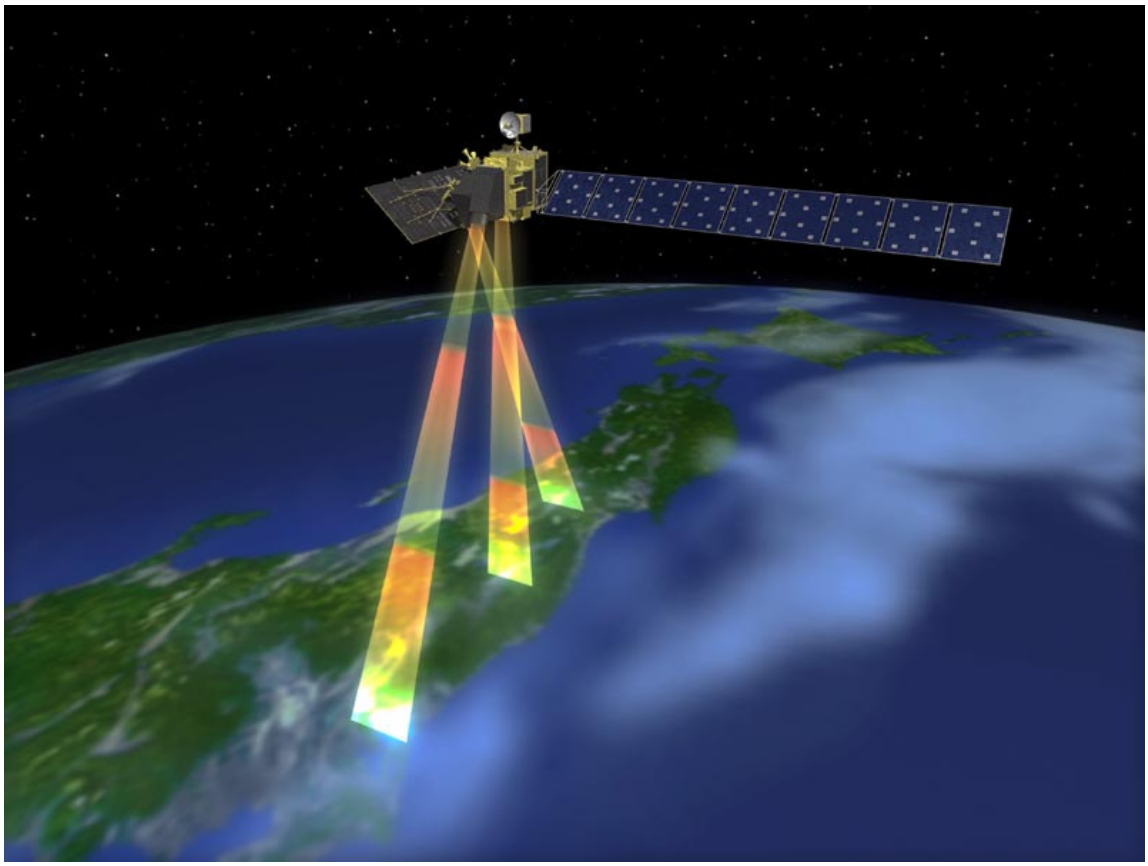
# *ALOS – PRISM*

# *CYCLIC REPORT #15*

# *23 OCTOBER 2007 TO 08 DECEMBER 2007*



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# PRISM CYCLIC REPORT # 15

## 1 INTRODUCTION

The PRISM Cyclic Report is distributed by the ADEN PRISM QC 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-product.

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

### *1.1 Acronyms and Abbreviations*

| | |
|---|---|
| ADEN | ALOS Data European Node |
| ALOS | Advanced Land Observing Satellite |
| CEOS | Committee on Earth Observation Satellites |
| EO Help | Earth Observation Help Desk |
| GCP | Ground Control Points |
| JAXA | Japan Aerospace Exploration Agency |
| OCM | Orbit Control Manoeuvre |
| PDS | Payload Data Segment |
| PI | Principal Investigator |
| PRISM | Panchromatic Remote-sensing Instrument Stereo Mapping |
| QC | Quality Control |
| SPPA | Sensor Performance Products Algorithms |
| TOA | Top of Atmosphere |
| UT | Universal Time |

## 1.2 Reference Documents


| | |
|---|---|
| RD.1 | ALOS/AVNIR-2 Level 1 product format description Rev J - October, 2006 JAXA (NEB 00016) |
| RD.2 | Bouvet M., Goryl. P.,Santer R., Chander G., Saunier S, Preliminary radiometric calibration assessment of ALOS AVNIR-2 IGARSS 2007 proceedings |
| RD.3 | R-3 Saunier S., Goryl. P and al<br>The contribution of ESA to the ALOS PRISM / AVNIR-2 commissioning phase<br>IGARSS 2007 proceedings. |
| RD.4 | Saunier S., Goryl P<br>Final calibration / Validation report: PRISM Instrument<br>Issue 1 Rev 0 – July 2007 |


## 1.3 Background information

The PRISM instrument is an optical instrument part of the ALOS mission built by the Japanese Space Agency (JAXA).

The ALOS mission has its data 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.

The ADEN-ALOS team is responsible for the operation and maintenance of the data received in Europe and North Africa. The ADEN team took part in the Cal/Val 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.

Details on the commissioning phase will be uploaded onto the ALOS PCS website, which can be found: http://earth.esa.int/pcs/alos/

# 2 SUMMARY

**Cyclic Report:** 15

**Cycle Start:** 23 October 2007

**Cycle End:** 08 December 2007

The main issues during the cycle have been as follows:

- **Processor Version**

  Current PRISM processor version: 3.00

  See Section 3 for more information

# 3 SOFTWARE & AUX FILE VERSION CONFIGURATION

| Current Optical Processor Version | ESRIN | Matera | Tromso |
|---|---|---|---|
| 4.04 | 04/12/07 | 05/10/07 | |
| 3.00 | | | 20/08/07 |

**Table 3-1 PRISM Processing Versions**

The reason for this particular configuration of processor versions as listed in Table 3-1 is that the release of the v4.02 of the optical processor solved a number of problems with the previously installed v3.00. However the PRISM components of the processor experienced some issues with the newer version, and therefore, v3.00 was maintained at Tromso, while the updated version was installed at Matera and ESRIN. Subsequently, v4.02 has been upgraded to 4.04 in both ESRIN and Matera, but v3.00 is still maintained at Tromso.

Therefore, all PRISM products are generated using v3.00 of the optical processor.

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/avnir/userinfo/

# 4 PDS STATUS

## 4.1 Planned Instrument Unavailability

None reported during this cycle.

## 4.2 Unplanned Instrument Unavailability

None reported during this cycle.

## 4.3 Planned Instrument Unavailability

Information on the platform provided by JAXA:

None reported during this cycle.

## 4.4 ADEN PDS Unavailability

No periods of PDS unavailability reported during this cycle.

## 4.5 Periods of missing precision orbit data

For the periods described in Table 4-1, JAXA has announced that precision orbit data is missing.

| From (UT) | | To (UT) | | Reason |
|---|---|---|---|---|
| Date | Time | Date | Time | |
| Dec 7, 2007 | 17:13:00.000000 | Dec 7, 2007 | 18:17:00.000000 | Due to OCM |
| Nov 23, 2007 | 19:20:00.000000 | Nov 23, 2007 | 20:23:00.000000 | Due to OCM |
| Nov 10, 2007 | 08:52:00.000000 | Nov 10, 2007 | 09:56:00.000000 | Due to OCM |
| Oct 26, 2007 | 16:49:00.000000 | Oct 26, 2007 | 17:53:00.000000 | Due to OCM |

**Table 4-1 Missing Precision Orbit Data**

## 4.6 JAXA Observation Strategy

The JAXA observation strategy can be found:

http://www.eorc.jaxa.jp/ALOS/obs/overview.htm

# 5 DATA QUALITY CONTROL

## 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 on a weekly basis due to current data volumes.

139 products have been examined during the course of this cycle, and the only issue that has arisen is that a small number of the PRISM products have displayed almost complete saturation. This issue is currently being investigated by the ADEN QC team.

## 5.4 User Queries

An AVNIR-2 FAQ containing the common user requests can be found at on the ESA PCS website.

The link to this site is: http://earth.esa.int/pcs/alos/userinfo/

## 5.5 Image quality status

The image quality status monitoring that occurred during this period is split between Cyclic Report 13 and 16. See the corresponding sections in those reports for details.

## 5.6 Product Performance Monitoring

A report on the product performance monitoring activities that occurred during this period will be split between Cyclic Report 13, and the next Cyclic Report, 16. See the corresponding section in these reports for details.

# 6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS

The reports on the calibration and validation activities carried out during this period are included in Cyclic Report 13 and 16. See the corresponding sections in those reports for details.

## *6.1 MTF*

The information on this section is divided between Cyclic Report 13 and 16.

## *6.2 Stripe noise correction*

The information on this section is divided between Cyclic Report 13 and 16.

## *6.3 1B1 Product geolocation*

Section to be completed in future cycles

## *6.4 1B1 Image geometry accuracy*

Section to be completed in future cycles

## *6.5 Orbit stability – along track (ETH)*

Section to be completed in future cycles

## *6.6 Cross calibration with AVNIR-2*

Section to be completed in future cycles

# 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.

- 19-23 November 2007

The first join PI symposium of ALOS data nodes for the ALOS science program, Kyoto

http://www.prime-intl.co.jp/alos-pi2007/index.html

# APPENDIX A PRODUCT SPECIFICATION AS DETERMINED DURING THE ADEN VERIFICATION PERIOD

| PRISM | Radiometric accuracy | Geometric accuracy | | | |
|---|---|---|---|---|---|
| Level1B2R | Absolute: 5% (1σ) | **RMS** | **Pixel (CT)** | **Line (AT)** | **Norm** |
| | | **Nadir** | 5.9 m | 3.4 m | 6.8 m |
| | | **Forward** | 33 m | 85 m | 92.5 m |
| | | **Backward** | 6.8 m | 49.3 m | 49.7 m |
| | Intercomparison with AVNIR-2 (GAEL). | Polynomial coefficients embedded within product are used to predict geo location (GAEL). | | | |
| Digital surface model | | Vertical: 1.05m (1σ)<br>Horizontal: 2.34m (1σ)<br><br>Results obtained with five(5) ground control points and the used of Direct Georeferencing Model (ETH). | | | |

**PRISM Product specifications, radiometric and geometric accuracy**

| PRISM | Image Quality | | |
|---|---|---|---|
| Level 1B1 | MTF@Nyquist | **Pixel (CT)** | **Line (AT)** |
| | **Backward View** | 0.07 | 0.25 |
| | Non-parameteric approach - (ONERA). | | |

**PRISM Product specifications, image quality**