This is a PRISM image taken on the 13th of March 2008 from frame 3335 or orbit 14053 over Senegal.

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## APPROVAL

<table>
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<th>Title</th>
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</tr>
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<tr>
<td>issue</td>
<td>1</td>
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<tr>
<td>revision</td>
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<table>
<thead>
<tr>
<th>author</th>
<th>IDEAS Optical Team</th>
</tr>
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<tr>
<td>date</td>
<td>25 September 2009</td>
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## CHANGE LOG

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<th>issue/issue</th>
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PRISM CYCLIC REPORT # 29

1 INTRODUCTION

The PRISM Cyclic Report is distributed by the IDEAS PRISM team to keep the PRISM community informed of any modification regarding quality control, instrument performance, the data production chain and the results of calibration and validation campaigns at the end of each ALOS cycle, which represents 671 orbits, or 46 days.

The PRISM instrument is part of the Japanese JAXA ALOS mission and its products are received and processed via ESA’s ADEN ground segment across Europe. This is done through an agreement between JAXA and ESA, where ALOS is classed as an ESA Third Party Mission, for which it is responsible for data reception and product dissemination across the European and African regions. A series of quality checks are undertaken in order to assess the ground segment, the instrument performance and the product quality.

Checks are currently made on a weekly (header parameters, PDS status) or bi-monthly (visual report) basis to have a constant view on the mission status. The cyclic report presents the results of the analysis for the different part of the chain, from satellite to end-user product.

This document is available online at:
http://earth.esa.int/pcs/alos/prism/reports/cyclic/

1.1 Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADEN</td>
<td>ALOS Data European Node</td>
</tr>
<tr>
<td>ALOS</td>
<td>Advanced Land Observing Satellite</td>
</tr>
<tr>
<td>AVNIR-2</td>
<td>Advanced Visible and Near Infra-red Radiometer Type-2</td>
</tr>
<tr>
<td>CEOS</td>
<td>Committee on Earth Observation Satellites</td>
</tr>
<tr>
<td>DoM</td>
<td>Day of Mission</td>
</tr>
<tr>
<td>EO Help</td>
<td>Earth Observation Help Desk</td>
</tr>
<tr>
<td>GCP</td>
<td>Ground Control Points</td>
</tr>
<tr>
<td>IDEAS</td>
<td>Instrument Data quality Evaluation and Analysis Service</td>
</tr>
<tr>
<td>JAXA</td>
<td>Japan Aerospace Exploration Agency</td>
</tr>
<tr>
<td>OCM</td>
<td>Orbit Control Manoeuvre</td>
</tr>
<tr>
<td>PCS</td>
<td>Product Control Service</td>
</tr>
<tr>
<td>PDS</td>
<td>Payload Data Segment</td>
</tr>
<tr>
<td>PI</td>
<td>Principal Investigator</td>
</tr>
<tr>
<td>PRISM</td>
<td>Panchromatic Remote-sensing Instrument Stereo Mapping</td>
</tr>
<tr>
<td>QC</td>
<td>Quality Control</td>
</tr>
<tr>
<td>SPPA</td>
<td>Sensor Performance Products Algorithms</td>
</tr>
<tr>
<td>TOA</td>
<td>Top of Atmosphere</td>
</tr>
</tbody>
</table>
1.2 Reference Documents

RD.1 ALOS/AVNIR-2 Level 1 product format description Rev J - October, 2006 JAXA (NEB 00016)
RD.3 Saunier S., Goryl. P and al The contribution of ESA to the ALOS PRISM / AVNIR-2 commissioning phase IGARSS 2007 proceedings.
RD.5 JAXA ALOS User Handbook November, 03, 2007 (NDX 070015)

1.3 Background information

The PRISM instrument is an optical instrument which forms part of the ALOS mission built by the Japan Aerospace eXploration Agency (JAXA).

The ALOS mission data is produced and disseminated through geographical nodes. The European node (ADEN) was set up and is operated by ESA through the Tromso, Matera, Mas Palomas and Frascati ground stations. As a third party mission (TPM), only the ground segment and data processing are dealt with by ESA, the platform being the responsibility of the owner: JAXA. Each node operates their ground segment independently and shares results with JAXA when required in the frame of the Calibration Validation Science Team (CVST).
The ADEN team is responsible for the operation and maintenance of the node that receives data acquired over Europe and North Africa. The ADEN team took part in the Calibration/Validation activities during the ALOS commissioning phase (January to October 2006). The methodologies used and results obtained are documented (RD.3 and RD.4) and made available to the user through the site: http://earth.esa.int/object/index.cfm?fobjectid=3738

As part of the ADEN operations, a series of quality checks are undertaken in order to assess the ground segment and instrument performance and the product quality for products requested by European users. Checks are currently made on a weekly basis (header parameters, PDS status) to have a constant view on the mission status.
2 SUMMARY

Cyclic Report: 29

Cycle Start: 28 July 2009

Cycle End: 12 September 2009

The main issues during the cycle have been as follows:

- **Processor Version**
  
  Current PRISM processor version: 5.04

  ALOS Core Processing Software Version v5.08 has been released on 12\textsuperscript{th} Aug, 2009 and validation activities have been initiated with this new version.

  This included an update to the PRISM Pointing Alignment Parameter.

  See Section 3 for install dates of ADEN processors.
3 SOFTWARE & AUX FILE VERSION CONFIGURATION

<table>
<thead>
<tr>
<th>Current Optical Processor Version</th>
<th>ESRIN</th>
<th>Matera</th>
<th>Tromso</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.04</td>
<td>27/04/09</td>
<td>27/04/09</td>
<td>27/04/09</td>
</tr>
</tbody>
</table>

Table 1 - PRISM Processing Versions

A history of the ADEN optical processor release notes will be made available on the ALOS ADEN PCS website, location: http://earth.esa.int/pcs/alos/prism/userinfo/.

A summary of the updates made to version 5.04 of the optical processor is given in Appendix A.
4 PDS STATUS

Please note; the major source of information for this document is the ALOS monthly report provided by JAXA. The monthly reporting timescale means that data concerning events conducted within this cycle may not be available at the time of writing. In this event, information will be included in the next cyclic report.

Instrument information provided by JAXA during the period 01/08/2009 to 31/08/2009 is reported in this document.

4.1 Planned Instrument Unavailability

For the periods described in Table 2, JAXA has announced planned instrument unavailability.

<table>
<thead>
<tr>
<th>From (UT)</th>
<th>To (UT)</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Time</td>
<td>Date</td>
</tr>
<tr>
<td>14 August 2009</td>
<td>-</td>
<td>14 August 2009</td>
</tr>
<tr>
<td>28 August 2009</td>
<td>-</td>
<td>28 August 2009</td>
</tr>
<tr>
<td>OCM</td>
<td></td>
<td>OCM</td>
</tr>
</tbody>
</table>

Table 2 Planned instrument unavailability

4.2 Unplanned Instrument Unavailability

For the periods described in Table 3, JAXA announced unplanned instrument unavailability.

<table>
<thead>
<tr>
<th>From (UT)</th>
<th>To (UT)</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Time</td>
<td>Date</td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 Unplanned instrument unavailability

4.3 Current Platform Status

Information on the platform provided by JAXA:

Current platform status: Normal

4.4 Upcoming Instrument Unavailability

For the periods described in Table 4, JAXA has announced planned instrument unavailability.
4.5 **ADEN PDS Unavailability**

None reported during this cycle.

4.6 **Periods of missing precision orbit data**

For the periods described in Table 5, JAXA has announced that precision orbit data is missing.

<table>
<thead>
<tr>
<th>From (UT)</th>
<th>To (UT)</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Time</td>
<td>Date</td>
</tr>
<tr>
<td>Aug. 28, 2009 18:19:00.000000</td>
<td>Aug. 28, 2009 19:23:00.000000</td>
<td>Due to orbit maneuvering</td>
</tr>
<tr>
<td>Aug. 14, 2009 20:34:00.000000</td>
<td>Aug. 14, 2009 21:37:00.000000</td>
<td>Due to orbit maneuvering</td>
</tr>
</tbody>
</table>

Table 5: Missing Precision Orbit Data

4.7 **Periods of missing precision attitude data**

For the periods described in Table 6, JAXA has announced that precision attitude data is missing.

<table>
<thead>
<tr>
<th>From (UT)</th>
<th>To (UT)</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Time</td>
<td>Date</td>
</tr>
<tr>
<td>None</td>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>

Table 6 Missing Precision Attitude Data

4.8 **Periods lacking Yaw steering**

For the periods described in Table 7, JAXA has announced that Yaw steering was not available.

<table>
<thead>
<tr>
<th>From (UT)</th>
<th>To (UT)</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Time</td>
<td>Date</td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7 No Yaw steering
4.9 JAXA Observation Strategy

The JAXA observation strategy can be found at:

4.10 Artefact repositories

A number of image artefacts are not due to instrument or processing chain malfunctions. These are fully documented in the following JAXA web pages.

5 DATA QUALITY CONTROL

The following sections in this Cyclic Report do not contain inputs from the ALOS SPPA scientific experts.

5.1 Instrument Related Anomalies

No reported anomalies this cycle.

5.2 Processor Related Anomalies

No reported anomalies this cycle.

5.3 Daily Report Issues

During the past cycle, daily checks have been undertaken on all PRISM products generated by ADEN, although these are reported on a weekly basis due to current data volumes.

Browse products for all optical images are visually inspected and reported on in each daily report.

166 products have been examined during the course of this cycle, and only one issue has been highlighted by these checks.

5.4 Visual Inspection Report Issues

This section reports on anomalies detected in PRISM products as a result of detailed visual inspections by the IDEAS PRISM Team.

5.4.1 JPEG COMPRESSION

- We continue to observe JPEG compression artefacts, which are expected as a result of PRISM processing.
  - Only a limited number of products (3%) have been distributed with compression mode 2 (1/9 compression ratio), consequently the observations of JPEG artefacts are primarily in compression mode 1 (1/4.5 compression ratio) data.
  - These effects are observed in all three views although not at the same location within the images of each view.

5.4.2 CCD BOUNDARIES

- CCD Boundaries continue to be observed in 1B2 products, an example of which is given in Figure 5-1. This image is taken from the level 1B2R product from
frame 2725 of orbit 6015 in the Forward view. Here the boundaries between CCD4, CCD5 and CCD6 are clearly visible.

Figure 5-1 - Intercamera boundaries can be observed

- These effects are also observed in 1B2G products and in the Nadir and Backward views. It is understood that this is because the equalization between CCDs has not been performed as expected. This anomaly continues to be routinely observed.
- The geometry of the image is preserved and there is no shift between CCDs.

Figure 5-2 – Browse image from ALPSMF060152670-01B2R_UF
• Figure 5-2 illustrates an example of a 1B2 product without visible CCD boundaries. This image is from the level 1B2R product from frame 2670 of orbit 6015 in the Forward view.

5.5 User Information

A PRISM FAQ containing common user requests can be found on the ESA PCS website.

An updated version of this document will be issued shortly.

The most recent version of this document can be found at: http://earth.esa.int/pcs/alos/prism/userinfo/
6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

One paper has been written by Jaxa calibration team (http://www.eorc.jaxa.jp/en/hatoyama/satellite/data_tekyo_setsumei/alos_hyouka_e.html). The reference is:


The geometric and radiometric calibration accuracy have been assessed from observation date from Jun. 22, 2007 to Jun. 4, 2009

- Geometric calibration
  1. Absolute accuracy

<table>
<thead>
<tr>
<th></th>
<th>Pixel direction (cross track)</th>
<th>Line direction (along track)</th>
<th>Distance</th>
<th>No of GCPs</th>
<th>No of Scenes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nadir view (RMS)</td>
<td>5.6 m</td>
<td>5.3 m</td>
<td>7.8 m</td>
<td>5,499</td>
<td>586</td>
</tr>
<tr>
<td>Forward view (RMS)</td>
<td>4.9 m</td>
<td>6.1 m</td>
<td>7.8 m</td>
<td>1,771</td>
<td>225</td>
</tr>
<tr>
<td>Backward view (RMS)</td>
<td>5.0 m</td>
<td>7.1 m</td>
<td>8.7 m</td>
<td>4,839</td>
<td>525</td>
</tr>
</tbody>
</table>

- Measurements: Statistical evaluation of the worldwide ground control points (GCPs) and calculation of the root mean square (RMS) of the distance between the position of GCPs, that were identified in the each PRISM image and obtained from the coordination conversion formula, and their true location on the GRS 80 that were calculated from the GCPs true measurement by GPS and the PRISM observation geometry.

- For reference: CE90
  Nadir view: 11.8 m, Forward view: 12.4 m, Backward view: 13.4 m

2. Relative accuracy (three radiometers)

<table>
<thead>
<tr>
<th></th>
<th>Pixel direction</th>
<th>Line direction</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Std. dev. in a scene(1σ)</td>
<td>1.4 m</td>
<td>1.8 m</td>
<td>2.4 m</td>
</tr>
</tbody>
</table>

- Measurements: Averaged value of standard deviation of geometric errors in a scene in evaluating absolute accuracy.
Radiometric calibration accuracy

1. Absolute accuracy (Nadir-looking radiometer)

Similar to that of AVNIR-2 (better than 3%, RMS)
- Measurements: Compared with calibrated AVNIR-2 as cross calibration over deserts, salt lakes, ocean etc.

2. Relative Accuracy (three radiometers)

Better than 0.4 % (better than 1DN) (RMS)

7 DISCLAIMERS

No new disclaimers have been issued during this cycle.

A list of known product errors caused by image processing algorithm errors is listed on the JAXA site at:

http://www.eorc.jaxa.jp/hatoyama/satellite/data_tekyo_setsumei/alos_renraku_e.html
8 EVENTS

The following section details events that may be of interest to ALOS data users.

- ALOS simulation#15 (Cycle 31 – 40): Result files will be available on Sep. 14th.
- ALOS Core Processing Software v5.08 for AVNIR-2/PRISM (PRISM Pointing Alignment Parameter) were released on August 12th
- A publication from the JAXA team concerning the PRISM calibration is foreseen on IEEE in December 2009.

8.1 Past Events:

- Submission of the request files for the first stage simulation #15 (Cycle 31 – 40) was due to the end of August
- ALOS Core Processing Software v5.07 for AVNIR-2/PRISM (PRISM Pointing Alignment Parameter) were released on June 10th
- Submission of request files for the first stage of simulation #15 (Cycle 30 – 33) was due towards the end of June.
- The simulation #15 is given because #14 is assigned to ALOS Long-term Full Simulation Cycle31–70
- Result files and statistics of second stage simulation #13 were released on May 22nd. Analysis report was released on May 28th
- The results of first stage simulation #13 were available from April 6th
- Submission of request files for the first stage simulation#13 (Cycle28 - 31) was due on March 12th
- ALOS Core Processing Software PRISM/AVNIR-2 Version 5.05 (PRISM Pointing Alignment Parameter) was released on Feb. 6th
- ADN-15 meeting was held on Feb. 24th and 25th in Tokyo
- The result files and statistics for the second stage simulation#12 were released on Feb. 13th.
- Analysis Report and Adoption/Rejection Information for simulation#12 was released on Feb. 20th.
• The submission of request files for the second stage simulation#12 is due on Jan. 19th.


• The result files of first stage simulation#12 will be available on Jan. 3rd

• ALOS Core Processing Software (Version 5.03 for PALSAR and Version 5.04 for PRISM/AVNIR-2) was provided Dec. 19th.

• Result files and statistics for simulation#11 were released on Nov. 21st

• Analysis Report and Adoption/Rejection Information for simulation#11 were released on Nov. 29th.

• The submission of request files for the first stage of simulation#12 was due Dec. 16th.

• The second ALOS PI Symposium took place from the 3rd to the 7th of November in Rhodes, Greece.

• Results of first stage simulation#11 made available on Oct. 15th

• The submission of request files for the second stage simulation#11 was due on Oct. 28th.

• Analysis report and Adoption/Rejection information of simulation#10 were released by JAXA on 21/08/2008.

• The due date of Observation/Acquisition request files for ALOS simulation 11 was 25/09/2008. This simulation covers the period 10/12/2008 to 11/06/2008.

• ADN-14 meeting was held at ASF from Sep. 9th to 11th

• Analysis report and Adoption/Rejection information of simulation#10 were released by JAXA on 21/08/2008.

• The submission of request files for ALOS simulation number 10 was due by 20th of June.

• The submission of request files for ALOS simulation number 9 was due by March 21, 2008
• The ALOS PCS Site is now available at: http://earth.esa.int/pcs/alos/

• ALOS simulation #8 for Cycle 18-21
  o The results of the second stage simulation were made available by JAXA on Feb. 4th.
  o The Analysis Report on ALOS simulation #8 was delivered by JAXA on Feb. 12th.

• 29 January 2008: Users are now able to submit orders for ALOS future acquisitions via EOLI-SA (email eohelp@esa.int for more information)

APPENDIX A INSTRUMENT ANOMALIES

Below is a list of ALOS anomalies that may have an impact on image quality, radiometric calibration or localisation accuracy (from 24th October 2006).

- Orbit manoeuvres conducted on 14th and 28th August 2009
- Orbit manoeuvres conducted on 20th June, 3rd, 4th, 5th, 7th, 10th and 13th July 2009
- Orbit manoeuvre conducted on 16th May 2009
- Orbit manoeuvres conducted on 13th and 28th March 2009
- Orbit manoeuvres conducted on 14th February 2009
- Orbit manoeuvres conducted on 3rd, 10th, 16th and 30th of January 2009
- Orbit manoeuvres conducted on 15th, 29th November 2008
- Orbit manoeuvres conducted on 11th, 18th, 24th October 2008
- Orbit manoeuvres conducted on 12th, 26th September 2008
- Orbit manoeuvres conducted on 5th, 8th August 2008
- Orbit manoeuvres conducted from 2nd August 2008 14:27 – 3rd August 2008 06:05
- Inclination and related in plane orbit manoeuvres conducted from 29th July 22:26 – 31st July 05:42
- Orbit manoeuvres conducted on 19th July 2008,
- LSSR acquisition failure 11th June 2008,
- Orbit manoeuvres conducted on 19th July 2008,
- Orbit manoeuvres conducted on 11th, 14th, 17th, 20th, 23rd June 2008,
- Calibration operations for Star Tracker conducted on 11th and 13th of May 2008,
- Orbit manoeuvres conducted on 16th May 2008,
- Orbit manoeuvres conducted on 26th April 2008,
- Orbit manoeuvres conducted on 4th April 2008.
- Orbit manoeuvres conducted on 26th January and 2nd, 15th, 29th February 2008.
- YAW steering was suspended on 28th January 2008
- Observation, yaw steering, and precision attitude system suspended on 31st October 2006 between 03:50 and 15:50 UT due to change AOCS on-board orbit model to that of 15th order.
- Yaw steering suspended during 23rd February 00:12 UT to 24th February 2007 23:01 UT (yaw steering suspended due to calibrating operations for Star Tracker (STT) and Precision Attitude Determination).
- Yaw steering suspended during 22nd March 00:24 UT to 23rd March 2007 23:17 UT (yaw steering suspended due to calibrating operations for Star Tracker (STT) and Precision Attitude Determination).
- Yaw steering on/off switching on 10th April 2007:
  Yaw steering on to off:         12:57 – 13:22 UT   (data unavailable)
  No yaw steering operation:     13:22 – 14:42 UT   (data available)
  Yaw steering off to on:        14:42 – 15:45 UT   (data unavailable)
- Orbit manoeuvres on 8th and 22nd June 2007.
- Orbit manoeuvres conducted on 7th and 20th July 2007.
- Yaw steering on/off switching on 31st July 2007:
  Switching in progress: 00:00 – 00:30, 21:57 – 22:46 UT (Observation suspended)
  No yaw steering observation: 00:30 – 21:57 UT (Data available)
- Orbit manoeuvres conducted on 3rd and 25th August 2007.
- Orbit manoeuvres conducted on 6th, 12th and 26th October 2007.
- Orbit manoeuvres conducted on 10th and 23rd November 2007.
- Orbit manoeuvres conducted on 7th and 15th December 2007.
- Orbit manoeuvres conducted on 4th, 11th, 18th and 26th January 2008.
- Orbit manoeuvres conducted on 2nd, 15th and 29th February 2008.
- Orbit manoeuvres conducted on 8th March 2008.
APPENDIX B           PROCESSOR UPDATE SUMMARY

Upgrade Version:  5.04  
Previous Version:  4.05  
Modifications:

(1) Update of Processing Software
   • None

(2) Update of Correction Parameter
   • Table of Geometric correction information (Update version of October20, 2008) (for AVNIR-2) [Ver_AV2_PR_GeometricModel (6.21)]
   • PRISM Pointing Alignment parameter file (Update version of November26, 2008) (for PRISM) [Ver_PSM_PR_AlignmentParameter(6.22)]

(3) Update of DEM data directory
   • None

Comments:
None