This scene, acquired over the southwest of Africa on 28 October 2004 - absolute orbit 13916 (relative orbit 335) - shows the border between Namibia and South Africa. On the top left is well visible the Kalahari desert, mostly within the Namibian country. Visible are the huge sand dunes that rise near the coast of the Atlantic Ocean and extend inland for up to 160 kilometers, ending at the steep slopes of the Great Escarpment (centre right). The Desert is temperate; it is kept cool and dry by the Benguela Current offshore.
# APPROVAL

<table>
<thead>
<tr>
<th>Title</th>
<th>AATSR Cyclic Report – Cycle 31st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>12 April 2005</td>
</tr>
</tbody>
</table>

| Author      | Luigi Accica                      |

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# Table of Contents

1 The Cyclic Report #31 ........................................................................................................ 5  
1.1 Acronyms and abbreviations ................................................................................. 5  
1.2 Summary .............................................................................................................. 5  
1.3 Software version and Auxiliary files version ......................................................... 6  
1.3.1 Software version ............................................................................................... 6  
1.3.1.1 Auxiliary file version ............................................................................... 6  
1.4 PDS status ......................................................................................................... 7  
1.4.1 Instrument Unavailability .............................................................................. 7  
1.4.2 Level0 data acquisition and Level1b processing status ................................... 8  
1.4.2.1 Compromised orbits owning to major bad data quality ............................. 9  
1.4.3 Level0 and Level1b backlog processing status ............................................... 9  
1.5 Quality Control ................................................................................................. 10  
1.5.1 Monitoring of parameters ............................................................................. 10  
1.5.2 Users Rejection .............................................................................................. 11  
1.5.3 Software Problem Reporting. Potential impact ............................................ 11  
1.5.3.1 SPR open ................................................................................................. 11  
1.5.3.2 SPR closed .............................................................................................. 11  
1.6 Calibration/Validation activities and results ......................................................... 11  
1.6.1 Calibration .................................................................................................... 11  
1.6.2 Validation ..................................................................................................... 12  
1.7 General information ........................................................................................... 13
1 THE CYCLIC REPORT #31

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
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
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: 31

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). No changing in the IPF version for Level1 and Level2 (5.59).
- **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 99.71% of the whole period, for the Level1 of the 99.85% of the whole period.

• **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 October 2004, there were 2270 match-ups in total, with a mean (ESA operational dual-view skin SST minus buoy SST) of 0.013 K, standard deviation 0.37 K, and a mean (dual-view bulk SST minus buoy SST) of 0.129 K, standard deviation 0.37 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/05.59 – delivered on 19th July 2004.

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

#### 1.3.1.1 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>October, 5, 6, 8, 11, 13, 14, 15, 16, 19, 20, 21, 22, 23, 24, 27, 28, 30, 31 November, 1, 2, 3, 4, 5, 6, 7, 8</td>
<td>(1)</td>
</tr>
</tbody>
</table>

**Tab 1.3.2.1: Auxiliary files list changed during the period**

<table>
<thead>
<tr>
<th>Product name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ATS_BRW_AXVIEC20020123_072338_20020101_000000_20200101_000000</td>
<td></td>
</tr>
<tr>
<td>ATS_CH1_AXVIEC20021114_113144_20020301_000000_20070801_235959</td>
<td></td>
</tr>
<tr>
<td>ATS_CL1_AXVIEC20020123_073044_20020101_000000_20020101_000000</td>
<td></td>
</tr>
<tr>
<td>ATS_GC1_AXVIEC20020123_073430_20020101_000000_20020101_000000</td>
<td></td>
</tr>
<tr>
<td>ATS_INS_AXVIEC20030731_092706_20020301_000000_20070801_235959</td>
<td></td>
</tr>
<tr>
<td>ATS_VC1_AXVIEC20041108_182722_20041106_193459_20041113_193459</td>
<td></td>
</tr>
<tr>
<td>ATS_LST_AXVIEC20040311_095537_20020301_000001_20070801_235959</td>
<td></td>
</tr>
<tr>
<td>ATS_PC1_AXVIEC20040812_063722_20020301_000000_20070801_235959</td>
<td></td>
</tr>
<tr>
<td>ATS_PC2_AXVIEC20020123_074151_20020101_000000_20200101_000000</td>
<td></td>
</tr>
<tr>
<td>ATS_SST_AXVIEC20020123_074408_20020101_000000_20070801_235959</td>
<td></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

No instrument unavailability during this period.
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 31. Yellow line: Level0 missing (PDS failure) Red lines: Level1 missing](image)

The Level0 data was available the 99.71% of the time during the cycle. The Level1b data was available the 99.85% 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>07-OCT-04 07:28:52</td>
<td>07-OCT-04 07:47:44</td>
<td>1132</td>
<td>13616</td>
<td>13616</td>
</tr>
<tr>
<td>17-OCT-04 11:04:09</td>
<td>17-OCT-04 12:13:10</td>
<td>4141</td>
<td>13761</td>
<td>13762</td>
</tr>
<tr>
<td>02-NOV-04 11:23:19</td>
<td>02-NOV-04 12:10:58</td>
<td>2859</td>
<td>13990</td>
<td>13991</td>
</tr>
<tr>
<td>03-NOV-04 13:16:54</td>
<td>03-NOV-04 13:18:51</td>
<td>117</td>
<td>14006</td>
<td>14006</td>
</tr>
</tbody>
</table>
The information reported in the tables 1.4.2.1 and 1.4.2.2 does not consider the quality of the data, only whether or not it is available. The orbits listed below have been processed but the quality is bad on the whole orbit or only on some few frames:

<table>
<thead>
<tr>
<th>Orbit number</th>
<th>Date</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>13674</td>
<td>11 October</td>
<td>Unknown</td>
</tr>
<tr>
<td>13717</td>
<td>14 October</td>
<td>Unknown</td>
</tr>
<tr>
<td>13760, 13761, 13762</td>
<td>17 October</td>
<td>Unknown</td>
</tr>
<tr>
<td>13822</td>
<td>21 October</td>
<td>Unknown</td>
</tr>
<tr>
<td>13932</td>
<td>29 October</td>
<td>Unknown</td>
</tr>
<tr>
<td>13946, 13951</td>
<td>30 October</td>
<td>Unknown</td>
</tr>
<tr>
<td>13965</td>
<td>31 October</td>
<td>Unknown</td>
</tr>
<tr>
<td>13989, 13990</td>
<td>02 November</td>
<td>Unknown</td>
</tr>
<tr>
<td>14051</td>
<td>06 November</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

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 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 #30).
1.5 Quality Control

1.5.1 Monitoring of parameters

**JITTER:**

The average scan-mirror jitter rate during most of this cycle was 0.01 jitters/sec or better. Note that occasional, short duration jitter periods do occur. During this cycle a period of relatively high jitter was detected between orbits 13965 and 13980 on October 31 and November 01. In orbit 13965 the peak-rate reached 0.3 jitter/sec. There were other occasional, short periods where the maximum jitter rate reached 0.13 jitters/sec. Users should 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 in this cycle.

**VISCAL:**

Reflectance channel calibration files are available for all days except: October 17, 18, 25 and 28
Nominal viscal characteristics were observed throughout the cycle where data was available.

**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 the cycle except on October 31 and November 01 when it increased by up to 25% on some orbits.

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

**NEAT:**

Nominal throughout the cycle.
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

Two official SPR opened against the IPF:

- "New AATSR Software Problem Report" concerning unphysical sea surface temperature values in Level 2 AATSR products from PDHS-E at intervals of 480 rows.
- "New AATSR Software Problem Report" concerning inconsistent values in AST confidence word, 17 km cell.

IPF maintainer is just being asked to comment on this at this stage:

- "50 / 17 km Cell Size Anomaly in AST product".

1.5.3.1.1 New SPRs since the last Cyclic Report

None

1.5.3.2 SPR closed

None

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 October 2004 composed from the spatially averaged 10’ product, provided by the UK Met Office, corresponding to part of Cycle 31, is shown in Figure 1.6.2-1.

![Monthly Global Average SST for October 2004](image)

**Figure 1.6.2-1: Monthly Global Average SST for October 2004. Image provided by the UK Met Office**

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 October 2004 being shown in Figure 1.6.2-2. In October 2004, there were 2270 match-ups in total, with a mean (ESA operational dual-view skin SST minus buoy SST) of 0.013 K, standard deviation 0.37 K, and a mean (dual-view bulk SST minus buoy SST) of 0.129 K, standard deviation 0.37 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 1.6.2-2: Comparison of daily mean difference between 10° AATSR SST values and in situ buoy SST for October 2004. Image provided by the UK Met Office.

A complete update on the status of the instrument validation can be found in Section 1.6.2 of Cyclic Report 28.

1.7 General information

None