AATSR Cycle Report
Cycle # 27

17 May 2004, 21:59:29 orbit 11578
21 June 2004, 21:59:29 orbit 12078

This image shows sea surface temperature patterns in the east Mediterranean Sea off the south coast of Turkey on June 13, 2004 during Envisat Orbit #11965. The sea surface temperature ranges from approximately 291 K to 295 K. The coolest water is light red in colour, the warmest is red/black, with increasing temperature represented by increasingly bright shades of red. The land, to the top, is masked out and appears black.
<table>
<thead>
<tr>
<th>prepared by/ préparé par</th>
<th>AATSR PCF team and QWG team</th>
</tr>
</thead>
<tbody>
<tr>
<td>reference/référence</td>
<td></td>
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<tr>
<td>issue/édition</td>
<td>1</td>
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<td>revision/révision</td>
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<td>Distribution/distribution</td>
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**APPROVAL**

<table>
<thead>
<tr>
<th>Title</th>
<th>AATSR Cyclic Report – Cycle 27th</th>
<th>issue 1</th>
<th>revision 0</th>
</tr>
</thead>
</table>

| author         | Luigi Accica                     | date    | 23 July 2004 |
| auteur         |                                  | date    |             |

**CHANGE LOG**

<table>
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**CHANGE RECORD**

Issue: 1 Revision: 0

| reason for change / raison du changement | page(s)/page(s) | Paragraph(s)/paragraph(s) |
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1 THE CYCLIC REPORT #27

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:
http://envisat.esa.int/dataproducts/aatsr/CNTR5-1.htm#eph.aatsr.glossary.acronabbr:nrt

1.2 Summary

Cyclic number: 27

The main activities during the cycle have been the following:

- **Processor L0 and IPF Version**: No changing in the version of AATSR processor for Level0 (5.22) and IPF version for Level1 and Level2 (5.58).
- **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 92.60% of the whole period, for the Level1 of the 99.66% of the whole period. One unavailability for the instrument:
  
  - High Speed Multiplexer (HSM) reset: planned

• **Calibration activities**: No further information is reported with respect to the previous cycle.
• **Validation activities**: A comparison with data collected from a network of *in situ* buoy SST values has been done. In May 2004, there were 1341 match-ups in total, with a mean (ESA operational dual-view skin SST minus buoy SST) of 0.021 K, standard deviation 0.57 K, and a mean (dual-view bulk SST minus buoy SST) of 0.188 K, standard deviation 0.55 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.

### 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/05.58 - since 10\(^{th}\) March 2004

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

#### 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*)
- **LST Land Surface Temperature Coefficients Data** (*ATS_LST_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)

<table>
<thead>
<tr>
<th>Product name</th>
<th>Start validity</th>
<th>Reason of changing</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATS_VC1_AXVIEC2004</td>
<td>May, 12, 13, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 June, 1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15, 16, 17</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Tab 1.3.2.1: Auxiliary files list changed during the period

Product name

<table>
<thead>
<tr>
<th>Product name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATS_BRW_AXVIEC20020123_072338_20020101_000000_20200101_000000_20070801_235959</td>
</tr>
<tr>
<td>ATS_CH1_AXVIEC20021114_113144_20020301_000000_20070801_235959</td>
</tr>
<tr>
<td>ATS_CL1_AXVIEC20020123_073044_20020101_000000_20070801_235959</td>
</tr>
<tr>
<td>ATS_GC1_AXVIEC20020123_073430_20020101_000000_20070801_235959</td>
</tr>
<tr>
<td>ATS_INS_AXVIEC20030731_092706_20020301_000000_20070801_235959</td>
</tr>
<tr>
<td>ATS_SST_AXVIEC20020123_074408_20020101_000000_20070801_235959</td>
</tr>
</tbody>
</table>

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

1.4   PDS status

1.4.1 Instrument Unavailability

The AATSR has been switch-down since 10 June 2004 16:21:44.000 (day of year 162, orbit 11918, anx offset=1113.487) to 10 June 2004 16:24:13.000
(day of year 162, orbit 11918, anx orbit =1262.487), due to High Speed Multiplexer (HSM) reset.

<table>
<thead>
<tr>
<th>Start</th>
<th>Stop</th>
<th>Reason</th>
<th>Reference</th>
<th>Planned</th>
</tr>
</thead>
</table>

### 1.4.2 Level0 data acquisition and Level1b processing status

In this chapter will be reported the Level0 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 Level0 data missing measurements (yellow line) and the Level1 data not processed starting from the corresponding Level0 (red line) and the unavailability not planned (green line).

Figure 1.4.2.1: *Missing measurements during cycle 27.*
*Yellow line: Level0 missing (PDS failure)*
*Red lines: Level1 missing*
The total number of missing data is equivalent to 37 orbits on 501 (7.4%). The Level0 data was available the 92.60% of the time during the cycle. The Level1b data was available the 99.66% 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.

<table>
<thead>
<tr>
<th>UTC Start</th>
<th>UTC Stop</th>
<th>Duration (sec)</th>
<th>Orbit Start</th>
<th>Orbit Stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-MAY-04 10:12:05</td>
<td>18-MAY-04 10:41:53</td>
<td>1788</td>
<td>11585</td>
<td>11585</td>
</tr>
<tr>
<td>02-JUN-04 22:16:35</td>
<td>03-JUN-04 00:21:29</td>
<td>7494</td>
<td>11807</td>
<td>11808</td>
</tr>
<tr>
<td>19-JUN-04 04:12:12</td>
<td>19-JUN-04 05:36:37</td>
<td>5065</td>
<td>12039</td>
<td>12040</td>
</tr>
<tr>
<td>21-JUN-04 03:02:34</td>
<td>21-JUN-04 04:33:52</td>
<td>5478</td>
<td>12067</td>
<td>12068</td>
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<tr>
<td>21-JUN-04 04:48:08</td>
<td>21-JUN-04 06:13:42</td>
<td>5134</td>
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</table>

**Tab 1.4.2.1: ATS_NL__0P missing data during cycle 27**

<table>
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<tr>
<th>UTC Start</th>
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<th>Duration (sec)</th>
<th>Orbit Start</th>
<th>Orbit Stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>08-JUN-04 12:35:31</td>
<td>08-JUN-04 13:56:44</td>
<td>4873</td>
<td>11887</td>
<td>11888</td>
</tr>
<tr>
<td>17-JUN-04 06:12:22</td>
<td>17-JUN-04 07:44:50</td>
<td>5548</td>
<td>12012</td>
<td>12013</td>
</tr>
</tbody>
</table>

**Tab 1.4.2.2: ATS_TOA_1P missing data during cycle 27**

### 1.4.3 Level0 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 with respect to 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 #26).
1.5 Quality Control

1.5.1 Monitoring of parameters

**JITTER:**

For most of this cycle, the average scan-mirror jitter rate was 0.01 jitters/sec or better. A short period of high jitter occurred between May 30 and June 01, peaking on May 31 around orbit #11768 when the mean rate hit 0.52 jitters/sec. No other non-nominal periods were seen. 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. Note that a seasonal peak occurs at the end of May.

**VISCAL:**

Reflectance channel calibration files are available for all days except:

- May 18 and 19
- June 09 and 10

**TOTAL NOISE:**

Total noise in the thermal infrared channels, as represented by the standard deviation of the black-body signal in each channel, was close to nominal throughout most of the cycle but increased towards the end of May, reaching a seasonal peak on May 31. It dropped back to nominal by June 02.

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

**NEAT:**

As with total noise, NEDT reached a seasonal peak on May 31 but quickly dropped back to nominal.
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 resolved after the new IPF version installation - IPF 5.58 - operational since 10\textsuperscript{th} March 2004.
1.6 Calibration/Validation activities and results

1.6.1 Calibration

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

1.6.2 Validation

A monthly mean global SST plot for April 2004 composed from the spatially averaged 10’ product, provided by the UK Met Office, corresponding to part of Cycle 27, is shown in Figure 1.6.2-1.

![Figure 1.6.2-1: Monthly Global Average SST for May 2004. Image provided by the UK Met Office](image)

Using the above data, the UK Met Office has done a comparison with data collected from a network of in situ buoy SST values, the results for May 2004 being shown in Figure 1.6.2-2. In May 2004, there were 1341 match-ups in total, with a mean (ESA operational dual-view skin SST minus buoy SST) of 0.021 K, standard deviation 0.57 K, and a mean (dual-view bulk SST minus buoy SST) of 0.188 K, standard deviation 0.55 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. A complete
update on the status of the instrument validation can be found in Section 1.7.4 of Cyclic Report 20.

![Graph showing daily mean difference between 10˚ AATSR SST values and in situ buoy SST for May 2004.](image)

**Figure 1.6.2-2: Comparison of daily mean difference between 10˚ AATSR SST values and in situ buoy SST for May 2004. Image provided by the UK Met Office.**

### 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: [http://envisat.esa.int](http://envisat.esa.int), ENVISAT/ERS Symposium.

- Following the installation of the new IPF (middle of March 2004) a data reprocessing will be done since July 24\textsuperscript{th}, 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.