ENVISAT - AATSR

CYCLIC REPORT #105

	START	END
DATE	24TH JULY 2011	23RD AUGUST 2011
TIME	22:03:07	22:03:29
ORBIT #	49153	49584
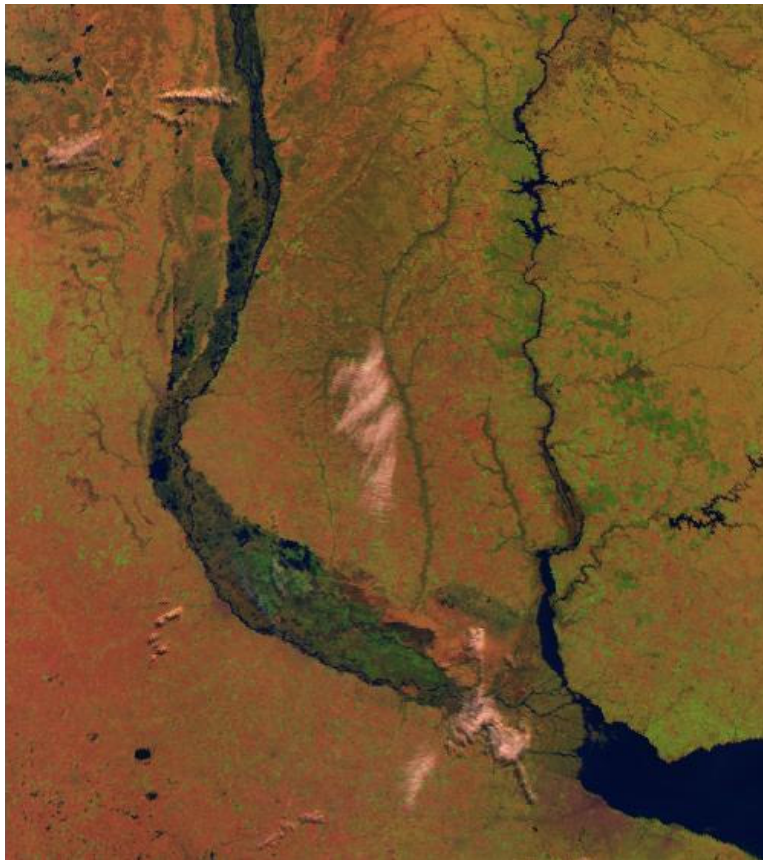
"*Entre ríos*", 11 August 2011. This subset of an AATSR L1B product shows the area called "*Entre ríos*" ("in between rivers"), the Paraná River (on the left) and the Uruguay River (on the right) which separates Uruguay and Argentina. Buenos Aires is right at the bottom of the image, in the delta. The image is composed of 1.6 (red), 0.87 (green) and 0.55 (blue) micron nadir-view data.

A P P R O V A L

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T A B L E   O F   C O N T E N T S

AATSR CYCLIC REPORT # 105

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: 105

Cycle Start: 24th July 2011, 22:02:43   Orbit #: 49153

Cycle End: 23rd August 2011, 22:03:08   Orbit #: 49584

The main activities during the cycle have been as follows:

- **ESRIN downtimes and delays**

    - 01 August 2011: 16:00 to 20:00, maintenance activity.

    - 16 August 2011: NRT dissemination delay due to hardware problems.

    - 22 August 2011: 09:00 to 18:00, maintenance activity.

- **Kiruna downtimes and delays**
  NRT Processing problems were experience at Kiruna on the following dates:

    - 26 July 2011

    - 28 July 2011

    - 23 August 2011

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

    - 24 July 2011: 21:38:27 to 22:24:58 (note it started in the previous cycle)

    - 30 July 2011: 09:45:18 to 16:24:09

- **Problem with length of AATSR consolidated products**
  On the 21 July 2011 a software update resulted in the generation of some AATSR consolidated products (orbits 49102 to 49218) with shorter than expected length. On the 29 July 2011, a roll-back of the software to a previous version was performed, and this has rectified the problem for products from 49219 onwards.

  The affected orbits have been reprocessed and the new products are nominal.

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**	
16/08/2011	14/08/2011	21/08/2011	Loaded into IECF but not disseminated
17/08/2011	15/08/2011	22/08/2011	Loaded into IECF but not disseminated

Table 3-2 Unavailable VC1 files

This reporting period, an issue with the IECF resulted in delays to the dissemination of some orbital VC1 files, but they were still delivered in time for consolidated data processing.

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-Jul-2011 22:03:00	49153	49239	0	259	0	100.00%	99.95%	99.95%
2	30-Jul-2011 21:43:00	49239	49325	0	0	0	100.00%	100.00%	100.00%
3	05-Aug-2011 21:23:00	49325	49412	0	521	0	100.00%	99.90%	99.90%
4	11-Aug-2011 22:43:00	49412	49498	0	0	0	100.00%	100.00%	100.00%
5	17-Aug-2011 22:23:00	49498	49584	0	57238	35232	100.00%	88.96%	82.16%

Table 4-1 Instrument and data unavailability weekly summary for Cycle 105

The instrument was available for 100.00% of the time during the cycle.
The L0 data were available for 97.76% of the time during the cycle.
The L1b data were available for 96.40% 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
26-Jul-2011 14:34:00	26-Jul-2011 14:38:00	259	49177	49177
10-Aug-2011 10:28:00	10-Aug-2011 10:36:00	521	49390	49390
22-Aug-2011 13:05:00	22-Aug-2011 21:15:00	29368	49564	49564
23-Aug-2011 06:22:00	23-Aug-2011 14:07:00	27870	49574	49575

Table 4-2 ATS_NL__0P missing data during Cycle 105

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
22-Aug-2011 09:51:00	22-Aug-2011 13:05:00	11670	49562	49564
23-Aug-2011 14:07:00	23-Aug-2011 20:40:00	23562	49579	49583

Table 4-3 ATS_TOA_1P missing data during Cycle 105

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:

- 49360 (08/08/2011)
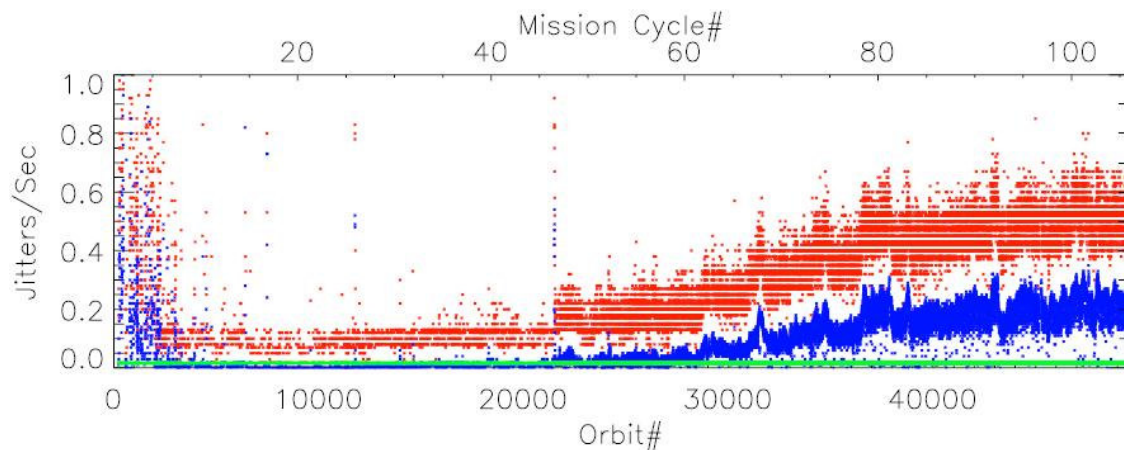
- 49389 (10/08/2011)

- 49569 (23/08/2011)

4.3 L0 and L1B Backlog Processing Status

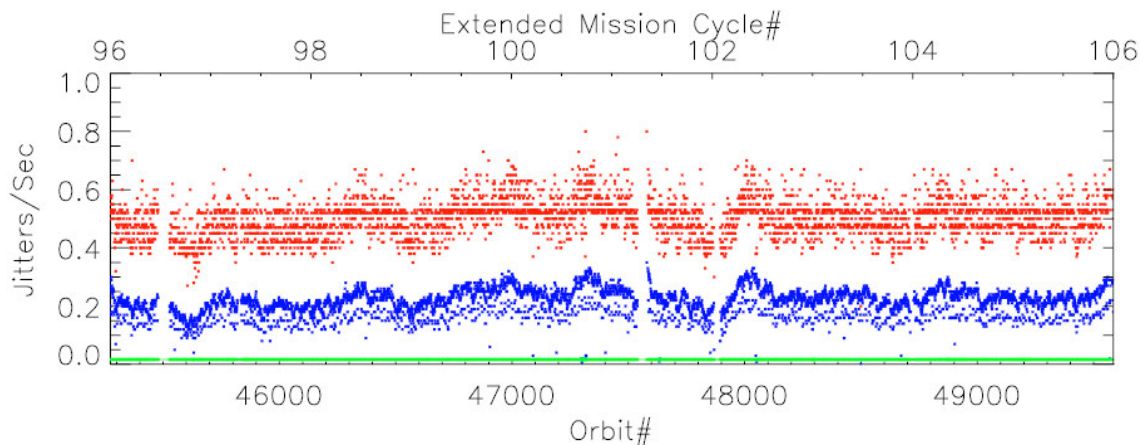There is no update available on the status of backlog processing.

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 105 can be found at:
http://www.aatsrops.rl.ac.uk/EDSX/CyclePlots/DetTemps105.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-105.txt

Figure 5-3 shows the yearly comparison of VISCAL monitor signal. As expected the signal has returned to its nominal level.
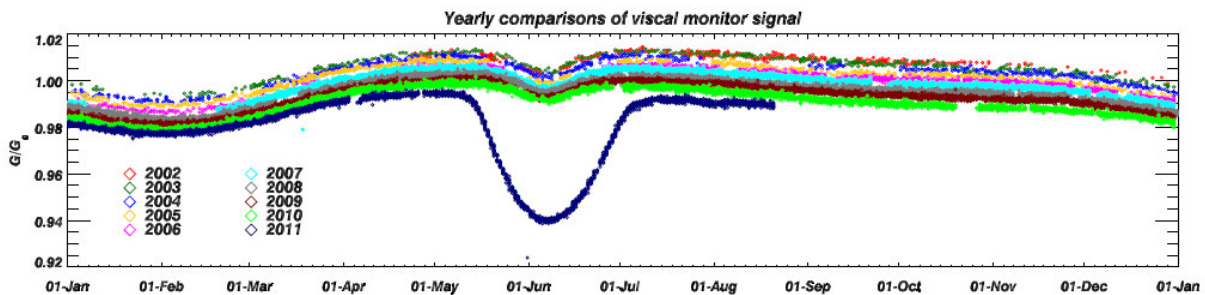

Figure 5-3 Yearly comparisons of viscal monitor signal

5.1.4   NEΔT

Information on the NEΔT is shown in Table 5-1. Figure 5-4 shows the trend since launch.

	Hot BB		Cold BB	
	T = 301.57K		T = 262.43K	
	Count	**NEΔT (mK)**	**Count**	**NEΔT (mK)**
12µm	1.55	32.5	1.19	34.6
11µm	1.48	30.1	1.11	33.3
3.7µm	2.49	31.4	1.19	74.7

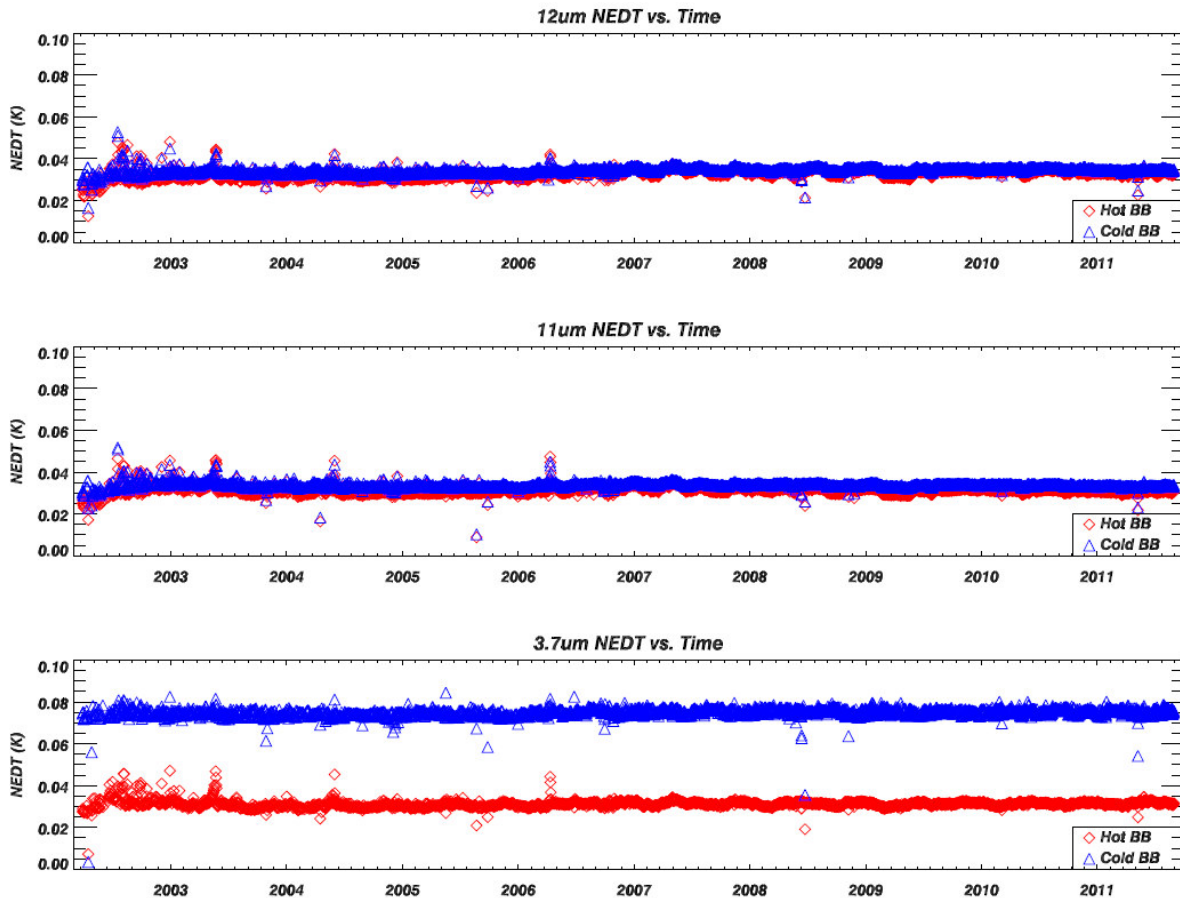**Table 5-1 NEΔT information for 27 July 2011 (Cycle 105)**

Figure 5-4 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

No level 3 product could be generated for this cyclic report. The level 3 product for August will be included in the next report.

6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

6.1 Calibration

No calibration results were reported during this cycle.

6.2 Validation

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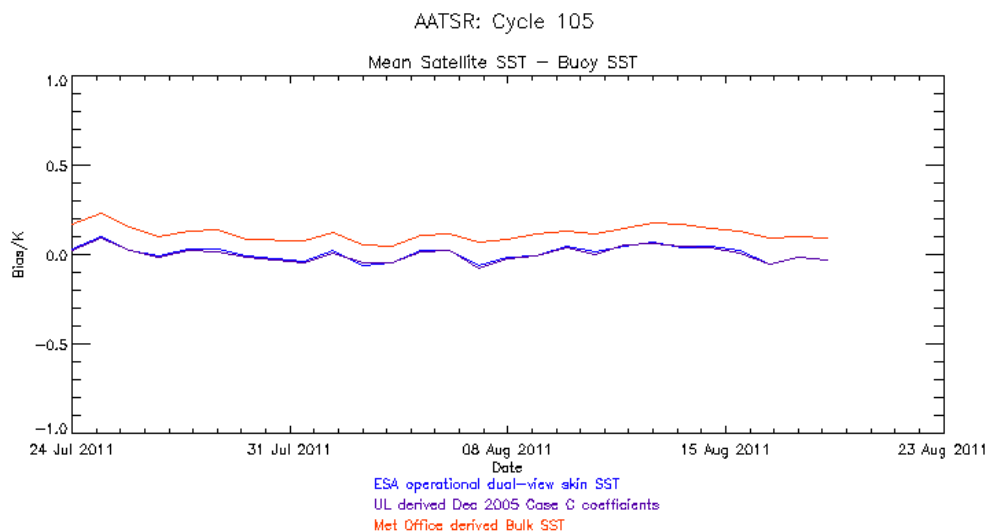

Figure 6-1: Comparison of daily mean difference between 10´ AATSR SST values and in situ drifting buoy SST for Cycle 105. Data provided by the Met Office.

During cycle 105, there were 1334 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 +0.08 K, standard deviation 0.22 K. A total of 1260 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.05 K, standard deviation 0.32 K, and a mean (dual-view depth SST minus buoy SST) of +0.16 K, standard deviation 0.31 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.
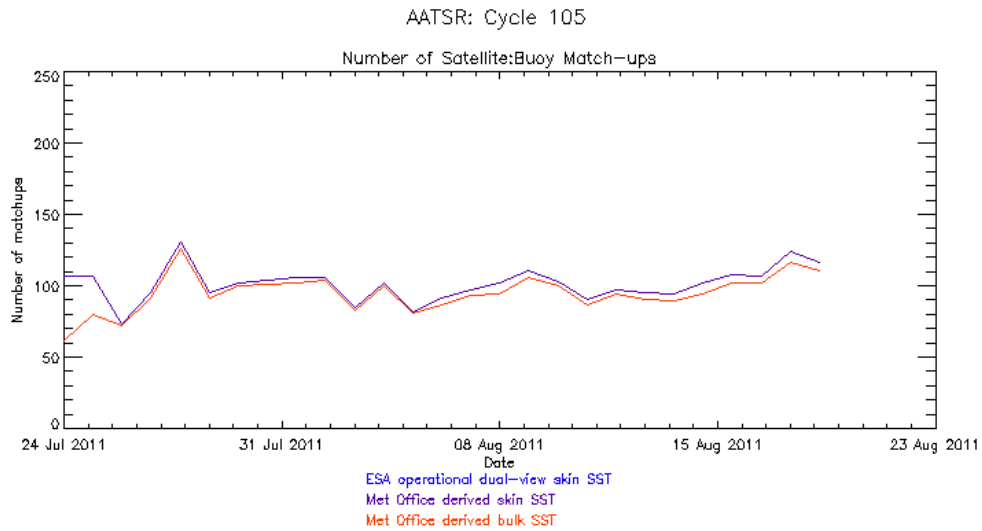
Figure 6-2: Plot of daily number of match-ups between 10′ AATSR SST values and in situ buoy SST for Cycle 105. Data provided by the Met Office.
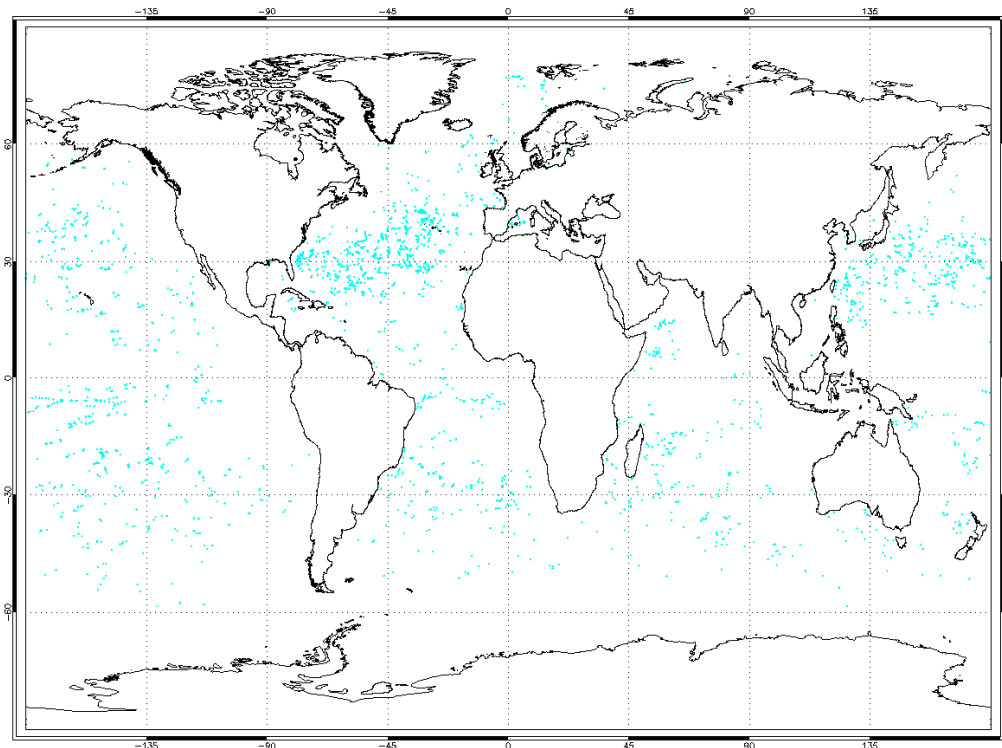
Figure 6-3: Map showing global distribution of match-ups between 10′ AATSR SST values and in situ buoy SST for Cycle 105. The cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

7   DISCLAIMERS

No new disclaimers have been issued during this cycle.