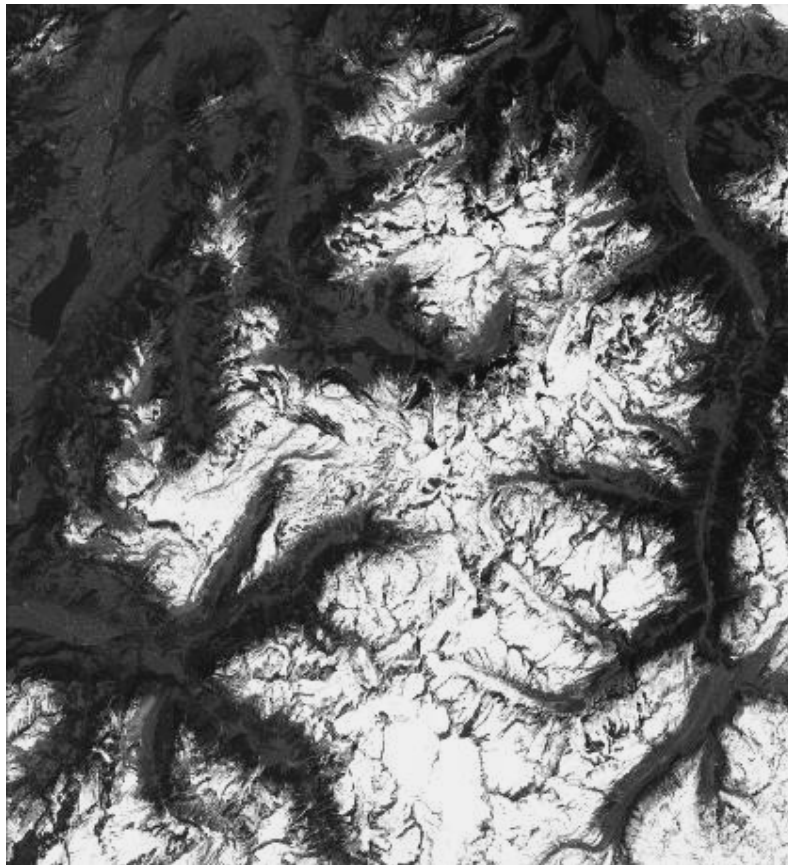


ADEN ALOS – PRISM CYCLIC REPORT
CYCLIC REPORT #21
25 JULY 2008 TO 09 SEPTEMBER 2008



This PRISM image taken from the forward view frame 2600 of orbit 6613 shows a portion of the Urner Alps, Switzerland.

prepared by/*préparé par* IDEAS Optical Team
reference/*référence* PRISM_CR_21_080725_080909
issue/*édition* 1
revision/*révision* 0
date of issue/*date d'édition* 22 September 2008
status/*état*
Document type/*type de document* Technical Note
Distribution/*distribution*

A P P R O V A L

Title <i>titre</i>	ADEN ALOS PRISM Cyclic Report – Cycle 21	issue 1 <i>issue</i>	revision 0 <i>revision</i>
-----------------------	--	-------------------------	-------------------------------

author <i>auteur</i>	IDEAS Optical Team	date 22 <i>date</i> September 2008
-------------------------	--------------------	--

approved by <i>approuvé par</i>		date <i>date</i>
------------------------------------	--	---------------------

C H A N G E L O G

reason for change / <i>raison du changement</i>	issue/ <i>issue</i>	revision/ <i>revision</i>	date/ <i>date</i>
Initial Issue	1	0	22 September 2008

T A B L E O F C O N T E N T S

PRISM CYCLIC REPORT # 21	1
1 INTRODUCTION	1
1.1 Acronyms and Abbreviations	1
1.2 Reference Documents	2
1.3 Background information	2
2 SUMMARY	4
3 SOFTWARE & AUX FILE VERSION CONFIGURATION	5
4 PDS STATUS	6
4.1 Planned Instrument Unavailability	6
4.2 Unplanned Instrument Unavailability	6
4.3 Current Platform Status	7
4.4 Upcoming Instrument Unavailability	7
4.5 ADEN PDS Unavailability	7
4.6 Periods of missing precision orbit data	7
4.7 Periods of missing precision attitude data	7
4.8 Periods lacking Yaw steering	8
4.9 JAXA Observation Strategy	8
4.10 Artefact repositories	8
5 DATA QUALITY CONTROL	9
5.1 Instrument Related Anomalies	9
5.2 Processor Related Anomalies	9
5.3 Daily Report Issues	9
5.4 Visual Inspection Report Issues	9
5.5 User Queries	11
5.6 Product Performance Monitoring	11
5.6.1 1b1 product geolocation results	11
5.6.2 1b2 product geolocation trend	12
5.6.3 MTF Monitoring	12
6 CALIBRATION/VALIDATION ACTIVITIES & RESULTS ERROR! BOOKMARK NOT DEFINED.	
6.1 Geometry and orbit stability	Error! Bookmark not defined.
6.2 Cross calibration PRISM / AVNIR-2	Error! Bookmark not defined.
7 DISCLAIMERS	13

8	EVENTS	14
8.1	Past Events.....	14
	APPENDIX A PRODUCT SPECIFICATION AS DETERMINED DURING THE ADEN VERIFICATION PERIOD	15
	APPENDIX B INSTRUMENT ANOMALIES	16

PRISM CYCLIC REPORT # 21

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*

ADEN	ALOS Data European Node
ALOS	Advanced Land Observing Satellite
AVNIR-2	Advanced Visible and Near Infra-red Radiometer Type-2
CEOS	Committee on Earth Observation Satellites
DoM	Day of Mission
EO Help	Earth Observation Help Desk
GCP	Ground Control Points
IDEAS	Instrument Data quality Evaluation and Analysis Service
JAXA	Japan Aerospace Exploration Agency
OCM	Orbit Control Manoeuvre
PCS	Product Control Service
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	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)
RD.6	Gruen A., Kocaman S., Wolff K., 2007. Calibration and Validation of Early ALOS/PRISM Images. The Journal of the Japan Society of Photogrammetry and Remote Sensing, Vol 46, No. 1, pp. 24-38.
RD.7	J Takaku, T Tadono And M Shimada, "High Resolution DSM Generation From ALOS PRISM Calibration Updates", Proc Of Igarss08, Boston, 2008.

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: 21

Cycle Start: 25 July 2008

Cycle End: 09 September 2008

The main issues during the cycle have been as follows:

- **Processor Version**

Current PRISM processor version: 4.05

See Section 3 for install dates of ADEN processors.

3 SOFTWARE & AUX FILE VERSION CONFIGURATION

Current Optical Processor Version	ESRIN	Matera	Tromso
4.05	09/01/08	14/02/08	18/06/08

Table 3-1 AVNIR-2 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 4.05 of the optical processor is given in Appendix C.

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 01/08/2008 to 31/08/2008 is reported on in this document.

3.1 Planned Instrument Unavailability

For the periods described in Table 3-2, JAXA has announced planned instrument unavailability.

From (UT)		To (UT)		Reason
Date	Time	Date	Time	
Jul. 29 th , 2008	22:26	Jul. 31 st , 2008	05:42	Inclination and related in plane OCM
Aug. 2 nd , 2008	14:27	Aug. 3 rd , 2008	06:05	OCM
Aug. 5 th , 2008	14:02	Aug. 5 th , 2008	18:08	OCM
Aug. 8 th , 2008	19:21	Aug. 8 th , 2008	23:28	OCM

Table 3-2 Planned instrument unavailability

3.2 Unplanned Instrument Unavailability

None reported during this cycle.

3.3 *Current Platform Status*

Information on the platform provided by JAXA:

Current platform status: **Normal**.

3.4 *Upcoming Instrument Unavailability*

For the periods described in Table 3-3, JAXA has announced planned instrument unavailability.

From (UT)		To (UT)		Reason
Date	Time	Date	Time	
None				

Table 3-3 Upcoming instrument unavailability

3.5 *ADEN PDS Unavailability*

None reported during this cycle.

3.6 *Periods of missing precision orbit data*

For the periods described in Table 3-4, JAXA has announced that precision orbit data is missing.

From (UT)		To (UT)		Reason
Date	Time	Date	Time	
Jul. 30th, 2008	05:45:00.00	Jul. 30th, 2008	22:24:00.00	OCM
Aug. 2nd, 2008	19:15:00.00	Aug. 2nd, 2008	21:15:00.00	OCM
Aug. 5th, 2008	15:09:00.00	Aug. 5th, 2008	16:13:00.00	OCM
Aug. 8th, 2008	21:45:00.00	Aug. 8th, 2008	22:49:00.00	OCM

Table 3-4 Missing Precision Orbit Data

3.7 *Periods of missing precision attitude data*

For the periods described in Table 3-5, JAXA has announced that precision attitude data is missing.

From (UT)		To (UT)		Reason
Date	Time	Date	Time	
Jul. 30 th , 2008	14:00:00.00	Jul. 30 th , 2008	18:10:52.00	OCM
Aug. 2 nd , 2008	00:00:00.00	Aug. 2 nd , 2008	01:53:00.00	OCM
Aug. 5 th , 2008	15:05:00.00	Aug. 5 th , 2008	23:59:59.00	OCM
Aug. 8 th , 2008	00:40:00.00	Aug. 8 th , 2008	23:20:00.00	OCM

Table 3-5 Missing Precision Attitude Data

3.8 *Periods lacking Yaw steering*

For the periods described in Table 3-6, JAXA has announced that Yaw steering was not available.

From (UT)		To (UT)		Reason
Date	Time	Date	Time	
None				

Table 3-6 No Yaw steering

3.9 *JAXA Observation Strategy*

The JAXA observation strategy can be found at:
<http://www.eorc.jaxa.jp/ALOS/obs/overview.htm>

3.10 *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.

<http://www.eorc.jaxa.jp/en/about/distribution/info/alos/characteristics.html>

4 DATA QUALITY CONTROL

4.1 *Instrument Related Anomalies*

No reported anomalies this cycle.

4.2 *Processor Related Anomalies*

A workreport warning (1092102W) is observed in PRISM products distributed since the processor upgrade. This is currently under investigation.

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.

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

PRISM products which exhibit areas of missing data have been distributed. The cause of this is under investigation in coordination with the processing facility. A warning is observed in the work reports of these products, this warning relates to the JPEG frame extractor.

4.4 *Visual Inspection Report Issues*

During the past cycle, visual inspections have been undertaken on a selected sample of PRISM products. The following issues have been identified:

4.4.1 MISSING DATA IN 1B2R PRODUCT

- PRISM products affected by missing data have been observed; the cause is under investigation and is currently suspected to be related to the ingestion of the L0 data.
 - The affected products were processed with version 4.05 of the optical processor, at ESRIN and Tromsøe.

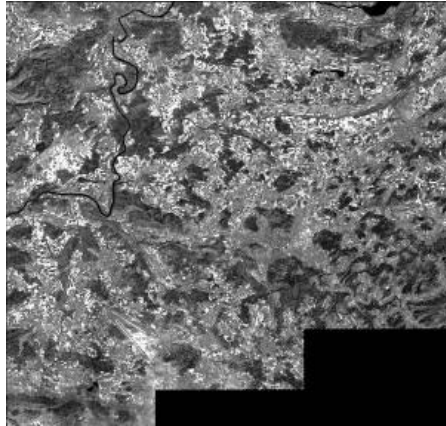


Figure 4.1 - Nadir View, Georeferenced PRISM image from frame 2640, orbit 6613 which shows sections of missing data.

4.4.2 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.

4.4.3 CCD BOUNDARIES

- CCD Boundaries continue to be observed in 1B2 products, an example of which is given in Figure 4.2. This image is taken from the level 1B2G product from frame 2620 of orbit 6234 in the backward view.

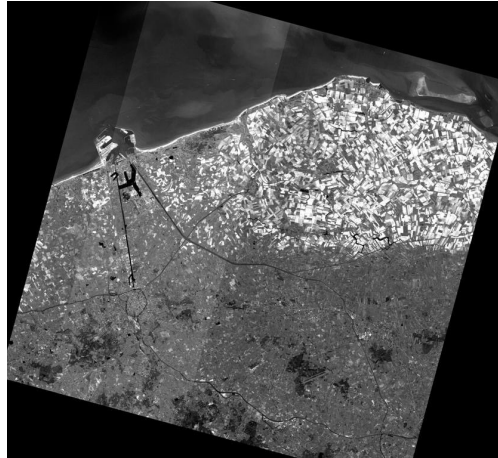


Figure 4.2 - Intercamera boundaries can be observed.

- These effects are also observed in 1B2R products and in the Nadir and Forward views. It is assumed this is because the equalization between CCDs has not been performed as expected. This anomaly continues to be routinely observed.

4.5 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/>

A new product specification document has been released. The results of this are presented in Appendix A.

4.6 Product Performance Monitoring

4.6.1 1B1 PRODUCT GEOLOCATION RESULTS

No result for this reporting period.

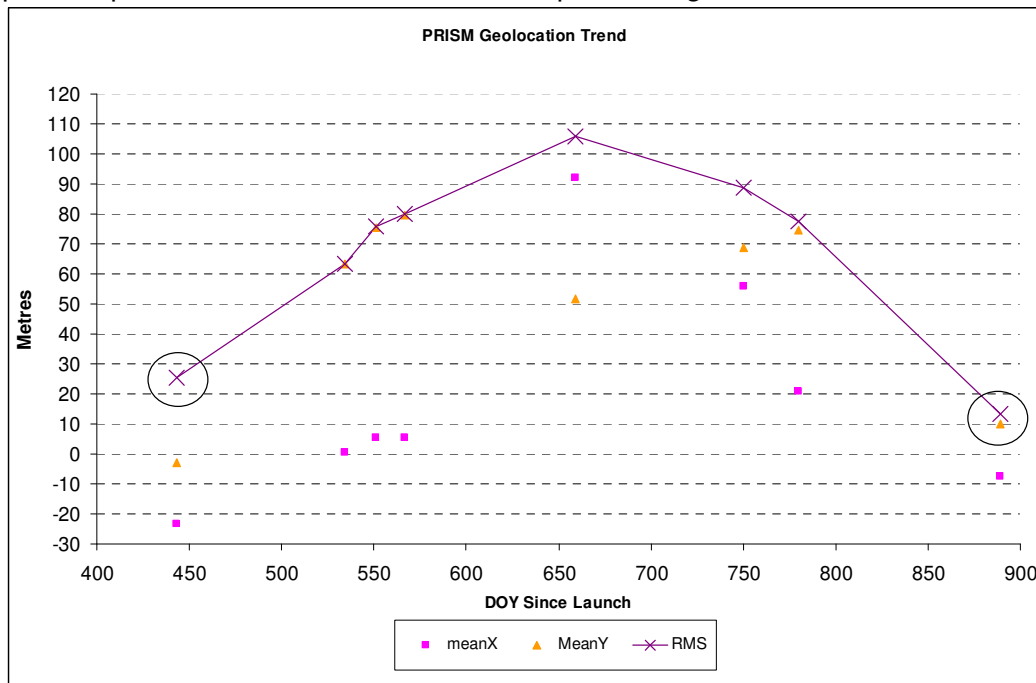
4.6.2 1B2 PRODUCT GEOLOCATION TREND

The product geo-location trend magnifies that the accuracy of ADEN PRISM product has dramatically improved with time.

Regarding the methodology, the trend is based on a set of products observed over La Crau (France). The assessment is performed using the same set of ground control points to make the multi-temporal analysis more consistent.

The last product assessed has been processed with the processing s/w version 4.05. Its geo-location accuracy reaches the goal of 13.484 m RMS and becomes below the first measurement (DOY450) taken just after the end of the commissioning phase.

Actually, the first measurement was considered as a reference because it was a product processed at JAXA – EORC with processing s/w 4.05 as well.



Geolocation trend up to DOY 900 since launch.

4.6.3 MTF MONITORING

No result for this reporting period.

5 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_setsumeai/alos_renraku_e.html

6 EVENTS

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

- The second ALOS PI Symposium will be taking place from the 3rd to the 7th of November in Rhodes, Greece. For more information, please see <http://earth.esa.int/ALOS2008>.
 - Note that the deadline for abstract submission was June 15 2008.
 - The deadline for full paper submission is November 3 2008.
- ALOS Simulations:
 - 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 is 25/09/2008. This simulation covers the period 10/12/2008 to 11/06/2008.

6.1 *Past Events*

- 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 available at: <http://earth.esa.int/pcs/alos/>
- 29 January 2008: Users are now able to submit orders for ALOS future acquisitions via EOLI-SA (email eohelp@esa.int for more information)
- ALOS simulation #8 for Cycle 18-21
 - The results of the second stage simulation were made available by JAXA on Feb.4th.
 - The Analysis Report on ALOS simulation #8 was delivered by JAXA on Feb.12th.

APPENDIX A PRODUCT SPECIFICATION

PRISM	Radiometric accuracy	Geometric accuracy			
Level1B2R	Absolute: 5% (1 σ)	RMS	Pixel (CT)	Line (AT)	Norm
		Nadir	8 m	10 m	13 m
		Forward	11 m	30 m	33 m
		Backward	7 m	28 m	29 m
	Agreement with AVN has been demonstrated	Polynomial coefficients embedded within product are used to predict geo location (GAEL).			
Digital surface model		Vertical: 1.05m (1 σ) Horizontal: 2.34m (1 σ) 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	0.2565	0.12412
	Nadir View	0.1558	0.1345
	Forward View	0.1527	0.14868
	Non-parameteric approach - (GAEL). Depends on the CCD Number		

PRISM Product specifications, image quality

APPENDIX B 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).

- 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
- Orbit manoeuvres conducted on 15th December 2007, 4th, 11th & 18th 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 25th, 27th and 29th April 2007.
- 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 – 21:57UT (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 C PROCESSOR UPDATE SUMMARY

Upgrade Version: 4.05

Previous Version: 4.04

Modifications:

(1) Update of Processing Software

- Update radiometric correction algorithm of PRISM Level 1 processing:
Reduction of stripe noises (Vertical stripe)
- The correspondence of the phenomenon that filter processing is terminated abnormally [Ver_PSM_SW_Radco="5.03"]]

(2) Update of Correction Parameter

- Update radiometric correction algorithm of PRISM Level 1 processing:
Reduction of stripe noises (Vertical stripe)
[Ver_PSM_PR_CalConstant=5.01]
- PRISM Pointing Alignment parameter file (Update version of October 25, 2007)
(for PRISM) [Ver_PSM_PR_AlignmentParameter="5.05"]

(3) Update of DEM data directory

None

Comments:

None