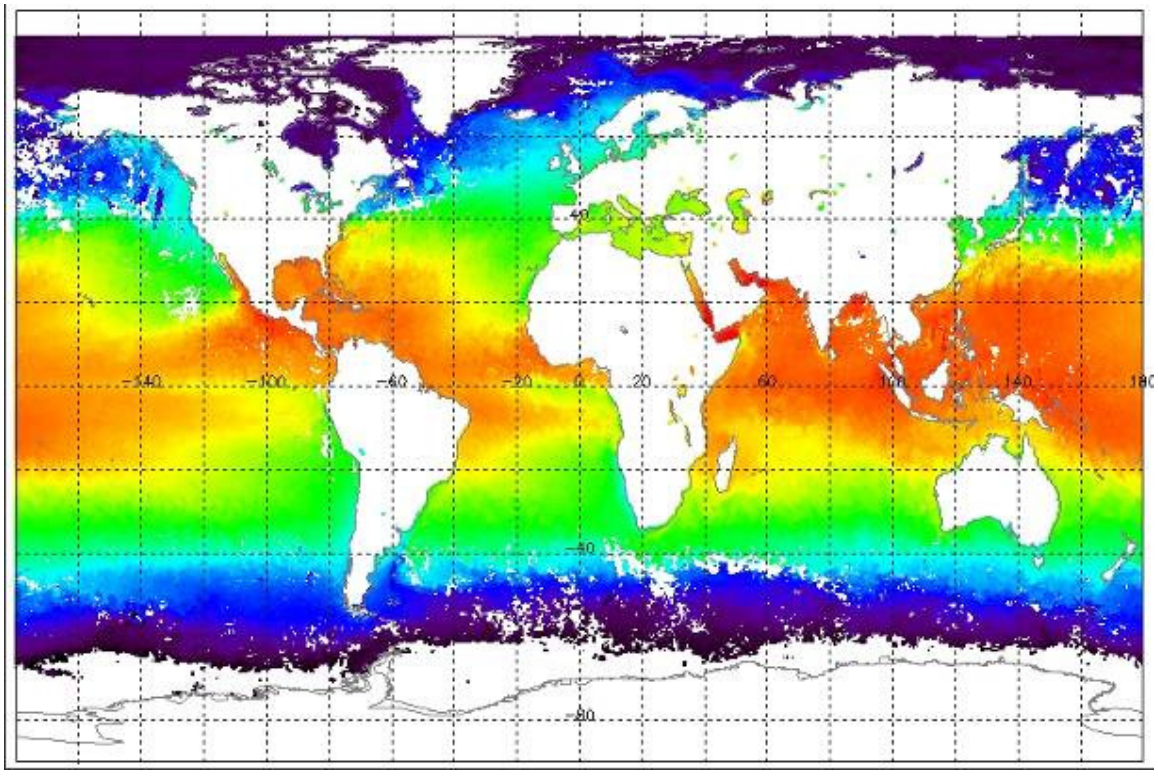


Figure 5-5 Monthly average Dual View SST, with a range of 270 - 305 Kelvin for June 2011

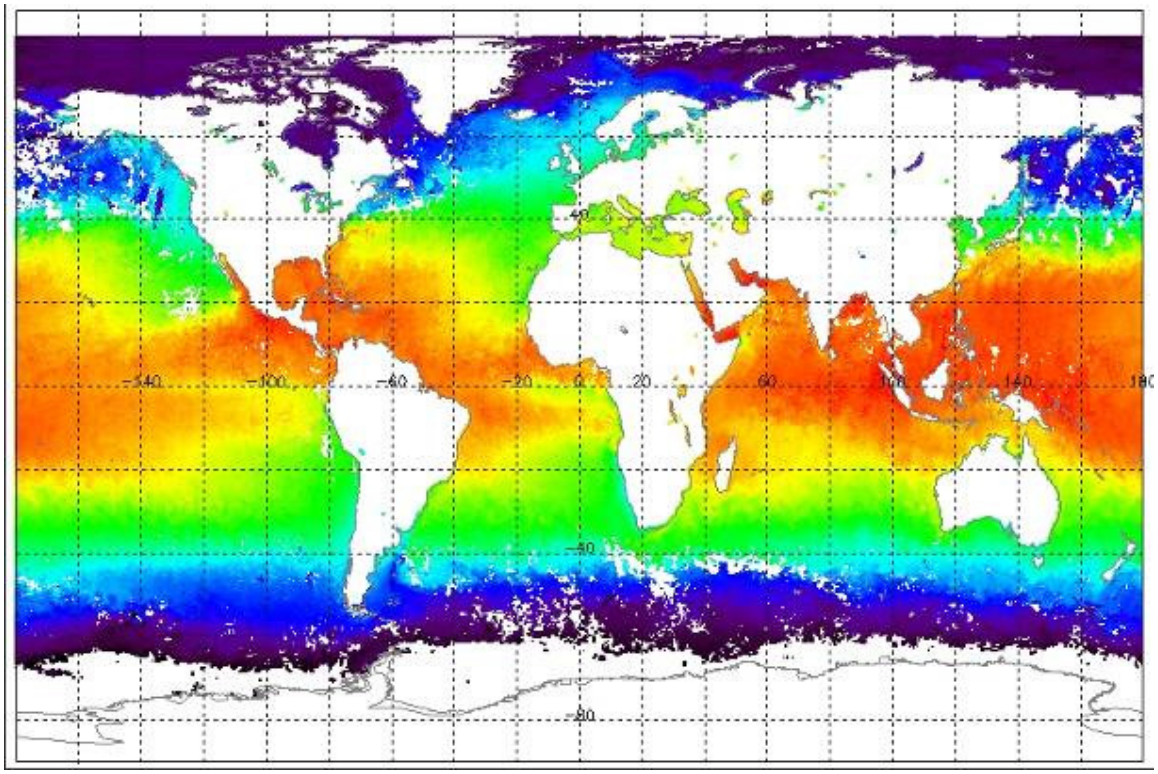


Figure 5-6 Monthly average Nadir SST, with a data range of 270 - 305 Kelvin for June 2011

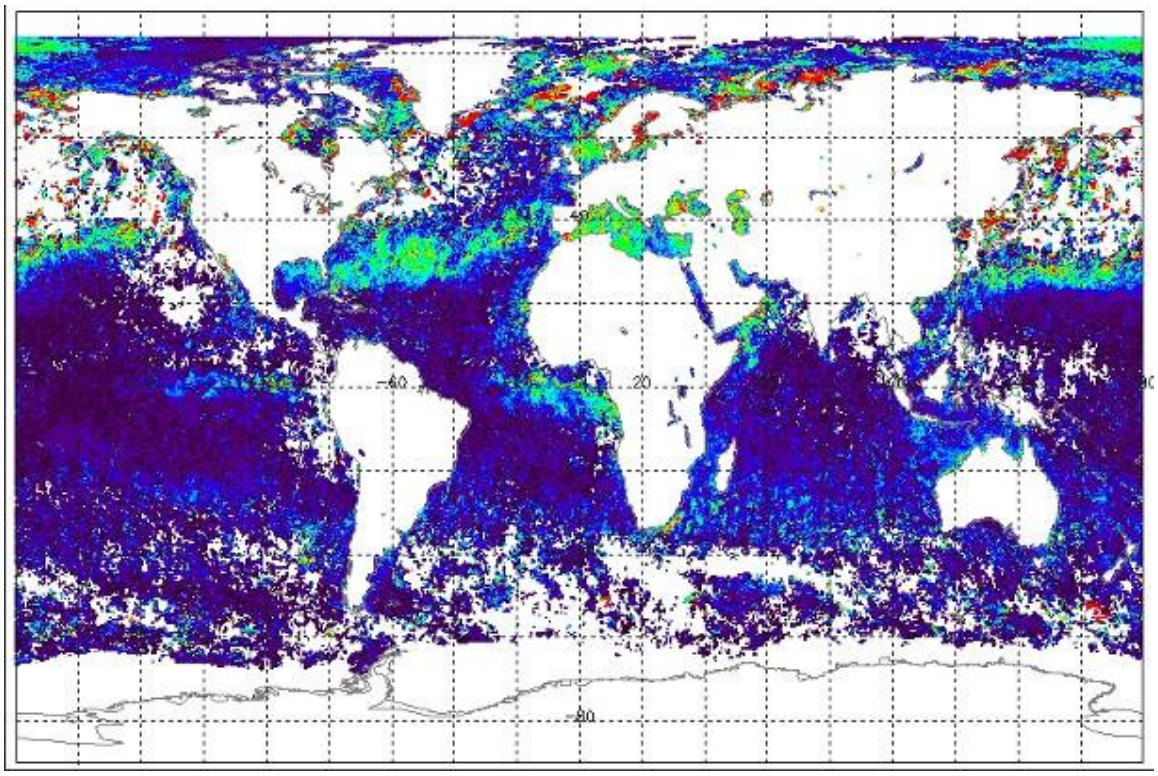


Figure 5-7 Standard deviation of the monthly average SST with a colour key range of 0 to 2.0 K, and a maximum value of 8.5 K for June 2011

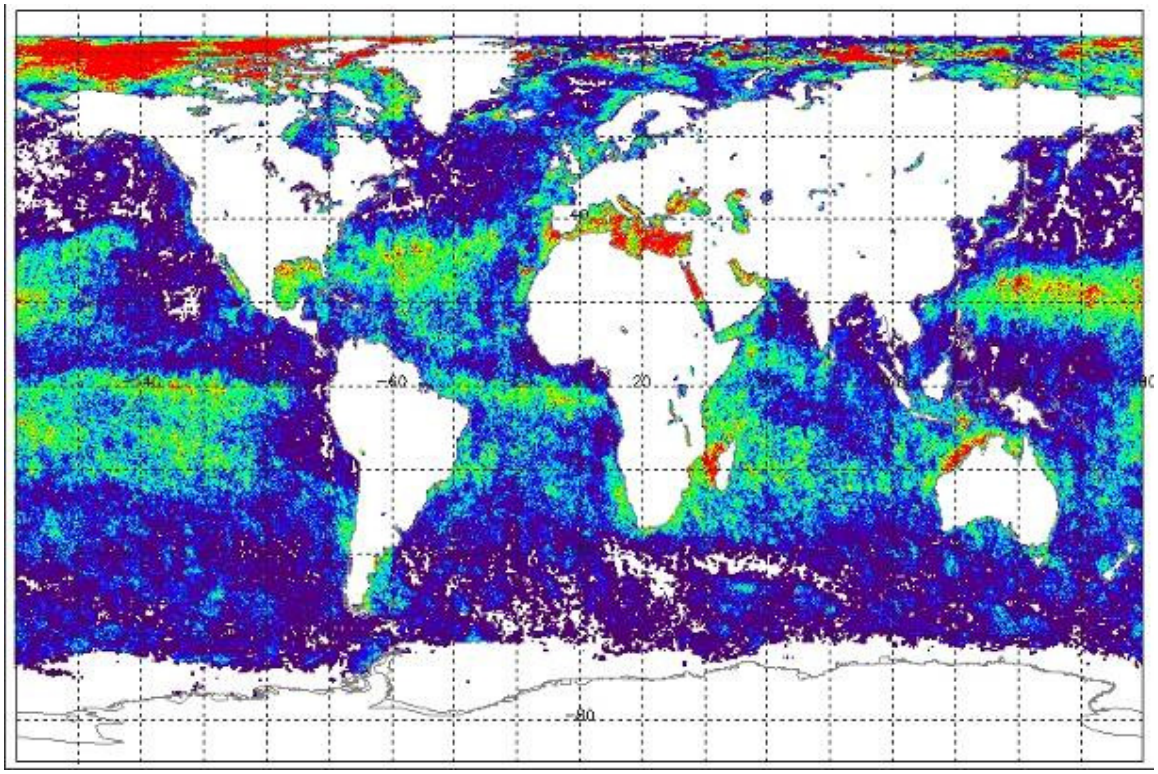


Figure 5-8 Number of contributory orbits to the calculation of the SST, with a colour key range of 0 to 10, and a maximum value of 63, for June 2011

6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

6.1 Calibration

No calibration results were reported during this cycle.

6.2 Validation

No validation results were available for this cycle.

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.