AATSR Cycle Report Cycle # 22

24 November 2003, 21:59:29 orbit 9073 29 December 2003, 21:59:29 orbit 9573



The image on the left side has been acquired on December 12, 2003 during Envisat Orbit #9321 over the Ormuz Strait and it shows a very imposing sand and dust storm. The storm (light gray, the land is brown, the clouds are white and the sea appears black) comes from Iran and goes toward Arabic peninsula covering the strait and a large section of Persic Gulf and Oman Gulf.

The image on the right side shows the same zone after some days. The effects of storm are disappeared and the coasts of Arabic peninsula and Iran are clearly visible. The two images are a colour composite from the 3 channels 0.87um, 0.67um, and 0.55um.

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1 THE CYCLIC REPORT #22

1.1 Acronyms and abbreviations

AATSR	Advanced Along Track Scanning Radiometer
CR	Cyclic Report
DMOP	Detailed Mission Operation Plan
DMS	Data Management System
EN-UNA-YYYY/#	Envisat Unavailability (plus year and number)
ESOC	European Space Operation Center
IECF	Instrument Engineering and Calibration Facilities
IPF	Instrument Processing Facilities
MPS	Mission Planning Schedule
NRT	Near Real Time
OCM	Orbit Control Manoeuvre
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: <u>http://envisat.esa.int/dataproducts/aatsr/CNTR5-</u> <u>1.htm#eph.aatsr.glossary.acronabbr:nrt</u>

1.2 Summary

Cyclic number: 22

Cycle Start Time: 24-NOV-2003, 21:59:29 orbit stop: 9073 Cycle Stop Time: 29-DEC-2003, 21:59:29 orbit stop: 9573 The main activities during the cycle have been the following:

- **Processor LO and IPF Version**: No changing in the version of AATSR processor for Level0 and in the IPF version for the Level1 and Level2
- Visible calibration data: The visible calibration coefficients data (ATS_VC1_AX) are changed regularly during the cycle. These VC1 files are being used within the time criteria set for NRT processing. Off-line data processing is expected to take place within 2 weeks of acquisition. When this is the case the VC1 file used should be +/- 1 day from the date of acquisition (i.e. within specification). If off-line data are generated before 2 weeks from acquisition, this may not be achieved.
- Data Acquisition: The data acquisition for the Level0 has been of 93.60% of the whole period, for the Level1 of the 99.28% of the whole period. Two unavailability for the instrument:

- Outgassing: planned.
- Recovered from PLSOL in Measurement: not planned.
- **Outgassing**: The NRT products during an outgassing contain only 0.86, 0.67 and 0.56um channel data and even these data will be [relatively] poorly calibrated. NRT L1B and Browse products immediately after an outgassing may be poorly calibrated as a post-outgassing ATS_VC1_AX file may not have been incorporated into the NRT processing.
- **Calibration activities**: No further information is reported with respect to the previous cycle.
- Validation activities: No further information is reported with respect to the previous cycle.

1.3 Software version and Auxiliary files version

1.3.1 Software version

AATSR processor for Level0; version: PFHS/5.22 *AATSR IPF* for Level1 and Level2; version: AATSR/05.55

DOCUMENTATION Applicable: PO-RS-MDA-GS-2009 Is. 3 Rev. F

1.3.2 Auxiliary file version

This is the list of AATSR auxiliary files.

- Browse Product Look-up Data (ATS_BRW_AX)
- L1b Characterization Data (ATS_CH1_AX)
- Cloud Look-up Table Data (ATS_CL1_AX)
- *General Calibration Data* (ATS_GC1_AX)
- AATSR Instrument Data (ATS_INS_AX)
- Visible Calibration Coefficients Data (ATS_VC1_AX)
- Level1B Processing Configuration Data (ATS_PC1_AX)
- Level2 Processing Configuration Data (ATS_PC2_AX)
- SST Retrieval Coefficients Data (ATS_SST_AX)

In this section will be reported the list of the auxiliary files changed in the cycle and for each file will be specified the date and the reason of the changing.

Will be also reported the list of the latest filename for every auxiliary file currently in use by the PDS.

Only the ATS_VC1_AX file is expected to change regularly. These VC1 files are being used within the time criteria set for NRT processing. Off-line data processing is expected to take place within 2 weeks of acquisition. When this is the case the VC1 file used should be +/-1 day from the date of acquisition (i.e. within specification). If off-line data are generated before 2 weeks from acquisition, this may not be achieved. **(1)**

Product name	Start	Reason of
	validity	changing
ATS_VC1_AXVIEC2003	25	
	November,	(1)
	1, 5, 8, 9,	
	10, 11, 12,	
	15, 18, 19,	
	22, 29	
	December	

Tab 1.3.2.1: Auxiliary files list changed during the period

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
ATS_VC1_AXVRAL20031229_125914_20031227_175621_20040103_175621
ATS_PC1_AXVIEC20030430_211727_20020301_000000_20070801_235959
ATS_PC2_AXVIEC20020123_074151_20020101_000000_20200101_000000
ATS_SST_AXVIEC20020123_074408_20020101_000000_20200101_000000

Tab 1.3.2.2: Latest auxiliary files currently in use by the PDS

1.4 PDS status

1.4.1 Instrument Unavailability

This is a summary of unavailability reports as communicated by ESOC during the period.

- The AATSR has been switch-down since 25 November 2003 10:10:09.000 (day of year 329, orbit 9080, anx offset=1582.151) to 28 November 2003 18:33:15.000 (day of year 332, orbit 9128, anx orbit =1243.607), due to IR channels unavailable during out-gassing.
- The AATSR has been switch-down since 03 December 2003 07:18:43.000 (day of year 337, orbit 9193, anx offset=0436.287) to 05 December 2003 11:41:00.000 (day of year 339, orbit 9224, anx orbit =1859.519), due to recover from PLSOL in measurement. (Ref. AR ENV-738)

Start	Stop	Reason	Reference	Planned
25 Nov 2003	28 Nov 2003	IR channels unavailable	EN-UNA	YES
10:10:09.000	18:33:15.000	during out-gassing I.A.W. AATSR IOR-0020	2003/0348	
03 Dec 03	05 Dec 2003	Recovered from PLSOL in	EN-UNA	NO
07:18:43	11:41:00	Measurement	2003/0356	
		(Ref AR ENV-738)		

Tab 1.4.1: AATSR Unavailability during Cycle 22

1.4.1.1 Outgassing

The NRT products during an outgassing contain only 0.86, 0.67 and 0.56um channel data and even these data will be [relatively] poorly calibrated. NRT L1B and Browse products immediately after an outgassing may be poorly calibrated as a post-outgassing ATS_VC1_AX file may not have been incorporated into the NRT processing.

The calibration should be good within a few days once a new VC1 file has been prepared.

1.4.2 LevelO data acquisition and Level1b processing status

In this chapter will be reported the LevelO missing and the data unavailability not planned in the period.

Only the Level1b data not processed starting from the corresponding Level0 will be reported.

The figure below shows the LevelO data missing measurements (yellow line) and the Level1 data not processed starting from the corresponding LevelO (red line) and the unavailability not planned (green line).



Figure 1.4.2.1: Missing measurements during cycle 22. Green Line: Unavailabilities (planned and unplanned) Yellow line: Level0 missing (PDS failure) Red lines: Level1 missing

The total number of missing data is equivalent to 32 orbits on 501 (6.4 %). The Level0 data was available the 93.60% of the time during the cycle. The Level1b data was available the 99.28% of the time during the cycle. The following tables show the list of Level0 and Level1 lack of data.

UTC Start: start time of the missing acquisition. UTC Stop: stop time of the missing acquisition. Duration: duration of the missing acquisition. Orbit Start: absolute orbit start of the missing acquisition. Orbit Stop: absolute orbit stop of the missing acquisition.

UTC Start	UTC Stop	Duration	Orbit	Orbit
		(sec)	Start	Stop
03-DEC-03 05:59:23	03-DEC-03 07:18:43	4760	9192	9193
03-DEC-03 07:18:43	05 DEC 03 11:41:00	188537	9193	9224
05-DEC-03 11:41:00	05-DEC-03 11:41:23	23	9224	9224

Tab 1.4.2.1: ATS_NL__OP missing data during cycle 22

UTC Start	UTC Stop	Duration	Orbit	Orbit
		(sec)	Start	Stop
02-DEC-03 13:16:18	02-DEC-03 14:43:49	5251	9182	9183
09-DEC-03 04:33:40	09-DEC-03 06:05:30	5510	9277	9278
13-DEC-03 02:25:17	13-DEC-03 03:56:28	5471	9333	9334
14-DEC-03 01:53:18	14-DEC-03 03:24:31	5473	9347	9348

 Tab 1.4.2.2: ATS_TOA_1P missing data during cycle 22

1.4.3 LevelO and Level1b backlog processing status

In this chapter a check with respect to the previous cycle is done to verify if the status of the missing data has changed after a backlog processing. In the following tables (showed only if a change whit respect the previous cycle has been detected) will be point out three kinds of missing products modified:

- Data gap cancelled: it refers to data gap that was identified in the previous report but hasn't now been detected as a result of backlog processing (red line).
- Duration change of data gap: it refers to data gap/s still exists but that it has got longer or shorter since the last report (green line).
- New data gap: it refers to data gap now filled as a result of a backlog processing (blue line).

The list of data missing during the previous cycle has not changed (see the list in the Cyclic Report #21).

1.5 Quality Control

1.5.1 Monitoring of parameters

JITTER:

The average scan-mirror jitter rate during this cycle was 0.00 jitters/sec. Note that occasional, short duration jitter periods do occur. During this cycle these were rare and mild. Users can check the jitter rate during the period covered by their products by checking the Scan Quality Annotation Data Sets (using EnviView, for example).

SENSOR TEMPERATURE:

All sensors maintained their nominal orbital and seasonal ranges except during outgassing and platform unavailability.

VISCAL:

Reflectance channel calibration files (ATS_VC1_AX) are available for most days except: 25-27 November (AATSR outgassing), 3-4 December (Envisat PL-SOL, platform unavailable), and the 14,16, 23, 24, 27 and 30 December (L0 dissemination problems).

Nominal viscal characteristics were observed throughout the cycle.

TOTAL NOISE:

Total noise in the thermal infrared channels, as represented by the standard deviation of the black-body signal in each channel, was nominal throughout the cycle while the instrument was on.

Total noise in the reflectance channels was nominal throughout the cycle.

NE<u></u>*T*:

Nominal throughout the cycle while the thermal channels were on.

1.5.2 Users Rejection

No user complaints during this cycle.

1.5.3 Software Problem Reporting. Potential impact

In this section will be described the SPR open with the potential impact on the data quality, and the SPR closed.

1.5.3.1 SPR open

In this section will be reported the list of SPRs.

1.5.3.1.1 Existing SPRS that are still open

No SPRs still opened.

1.5.3.1.2 New SPRs since the last Cyclic Report

None

1.5.3.2 SPR closed

The old SPRs have been corrected and they will be fixed in the next version of the processor, planned in early March 2004.

1.6 Calibration/Validation activities and results

1.6.1 Calibration

No further information on instrument calibration is reported for Cycle 22. The current status of the instrument calibration can be found in Section 1.7.1 of Cyclic Report 20.

1.6.2 Validation

No further information on instrument validation is reported for Cycle 22. The current status of the instrument validation can be found in Section 1.7.4 of Cyclic Report 20.

1.7 General information

- ENVISAT/ERS Symposium will be held on 6 to 10 September 2004 in Salzburg, Austria. The symposium will be open to all interested parties, from scientists to operational users, and will cover both ENVISAT and ERS missions. Any information will be published on the ESA's web site: <u>http://envisat.esa.int</u>, ENVISAT/ERS Symposium.
- Following the installation of the new IPF (March 2004) a data reprocessing will be done since July 24th, 2002. The reprocessing will be done to include the new LST products (1 Km resolution) and to provide a better visible calibration status and a better nadir/forward collocation.
- The AATSR QWG will be held at RAL on March 4, 2004.