This is a PRISM image taken on the 11\textsuperscript{st} of June 2009 from frame 2815, orbit 18006 and path 347 (PSM_MMC_TP__0008390001).
## Approval

<table>
<thead>
<tr>
<th>Title/Titre</th>
<th>ADEN ALOS PRISM Cyclic Report – Cycle 35</th>
</tr>
</thead>
<tbody>
<tr>
<td>author/auteur</td>
<td>IDEAS Optical Team</td>
</tr>
<tr>
<td>approved by/approuvé par</td>
<td></td>
</tr>
</tbody>
</table>

## Change Log

<table>
<thead>
<tr>
<th>reason for change/raison du changement</th>
<th>issue/issue</th>
<th>revision/revision</th>
<th>date/date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial issue</td>
<td>1</td>
<td>0</td>
<td>25 June 2010</td>
</tr>
</tbody>
</table>
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7.1 Past Events:
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>
<tr>
<td>UT</td>
<td>Universal Time</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.4  Saunier S., Goryl P
      Final calibration / Validation report: PRISM Instrument
      Issue 1 Rev 0 – July 2007

RD.5  JAXA
      ALOS User Handbook
      November, 03, 2007 (NDX 070015)


      http://www.gael.fr/eoqc/alos_optical_mission/GAEL_PRES_004-ALOS-RHODES-MTF.pdf

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: 35
Cycle Start: 29 April 2010
Cycle End: 14 June 2010

The main issues during the cycle have been as follows:

1. notifications of emergency observation plan

During cycle 35, we could observe some notifications of emergency observation plan due to severe natural events. For PRISM sensor plans’ modification, events have been reported (Table 2-1).

<table>
<thead>
<tr>
<th>Observation Date</th>
<th>Observation Start Time</th>
<th>Observation Area</th>
<th>Alert Type</th>
<th>Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 13, 2010</td>
<td>UT 05:52</td>
<td>Pakistan (Figure 1.3-1)</td>
<td>Alert for dam collapse</td>
<td>PRISM (OB1)</td>
</tr>
<tr>
<td>June 2, 2010</td>
<td>UT 16:39</td>
<td>Guatemala (Figure 1.3-2)</td>
<td>Volcanic eruption / Flood</td>
<td>PRISM (OB2)</td>
</tr>
</tbody>
</table>

Table 2-1: Observation plan emergency notifications

Figure 1.3-1 Pakistan. Location of the emergency observation for PRISM (source: https://auig.eoc.jaxa.jp/auigs/)
2. AUIG information
   - [2010.06.17] System maintenance of AUIG: 23 May, 2010 4:00 ~ 6:00(UT)
   - [2010.06.11] Upgraded Processing Software Release Information
   - [2010.05.14] System maintenance of AUIG: 18 May, 2010 6:00 ~ 8:30(UT)

3. Extended Matera station antenna maintenance

I-PAF/PAC - Extended Matera station antenna maintenance

"The previously announced antenna maintenance at the Matera station has been extended and re-scheduled for the period 26 May - 18 June 2010. Operations may be affected for the Landsat-5 and ALOS missions whenever there is an acquisition conflict with other missions.” The following information has been noted in the EO Weekly Newsletter (28 May 2010 - Week 21/2010):
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>5.08</td>
<td>09/12/2009</td>
<td>09/12/2009</td>
<td>09/12/2009</td>
</tr>
</tbody>
</table>

Table 3-1: PRISM Processing Versions

- 2010.05.27 (CP) PRISM Pointing alignment parameters updated (Update version of May 26, 2010).
  - The ALOS core software processors Version 6.01 for AVNIR-2/PRISM (PRISM Pointing Alignment parameter) are now available in the ALOS Mission Operation Site. (Source: Hiroshi, Earth Observation Dept., Remote Sensing Technology Centre of Japan (RESTEC)).
3.1 **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 29 April 2010 to 14 June 2010 is reported in this document.

3.2 **Planned Instrument Unavailability**

For the periods described in Table 3-2, 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>Jun. 4, 2010</td>
<td>19:44:00.000000</td>
<td>Jun. 4, 2010</td>
</tr>
<tr>
<td>May 29, 2010</td>
<td>05:50:00.000000</td>
<td>May 29, 2010</td>
</tr>
<tr>
<td>May 22, 2009</td>
<td>09:19:00.000000</td>
<td>May 22, 2009</td>
</tr>
<tr>
<td>May 15, 2010</td>
<td>09:30:00.000000</td>
<td>May 15, 2010</td>
</tr>
<tr>
<td>May 07, 2010</td>
<td>17:13:00.000000</td>
<td>May 07, 2010</td>
</tr>
<tr>
<td>Apr. 30, 2010</td>
<td>22:21:00.000000</td>
<td>Apr. 30, 2010</td>
</tr>
</tbody>
</table>

Table 3-2: Planned Instrument unavailability

3.3 **Unplanned Instrument Unavailability**

For the periods described in Table 3-3, 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></td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td>Time</td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3-3: Unplanned Instrument Unavailability
3.4 **Current Platform Status**

Information on the platform provided by JAXA:

Current platform status: **Normal**

3.5 **Upcoming Instrument Unavailability**

For the periods described in Table 3-4, 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>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 3-4: Upcoming instrument unavailability*

3.6 **ADEN PDS Unavailability**

None reported during this cycle.

3.7 **Periods of missing precision orbit data**

For the periods described in Table, 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></td>
</tr>
<tr>
<td>Jun. 4, 2010</td>
<td>19:44:00.000000</td>
<td>Jun. 4, 2010</td>
</tr>
<tr>
<td>May 29, 2010</td>
<td>05:50:00.000000</td>
<td>May 29, 2010</td>
</tr>
<tr>
<td>May 22, 2009</td>
<td>09:19:00.000000</td>
<td>May 22, 2009</td>
</tr>
<tr>
<td>May 15, 2010</td>
<td>09:30:00.000000</td>
<td>May 15, 2010</td>
</tr>
<tr>
<td>May 07, 2010</td>
<td>17:13:00.000000</td>
<td>May 07, 2010</td>
</tr>
<tr>
<td>Apr. 30, 2010</td>
<td>22:21:00.000000</td>
<td>Apr. 30, 2010</td>
</tr>
</tbody>
</table>

*Table 3-5: Missing Precision Orbit Data*

**Operational events:** ALOS Ancillary Information:
ALOS Precision Orbit Data (POD) of May 2nd and 3rd, 2010 were replaced by modified one on May 13th. Then, precision orbit data (POD) for May 2nd and 3rd were re-distributed on May 13th. The POD for May 2nd have turned out to hold an error which was caused not by any equipment on the spacecraft but by a leap on the data provided by a GPS.
3.8 **Periods of missing precision attitude data**

For the periods described in Table 3-6, JAXA has announced that precision attitude data is missing.

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

Table 3-6: Missing Precision Attitude Data

3.9 **Periods lacking Yaw steering**

For the periods described in Table 3-7, 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 3-7: No Yaw steering

3.10 **JAXA Observation Strategy**

The JAXA observation strategy can be found at:

3.11 **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.

4 DATA QUALITY CONTROL

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

4.1 Instrument Related Anomalies

No reported anomalies this cycle.

4.2 Processor Related Anomalies

No reported anomalies this cycle.

4.3 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.

140 products have been examined during the course of this cycle.

1 type of anomaly, affecting 3 products, have been detected and reported. Section 4.4, in this report, displays these anomalies.

4.4 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.

<table>
<thead>
<tr>
<th>Scene ID</th>
<th>Inspection Date</th>
<th>Cloud %</th>
<th>Gain</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALPSMN221903335</td>
<td>15/06/2010</td>
<td>0-3</td>
<td>0.501</td>
<td>CCD Boundaries. Slight Saturation of Ground Features.</td>
</tr>
<tr>
<td>ALPSMF221903280</td>
<td>15/06/2010</td>
<td>0-3</td>
<td>0.501</td>
<td>CCD Boundaries. Slight Saturation of Ground Features.</td>
</tr>
<tr>
<td>ALPSMB221903390</td>
<td>15/06/2010</td>
<td>0-3</td>
<td>0.501</td>
<td>CCD Boundaries. Slight Saturation of Ground Features.</td>
</tr>
</tbody>
</table>

Table 4-1 : Anomalous products identified during browse inspections.
4.4.1 CASE OF CCD BOUNDARIES

CCD Boundaries are observed in 3 products listed in Table 4-1. CCD anomaly is illustrated by 3 scenes ALPSMN221903335, ALPSMF221903280, ALPSMB221903390 (Figure 4.4-1 to Figure 4.4-3).
These data should be recoverable; users are advised to contact EO Help and to be aware that the recovery process.

4.5 Anomaly report

In the previous cyclic report (ALOS-PRISM cycle n°34), we reported an anomaly on PRISM scene ALPSMN220014295. It’s a level 1B2 Georeferenced Imagery Acquired on the 12 of March 2010. An anomaly report has been delivered on KT site, during time period of cycle 35. In this section, we sum-up the analysis of the report.

4.5.1 SUMMARY

We have concluded that the signal observed could be an attitude perturbation impacting the scene (sections 4.5.2 and 4.5.3).

We have concluded that the origin of this perturbation can’t come from a raw wheel reaction, neither, because the product is a nadir scene and but a raw wheel doesn’t impact nadir scene (This has been reported in anomaly report (from May 18th 2010).

We suggest that the perturbations’ signature observed on product isn’t due to a blur effect, because frequency would be higher than the one estimated on product. (See section 4.5.5 in this report).
4.5.2 PRODUCT CHARACTERISTICS

Table 4-2 product characteristics

<table>
<thead>
<tr>
<th>View</th>
<th>Nadir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site</td>
<td>None</td>
</tr>
<tr>
<td>Latitude, Longitude (area)</td>
<td>34.492° South, 18.645° East, (South Africa)</td>
</tr>
<tr>
<td>Cycle</td>
<td>33</td>
</tr>
<tr>
<td>Processing level</td>
<td>B2R</td>
</tr>
<tr>
<td>Path</td>
<td>263</td>
</tr>
<tr>
<td>Orbit</td>
<td>22001</td>
</tr>
<tr>
<td>Frame</td>
<td>4295</td>
</tr>
<tr>
<td>Cloud</td>
<td>0-3</td>
</tr>
<tr>
<td>Gain</td>
<td>0.501</td>
</tr>
<tr>
<td>Compression Mode</td>
<td>2</td>
</tr>
<tr>
<td>Archive / Scene</td>
<td>PSM_MMC_IP__0003583001 / ALPSMN220014295</td>
</tr>
</tbody>
</table>

4.5.3 ANOMALY DISPLAY

A browse product of the image is shown in Figure 4.5-1.
Saturation of ground features are shown in red on Figure 4.5-1. 2 zooms on anomaly is shown in Figure 4.5-2.
Figure 4.5-1 Browse product of image taken from PSM_MMC_IP_0003583001 (scene ALPSMN220014295). Pin n° flags are shown. They were used to estimate the peak to peak distance between 2 successive perturbations. Pin numbers 1 to 6 to estimate the distance on x axis. Pin numbers greater than 6 to estimate the distance on Y axis.

Figure 4.5-2 Product of image taken from PSM_MMC_IP_0003583001 (scene ALPSMN220014295). Zoom on the structure of the perturbation. Pin n° flags are shown. They were used to estimate the peak to peak distance between 2 successive perturbations. Pin numbers 1 to 6 to estimate the distance on x axis. Pin numbers greater than 6 to estimate the distance on Y axis.
### 4.5.4 PERTURBATION STRUCTURES

**Table 4-3 order of magnitude of the perturbation**

<table>
<thead>
<tr>
<th>View</th>
<th>Nadir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site</td>
<td>None</td>
</tr>
<tr>
<td>Latitude, Longitude (area)</td>
<td>34.492° South, 18.645° East, (South Africa)</td>
</tr>
<tr>
<td>Periodicity on longitudinal axis (x axis)</td>
<td>160 pixels Indication in meter (m): 400 m</td>
</tr>
<tr>
<td>Periodicity on latitude axis (y axis)</td>
<td>Not representative of the perturbation structure. Perturbation is mainly on x axis. This default is not constant on y axis.</td>
</tr>
<tr>
<td>Maximum of perturbation area</td>
<td>Impacted central band size = 5129 pixels. (on x axis) Total distance range all over the scene =14770 pixels on x axis and 14015 pixels on y axis. Impact is visible over all the latitudes on image. Indication in km: Impacted central band size =12 km. (on x axis) Total distance range all over the scene =37 km on x axis Impact is visible over all the latitudes on image (35km).</td>
</tr>
</tbody>
</table>

| Archive / Scene       | PSM_MMC_IP__0003583001 / ALPSMN220014295 |

### 4.5.5 CAUSES AND CONSEQUENCES

**Blur effect or not?**

- On longitudinal x axis, the order of magnitude of the mean distance periodicity of the signal anomaly is 160 pixels (peak to peak distance)

- For PRISM sensor, the integration time is defined equal to $37.10^{-5}$ seconds. Its frequency is $2702.70$ Hertz (Hz). The longitudinal component of the perturbation of 160 pixels represents then a process of $0.0592$ seconds (16 Hz). That's high frequency signal.

- We notice that the maximum of perturbation impacts the centre of the scene. As if the perturbation was centered in the middle of the image and its propagation all over the scene trailed away on limit of the domain. For the border of the scene, the mean distance periodicity of the signal is of the order of 120 pixels.

- On latitude (Y) axis, there is no clear characteristic “default” period. We can notice, nevertheless a mean distance periodicity of the signal “anomaly” of the order of 600 pixels. As for the x axis, the phenomenon seems to trail away towards the borders of the scene.
With a signal periodicity of the order of several hundred meters, the anomaly comes from a small scale and high frequency phenomenon. To identify its nature, we have used calculus chart (source JAXA, courtesy of GAEL consulting) to link the studied signal period to the frequency using PRISM's integration time.

a) A perturbations’ period of 160 pixels for PRISM could be due Reaction wheel step or communication step (RDC step). But, the product we discussed is a nadir observation, and the wheel reaction anomaly doesn’t impact the nadir. So a wheel reaction can’t be the source of this anomaly.

b) Y axis shows a perturbations’ period of 600 pixels. Knowing the correspondence between frequency and some characteristic of instrumental and environmental phenomena, we link this latter periodicity to an attitude perturbation phenomenon.

Crossing results a) and b), we suggest a possible attitude perturbation impacting the scene. Hypothesis of a blur effect has been rejected because this latter effect is characterised by higher default periodicities.

4.5.6 CHECK OF THE NEAREST NEIGHBOUR’S SCENES

PRISM product in the neighbourhood of the detailed product (Table 4-2) have been ordered and checked to see if scenes in the vicinity of the product contain the described anomaly.

Scene over the Sea that is located further South of the discussed product is also affected by the same perturbation. On the contrary, scenes over the land, located further north of the product aren’t impacted by this phenomenon. Location of the 3 PRISM scenes can be found in Figure 4.5-3 and Figure 4.5-4. The 3 products can be found in From Table 4-3, we note that perturbation is observed only over the Ocean. When the sensor arrives over land pixels, the perturbation is not observed anymore.

Scene ALPSMF220014250 is located further south of ALPSMN220014295 (Table 4-3). The perturbation signal is characterised by a period line of the order of 60 pixels on x axis and no periodic structure on y axis. The area impacted by the perturbation is similar to the one described in the report. We note that the area of maximum of perturbations’ magnitude is located in the same band of longitude comparing to the product discussed in this report (PSM_MMC_IP__0003583001, scene ALPSMN220014295).

For PRISM sensor, a signal characterised by a period line of the order of 60 pixels represents a structure of 150 meters (time period= 0.02 seconds, frequency=45 Hz). This could be associated with a blur artefact due to a change of AVNIR-2 mirror that could impact PRISM observation. This point is under investigation to be able to find the reason of this perturbation on scene ALPSMF220014250.
Table 4-4.

Figure 4.5-3 Location of checked scenes using BEAM-VISAT software. Area south Africa. Below a zoom on this area.

Figure 4.5-4 Location of the 3 checked scenes using BEAM-VISAT software. South Africa area. Scene n°1: the offshore one ref. ALPSMF220014250; scene n°2 is the main topic of this report. Its scenes’ reference is ALPSMN220014295. Scene n°3 is the coastal one, ref. is ALPSMN220014290.

From Table 4-4, we note that perturbation is observed only over the Ocean. When the sensor arrives over land pixels, the perturbation is not observed anymore.

Scene ALPSMF220014250 is located further south of ALPSMN220014295 (Table 4-4). The perturbation signal is characterised by a period line of the order of 60 pixels on x axis and no periodic structure on y axis. The area impacted by the perturbation is similar to the one described in the report. We note that the area of maximum of perturbations’ magnitude is located in the same band of longitude comparing to the product discussed in this report (PSM_MMC_IP__0003583001, scene ALPSMN220014295).

For PRISM sensor, a signal characterised by a period line of the order of 60 pixels represents a structure of 150 meters (time period= 0.02 seconds, frequency=45
Hz). This could be associated with a blur artefact due to a change of AVNIR-2 mirror that could impact PRISM observation. This point is under investigation to be able to find the reason of this perturbation on scene ALPSMF220014250.
Table 4-PRISM products displays (visualisation tool is BEAM)

<table>
<thead>
<tr>
<th>Products’ ID / Scenes’ ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSM_MMC_IP__0003998001 / ALPSMN220014290 / the product located further North of ALPSMN220014295</td>
<td>2 dimensions referential</td>
</tr>
<tr>
<td></td>
<td><img src="image1" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products’ ID / Scenes’ ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSM_MMC_IP__0003583001 / ALPSMN220014295 / the product discussed in this report.</td>
<td>2 dimensions referential</td>
</tr>
<tr>
<td></td>
<td><img src="image2" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products’ ID / Scenes’ ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSM_MMC_IP__0004010002 / ALPSMF220014250 / the product located further South of ALPSMN220014295.</td>
<td>2 dimensions referential</td>
</tr>
<tr>
<td></td>
<td><img src="image3" alt="Image" /></td>
</tr>
</tbody>
</table>
4.6 **User Information**

A PRISM FAQ containing common user requests can be found on the ESA PCS website. The most recent version of this document can be found at: http://earth.esa.int/pcs/alos/prism/userinfo/

5 **CALIBRATION/VALIDATION ACTIVITIES & RESULTS**

- AVNIR-2 calibration values can be found in annex E of the FAQ. FAQ link is:
  
  http://earth.esa.int/download/alos/IDEAS-VEG-OQC-REP-0124 20ALOS 20OPTICAL 20FAQ.pdf
  
  FAQ (previous update: 15 January 2010).


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

- Geometric calibration

  1. Absolute accuracy

    |             | Pixel direction (cross track) | Line direction (along track) | Distance | No of GCPs | No of Scenes |
    |-------------|------------------------------|-----------------------------|----------|------------|-------------|
    | Nadir view  | 5.6 m                        | 5.3 m                       | 7.8 m    | 5,499      | 586         |
    | (RMS)       |                              |                             |          |            |             |
    | Forward view| 4.9 m                        | 6.1 m                       | 7.8 m    | 1,771      | 225         |
    | (RMS)       |                              |                             |          |            |             |
    | Backward view| 5.0 m                       | 7.1 m                       | 8.7 m    | 4,839      | 525         |

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

6 DISCLAIMERS

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
7 EVENTS

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

- June 28th - July 2nd 2010: ESA living Planet Symposium IDEAS Altimetry Team Meeting to be held in Bergen.
  → Symposium web site: http://www.congrex.nl/10a04/
- A new release of EOLI-SA (v 7.0.6) is available for download on the EOLI-SA web pages. From then on, users will be requested to perform the update in order to continue working with EOLI-SA. Further information on changes and new features will be available in the Release Notes for the new version (source: ESA EO Weekly Newsletter - 14 May 2010 - Week 19/2010).
  → http://earth.esa.int/EOLi/EOLi.html
- The following information has been noted in the EO Weekly Newsletter (28 May 2010 - Week 21/2010):
  I-PAF/PAC - Extended Matera station antenna maintenance
  “The previously announced antenna maintenance at the Matera station has been extended and re-scheduled for the period 26 May - 18 June 2010. Operations may be affected for the Landsat-5 and ALOS missions whenever there is an acquisition conflict with other missions.”
- ALOS simulation#18 (Cycle 36 –39)
  o Result files and statistics were delivered on May 27th.
- ALOS simulation#18 (Cycle 36 –39)
  o - Analysis Report and Adoption/Rejection information for Sim#18 will be available in June.

7.1 Past Events:

- April 14th, 2010: ALOS images cooperative with NASA are now available. The data sources are down-linked to NASA through its data-relay satellites TDRS.
- The EXTPS software at Kiruna has been changed, to the recently validated version (Information from Instrument Data quality Evaluation and Analysis Service):
- Starting from March 25, 2010 (absolute orbit 42176) Kiruna station is operating with a new version of EXTPS system. They have been validated by IDEAS team. The current Acquisition Systems at Kiruna-Salmijarvi Station is in version reference KSPT_L0/4400. Previous one is referred as KSPT_L0/4303. Starting from March
25, 2010, products are provided from the new system only (ref 4400). Considering that the switch to KSPT_L0/4400 has been performed at Kiruna-Salmijarvi Station (PDHS-K) only. Matera and PDHS-E station are still using the KSPT_L0/4303 version. Information will be given from Instrument Data quality Evaluation and Analysis Service after the EXTPS systems switch at those stations.

- The second stage of ALOS Simulation #18 for Cycle 36 – 39 has been cancelled as a result of coordination within JAXA. Currently, the simulation is running and the result files and statistics will be available in mid May. (Information from RESTEC Centre, 27th April 2010). For this simulation, following sensors and areas are added in the BOS for Simulation#18. <AVNIR-2> Cycle 36: E4, 5, 6 & 7.

- Apr. 20, 2010: ALOS Systematic Observation Strategy "PRISM" was updated (CYCLE35).

- RESTEC note: Downlink Segment Numbers (DLS#) for emergency observation plan are listed in Table 2-1.


- Acquisition plan at MATERA: (ref. MATE00000139073D, X1503287001-01 (AVNIR-2)) has been cancelled due to an emergency observation for floods in Hungary (March 6, 2010. Information provided by RESTEC Centre).

- Acquisition plan at MATERA: (ref. (MSPS00000139466D, X1506252001-01, Path 252, AVNIR-2 has been cancelled due to an emergency observation for the wind storm in France (March 9, 2010. Information provided by RESTEC Centre).

- Operational restriction: (information source: Masanobu Morioka, Earth Observation Dept. Remote Sensing Technology Centre of Japan (RESTEC))
  - Maintenance of data receiving facility at EOC (From 00:00 on Dec. 22\textsuperscript{nd} to 23:59 on Dec. 23\textsuperscript{rd} (UT)).

- Request files are due on January, 8\textsuperscript{th}. Result files will be available in late January.

- Result files and statistics of second stage of ALOS simulation #16 (Cycle 32 – 35) have been released on November 9th.

- Adoption/Rejection Information of Sim#16 Last Updated: November 17, 2009

- Two publications of Jaxa team concerning the AVNIR calibration are foreseen on IEEE, December 2009.

- ALOS simulation #17 (cycle 34 – 37) has been conducted. Otherwise, no change is made other than an exception for PRISM as follows:
  - \(<\text{Cycle 35}>\): C2 of PRISM changed from OB1 into OB2 from Sim#15.
- A publication from the JAXA team concerning the PRISM calibration is foreseen on IEEE in December 2009.

- ALOS Core Processing Software v5.08 for AVNIR-2/PRISM (PRISM Pointing Alignment Parameter) was released on December 09th. V5.08 includes an update to the PRISM Pointing Alignment Parameter in comparison to v5.04, the previous ALOS Core processing.

- ALOS Symposium:
  Nov. 9 - 13, 2009: 3rd Joint PI symposium of ALOS Data Nodes for ALOS Science Program in Kona, Hawaii, US.
  Details are available on site: http://www.asf.alaska.edu/pi_symp/

  Presentations in session dedicated to Calibration/Validation (November 9th 2009)

- ALOS simulation#15 (Cycle 31 – 40): Result files are available since Sep. 14th.
- ALOS Core Processing Software v5.09 for AVNIR-2/PRISM (PRISM Pointing Alignment Parameter) was released on October 15th.

  Modified Items:
  (1) Update of Processing Software
      - PRISM image abnormality appeared in GeoCoded images of ascending passes are resolved. [Ver_PSM_SW_Resamp(6.41)]
  (2) Update of Correction Parameter
      - PRISM Pointing Alignment parameter file (Update version of September30, 2009) (for PRISM) [Ver_PSM_PR_AlignmentParameter (6.44)]
  (3) Update of DEM data directory
      - None

- 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 v5.08 for AVNIR-2/PRISM (PRISM Pointing Alignment Parameter) was released on August 12th.
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 (Cycle 28 - 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.

11th Science Team meeting for ALOS Kyoto and Carbon Initiative, January 13 - 16, 2009 (Tue. - Fri.), JAXA.

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 Apr. 23, 2010
- Orbit manoeuvres conducted on Apr. 17, 2010
- Orbit manoeuvres conducted on Apr. 10, 2010
- Orbit manoeuvres conducted on Mar. 26, 2010
- Orbit manoeuvres conducted on Mar. 19, 2010
- Orbit manoeuvres conducted on March 12, 2010
- Orbit manoeuvres conducted on Feb. 27, 2010
- Orbit manoeuvres conducted on Feb. 20, 2009
- Orbit manoeuvres conducted on Feb. 12, 2010
- Data deficits (LSSR data acquisition 98.36%) on Feb. 10, 2010
- Orbit manoeuvres conducted on Jan. 29, 2010
- Due to calibration of STT/Precise Positioning Determination System on Jan. 27, 2010
- Orbit manoeuvres conducted on 5 and 12 December 2009
- Orbit manoeuvres conducted on 6, 13, 20, 28 November 2009
- Orbit manoeuvres conducted on 31 October 2009
- Orbit manoeuvres conducted on 2nd, 9 and 17 October 2009
- Orbit manoeuvres conducted on 25th September 2009
- 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:  5.08
Previous Version:  5.04
Modifications:

(4) Update of Processing Software
   • None

(5) Update of Correction Parameter
   • Table of Geometric correction information (Update version of October 20, 2008) (for AVNIR-2) [Ver_AV2.PR.GeometricModel (6.21)]

(6) Update of DEM data directory
   • None

Processor past events:
• 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/

• Recent information: on April 26th 2010, PRISM Pointing alignment parameters have been updated (Update version of Feb 3, 2010) Information from https://auig.eoc.jaxa.jp/auigs.

• 2010.04.27: Upgrade of processing software release at Kiruna station. The EXTPS software at Kiruna has been changed, to the recently validated version (Information from Instrument Data quality Evaluation and Analysis Service). Current Acquisition System at Kiruna - Salmijarvi station is in version KSPT_L0/4400 (refer to section 7 in this report for more details).

• CFI version changed in processor version 5.08 for processing PRISM products. Current CFI is in configuration 6.4. Previous one was version 6.1.

• 2010.04.26: Sensor alignment parameters of the current geometric model have changed.

• 2010.04.15: System maintenance of AUIG: 22 April, 2010 7:00 ~ 22 April, 2010 8:00(UT).

• 2010.02.04 (CP) PRISM Pointing alignment parameters updated (Update version of February 3, 2010)

• 2010.03.31: Upgraded Processing Software Release Information.
2010.03.30 (CP) PRISM Pointing alignment parameters updated (Update version of March 24, 2010)