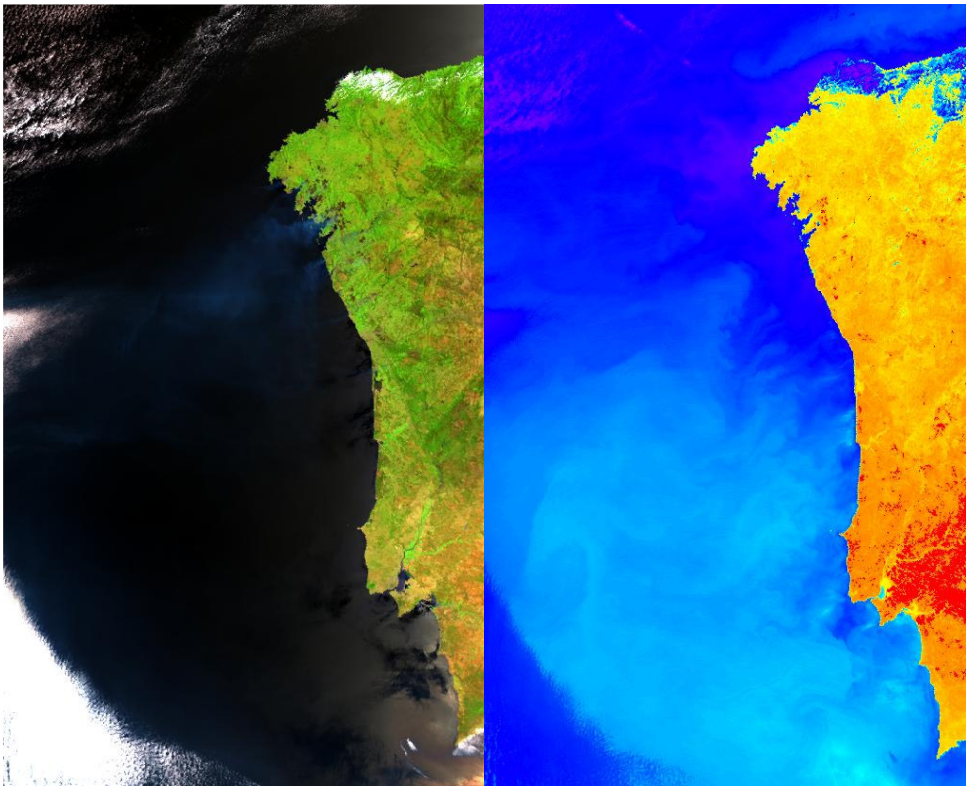
ENVISAT - AATSR

CYCLIC REPORT #50

	START	END
DATE	31 JULY 2006	04 SEPTEMBER 2006
TIME	21:59:29	21:59:29
ORBIT #	23101	23601



Galicia region, 9 August 2006 – Smoke from fires in NW Spain can be seen drifting out across the Atlantic in the visible channel image; corresponding heat spots can be seen in the region of origin in the false colour thermal image on the right.

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AATSR CYCLIC REPORT # 50

1 INTRODUCTION

The AATSR Cyclic Report is distributed by the AATSR DPQC 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
DPQC	Data Product Quality Control
EN-UNA-YYYY/#	Envisat Unavailability (plus year and number)
ESOC	European Space Operation Centre
HSM	High Speed Multiplexer
IECF	Instrument Engineering and Calibration Facilities
IPF	Instrument Processing Facilities
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
SPR	Software Problem Reporting
SW	Software
VISCAL	Visible Calibration

The AATSR list of acronyms and abbreviation is in the following site:
http://envisat.esa.int/dataproducts/aatsr/CNTR5.htm#eph.aatsr.glossary

2 SUMMARY

Cyclic Report:	50	
Cycle Start:	31 July 2006, 21:59:29,	Orbit #: 23101
Cycle End:	04 September 2006, 21:59:29	Orbit #: 23601

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 (5.59)

- **Visible channel calibration:**

  The visible calibration data supplied as an aux file (ATS_VC1_AX) continued to be regularly updated throughout the cycle.

- **AATSR anomaly**

  There was a period of unplanned unavailability during this cycle when AATSR went to Reset/Wait due to two or more consecutive TM Format Errors on 04 August 2006; nominal operations were restored on 08 August 2006.

3 SOFTWARE & AUX FILE VERSION CONFIGURATION

3.1 Software Version

AATSR IPF for Level 1 and Level 2: Version 5.59

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_AXVIEC20021114_113144_20020301_000000_20070801_235959
ATS_CL1_AXVIEC20020123_073044_20020101_000000_20200101_000000
ATS_GC1_AXVIEC20020123_073430_20020101_000000_20200101_000000
ATS_INS_AXVIEC20030731_092706_20020301_000000_20070801_235959
See below for VC1 files
ATS_LST_AXVIEC20040311_095537_20020301_000001_20070801_235959
ATS_PC1_AXVIEC20040812_063722_20020301_000000_20070801_235959
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 VISIBILE CALIBRATION FILES

3.2.1.1 VC1 File Availability

Reflectance channel calibration files were available for all dates, except:

- 5th August 2006
- 6th August 2006
- 7th August 2006
- 8th August 2006

Due to instrument anomaly

- 2nd September 2006

3.2.2 STATUS OF OTHER AUXILIARY FILES

The following list highlights any of the other auxiliary files changed during this cycle.

Product name	**Date Introduced**	**Validity Range**	**Reason for Change**
No changes 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
4th August 2006 01:25:30	8th August 2006 13:10:49	AATSR anomaly	EN-UNA-2006/0236	No

Table 4-1 Instrument unavailability during cycle 50

4.2 L0 Data Acquisition and L1b Processing Status

The L0 data were available for 86.99% of the time during the cycle.
The L1b data were available for 86.99% of the time during the cycle.

The following L0 and L1b data were missing from this cycle:

NB Missing L0 data are automatically also missing at L1b; there were no additional missing L1b data for cycle 50.

UTC Start	UTC Stop	Duration (s)	Orbit Start	Orbit End
08-Aug-2006 13:10	08-Aug-2006 13:11	18	23210	23210
12-Aug-2006 00:24	12-Aug-2006 00:34	568	23259	23259
12-Aug-2006 00:34	12-Aug-2006 01:59	5125	23259	23260
04-Aug-2006 01:26	08-Aug-2006 13:10	387858	23145	23210

Table 4-2 ATS_NL__0P missing data during cycle 50

4.2.1 ORBITS AFFECTED BY POOR DATA QUALITY

The information reported in Table 4-2 does not consider the quality of data, only whether or not it is available.

In the following orbit, a few frames suffered from bad/missing telemetry:

- 23210

Note: This was the first product following the recovery of AATSR; the artefacts present in the product were known and expected.

4.3 L0 and L1b Backlog Processing Status

The list of data missing during the previous cycle has not changed.

5 DATA QUALITY CONTROL

5.1 Monitoring of Instrument Parameters

5.1.1 JITTER

The plot below shows the mean and maximum jitter rate as measured over the cycle. At the start of this cycle the rate was more or less nominal but deteriorated slowly as the cycle progressed. The data gap corresponds to the AATSR anomaly between August 04 and August 08 when AATSR was out of measurement mode.

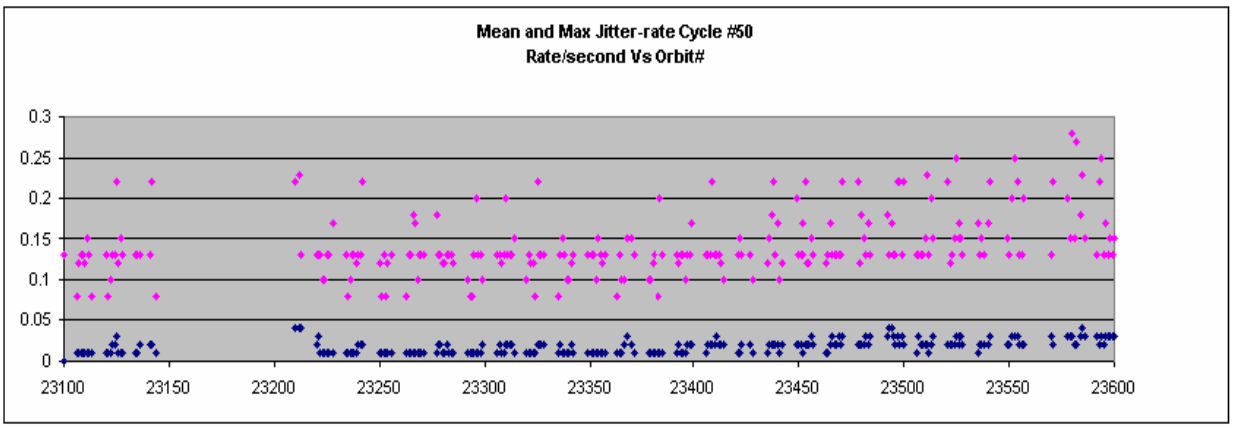

Figure 5-1 Jitter rates for Cycle 50

Users should check the jitter rate during the period covered by their products by checking the Scan Quality Annotation Data Sets (using EnviView or BEAM, for example).

5.1.2 SENSOR TEMPERATURE

All sensors maintained their nominal orbital and seasonal ranges in this cycle while AATSR was in measurement mode.

5.1.3 VISCAL

Reflectance channel calibration files are available for most days in this cycle, except:

- August 04-07 (i.e. during the anomaly)
- September 02

5.1.4 NEΔT

	Hot BB T = 301.80K		Cold BB T = 263.01 K	
	Count	**NEΔT (mK)**	**Count**	**NEΔT (mK)**
12µm	1.62	34.0	1.20	35.3
11µm	1.60	32.7	1.15	34.9
3.7µm	2.53	31.8	1.19	75.8

Table 5-1 NEΔT data for Cycle 50

The NEΔT data for Cycle 49 was absent from Cyclic Report #49; this data is provided in the following table.

	Hot BB T = 301.15K		Cold BB T = 262.11K	
	Count	**NEΔT (mK)**	**Count**	**NEΔT (mK)**
12µm	1.59	33.3	1.20	34.9
11µm	1.57	32.2	1.15	34.9
3.7µm	2.52	31.7	1.21	76.0

Table 5-2 NEΔT data for Cycle 49

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

Unphysical sea surface temperature values in Level 2 AATSR products from PDHS-E at intervals of 480 rows:
Open – The investigation shows that the problem does not happen using the IPF 5.59 with respect to the IPF 5.52 on which the problem was detected. No further instances of the problem have been reported. Original OAR (OAR-193) closed. Investigation will continue as a background task and a new OAR opened if necessary.

Inconsistent values in AST confidence word, 17 km cell:
Open - Investigation completed (an error has been found in the setting of the flag indicating the use of ir37 channel). To be corrected in IPF V6.0 to be released Spring 2007.

5.3.2 NEW SPRS SINCE THE LAST CYCLIC REPORT

The following SPRs have been opened since the last Cyclic Report:

Cloud Flagging Errors leading to Missing Zones in Consolidated AATSR Data:
Open – Systematic bands of missing data were observed in monthly mean SST maps for December products from all years. Investigation reveals that the forward view gross cloud test flag is set incorrectly in all data from December. Suspected cause is LUT corruption within the IPF.

5.3.3 CLOSED SPRS

No new SPRs have been closed since the last Cyclic Report.

6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

6.1 Calibration

No additional calibration results were reported during this cycle.

6.2 Validation

A monthly mean global dual-view SST plot for Cycle 50 composed from ATS_AR__2P 10' data is shown below in Figure 6-1.

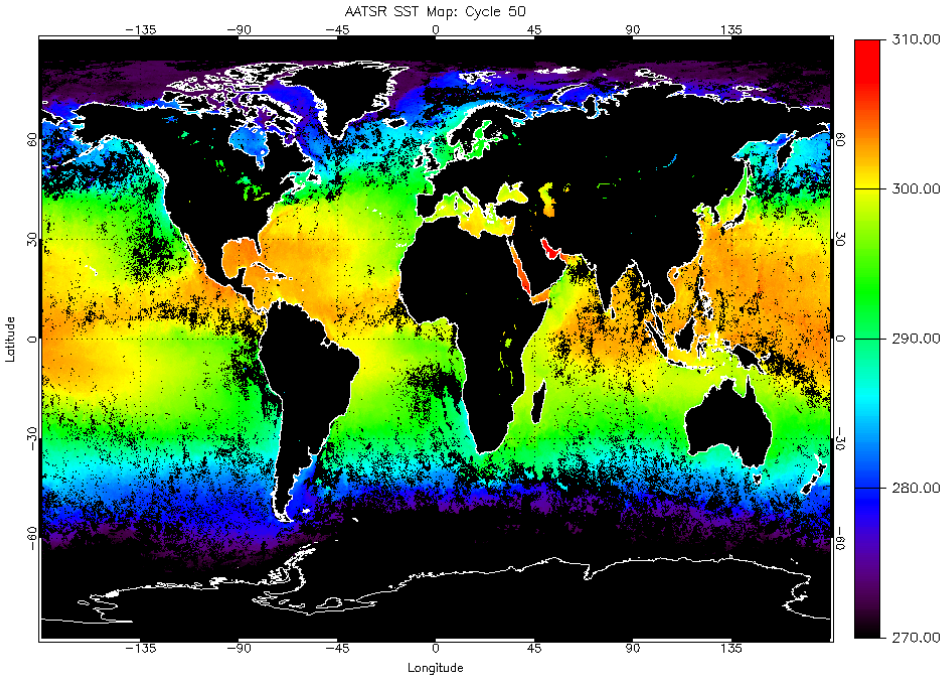

Figure 6-1: Monthly Global Average dual-view SST for Cycle 50.

The Met Office has performed a comparison between AATSR dual view SST data and data collected from a network of in situ buoy SST values, the results for Cycle 49 being shown in Figure 6-4. The updated SST coefficients introduced in December 2005 were used in the retrievals.

Due to a problem with the BUFR encoded AATSR data used by the Met Office, it is not currently possible to distinguish between D2 and D3 SST retrievals or between day and night time data. Subsequently, it is not possible to provide meaningful statistics for this Cycle 50 at this time.

Note: The problem is only noted in the BUFR encoded ATS_MET_2P data. The PDS format ATS_MET_2P data files are unaffected.

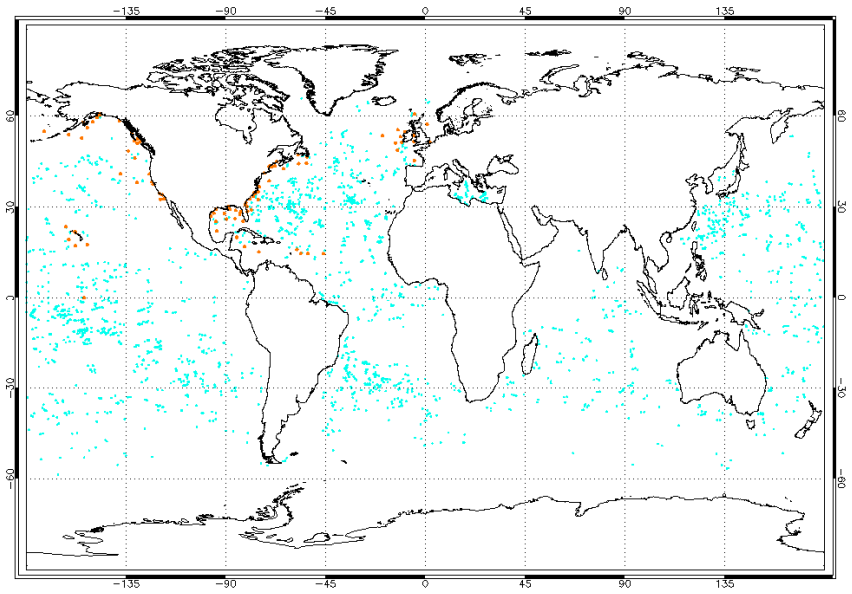

Figure 6-2: Map showing global distribution of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 50. The red dots indicate match-ups to a moored buoy; the cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

6.2.1 VALIDATION INFORMATION FOR CYCLE 49

Cycle 49 validation data was unavailable at the time of publication; the results are included here for reference.

A monthly mean global dual-view SST plot for Cycle 49 composed from ATS_AR__2P 10' data is shown below in Figure 6-3.

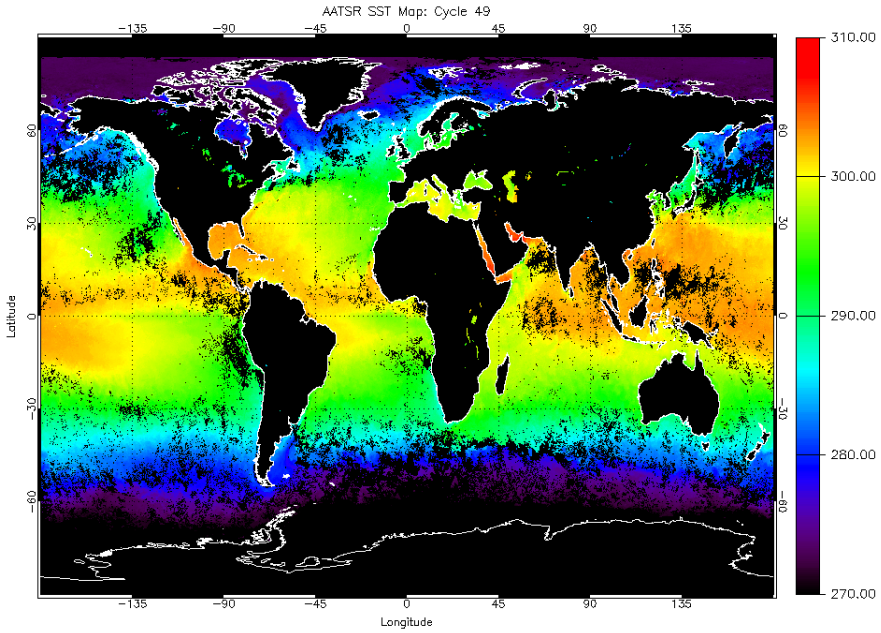

Figure 6-3: Monthly Global Average dual-view SST for Cycle 49.

The Met Office has validated the AATSR dual-view SST data using the global network of in situ buoy SST data, the results for Cycle 49 being shown in Figure 6-4. The updated SST coefficients released in December 2005 were used in the AATSR SST retrievals.

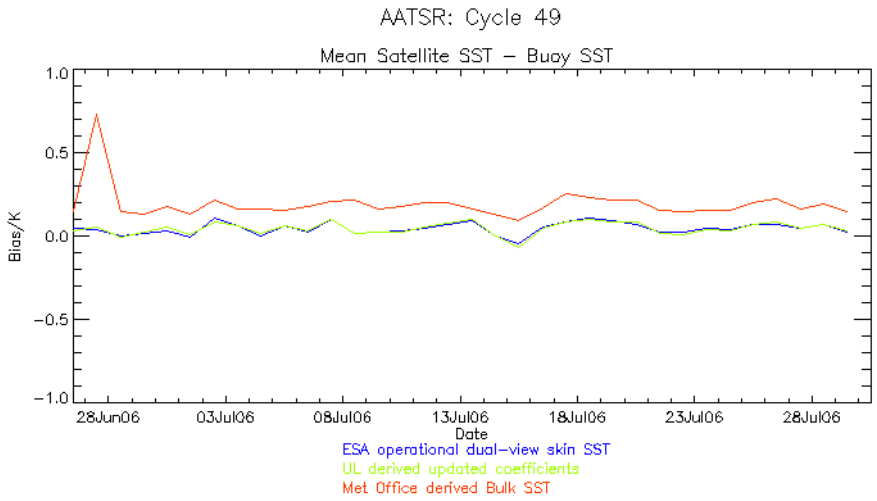

Figure 6-4: Comparison of daily mean difference between 10´ AATSR SST values and in situ buoy SST for Cycle 49. Data provided by the Met Office. The large bias on 27 June 2006 for comparisons to AATSR bulk is due to limited acuiallry data for the skin-to-bulk conversion.

During cycle 49, there were 1757 night time match-ups, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.004 K, standard deviation 0.25 K, and a mean (dual-view bulk SST minus buoy SST) of +0.138 K, standard deviation 0.23 K. A total of 1664 daytime match-ups were found, with a mean (UL derived dual-view skin SST minus buoy SST) of +0.105 K, standard deviation 0.32 K, and a mean (dual-view bulk SST minus buoy SST) of +0.223 K, standard deviation 0.32 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.

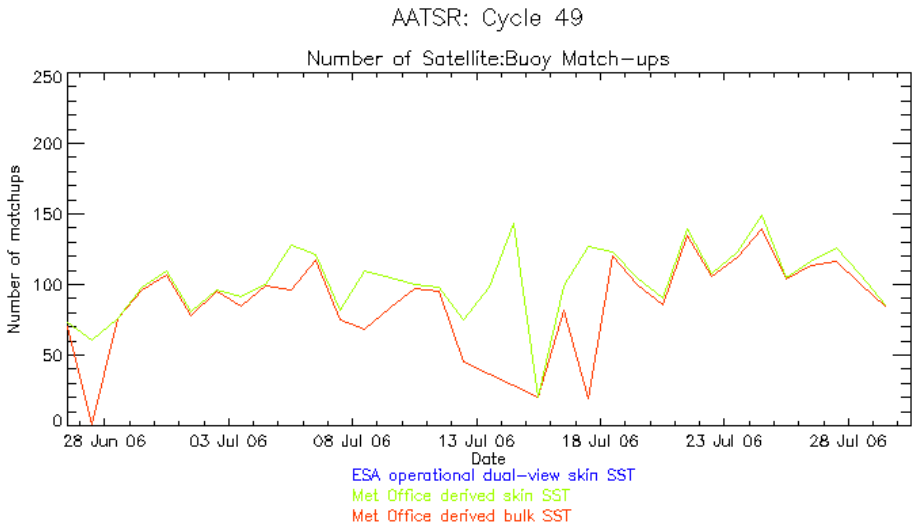

Figure 6-5 Plot of daily number of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 49. Data provided by the Met Office.

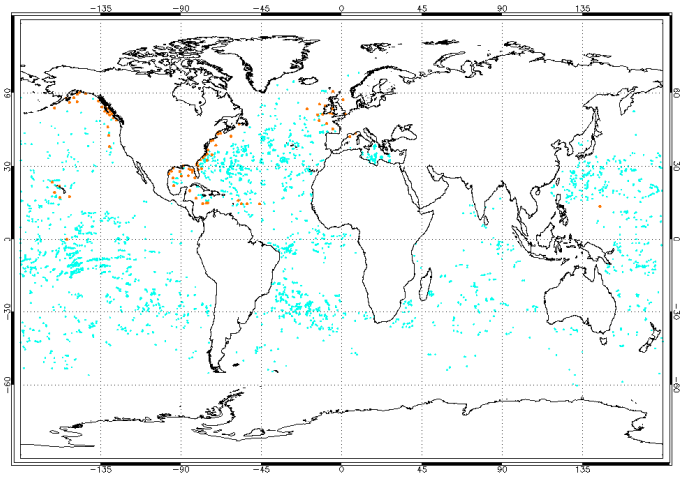

Figure 6-6 Map showing global distribution of match-ups between 10´ AATSR SST values and in situ buoy SST for Cycle 49. The red dots indicate a match-ups to a moored buoy; the cyan dots indicate a match-up to a drifting buoy. Data provided by the Met Office.

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.