



MONTHLY OPERATIONS REPORT

MOR#023

Reporting period from 16-Oct-2015 to 15-Nov-2015

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1. Summary

In the past month, nearly all syntheses were complete. The majority of the data gaps are caused by decompression errors, which only have a negligible impact on end products. One synthesis shows a large gap, four a medium gap; all other syntheses have minor or negligible gaps.

An investigation is still ongoing to correct the misplaced header pointers in order to avoid the multiple daily decompression errors that we experience in the data.

In this reporting period, one transfer frame files was missing due to an antenna malfunction.

Furthermore, a new release of the PF module was done to embed the missing % of pixels in the reporting, but needs some fine-tuning before results will be taken into the monthly reports.

There were no major issues with the image quality during this reporting period, both for radiometric as geometric quality.

2. System Infrastructure

Category	% Up Time	% Down Time
Switches	100.0	0.0
Database Servers	100.0	0.0
Mid Term File Servers	100.0	0.0
Short Term File Servers	99.99	0.01 ^(*)
Master Servers	100.0	0.0
Worker Nodes	100.0	0.0
PDF	100.0	0.0

Table 1: System Infrastructure availability for this reporting period

(*) Downtime on STFS servers due to planned maintenance

3. Image Processing Services

3.1. Ingested and archived products

Product Type	Total	Received	Missing data, ingested by VITO	Archived
METEO	247	247		247
TFF	311	310	1 ^(*)	310

Table 2: Ingested and archived products for this reporting period

(*) 1 Missing TFF (TFF 07841): Antenna scheduled for pass did not move

3.2. Generated and archived products

Product Type	Total	Processed	Error	Archived
PROBAV_L1A - Calibration	444	444		444
PROBAV_L1A - Nominal	2585	2584	1	2585
PROBAV_L1C	2584	2584		2584
PROBAV_L3_S1_TOA_100M	31	31		31
PROBAV_L3_S1_TOC_100M	31	31		31
PROBAV_L3_S1_TOC_NDVI_100M	31	31		31
PROBAV_L3_S5_TOA_100M	6	6		6
PROBAV_L3_S5_TOC_100M	6	6		6
PROBAV_L3_S5_TOC_NDVI_100M	6	6		6
PROBAV_L3_S1_TOA_300M	31	31		31
PROBAV_L3_S1_TOC_300M	31	31		31
PROBAV_L3_S10_TOC_300M	3	3		3
PROBAV_L3_S10_TOC_NDVI_300M	3	3		3
PROBAV_L3_S1_TOA_1KM	31	31		31
PROBAV_L3_S1_TOC_1KM	31	31		31
PROBAV_L3_S10_TOC_1KM	3	3		3
PROBAV_L3_S10_TOC_NDVI_1KM	3	3		3

Table 3: Generated and archived products for this reporting period

(*) 1x missing strips for RawSegment_PROBAV#3_20151103124913_L1A_V001



3.3. Backup and archiving service

Product type	Total Files	Total File Size (GB)
TFF	301	780.48
L1A	2948	1385.13
Database transaction logs	958	61.54
Database incremental back-up	80	35.84
Database full back-up	35	728.94

Table 4: Back-up data volumes for this reporting period

Product type	Total Files	Total File Size (GB)
PROBAV_TRANSFERFRAMES	309	863.04
PROBAV_L1A	3034	1531.47
PROBAV_L1C	2586	2856.67
PROBAV_L3_S1_TOA_100M	150	4020.59
PROBAV_L3_S1_TOC_100M	160	4455.64
PROBAV_L3_S1_TOC_NDVI_100M	136	418.14
PROBAV_L3_S5_TOA_100M	29	2859.79
PROBAV_L3_S5_TOC_100M	32	3242.66
PROBAV_L3_S5_TOC_NDVI_100M	28	338.85
PROBAV_L3_S1_TOA_300M	190	2360.12
PROBAV_L3_S1_TOC_300M	258	3225.34
PROBAV_L3_S10_TOC_300M	10	193.60
PROBAV_L3_S10_TOC_NDVI_300M	10	18.01
PROBAV_L3_S1_TOA_1KM	139	212.33
PROBAV_L3_S1_TOC_1KM	153	238.34
PROBAV_L3_S10_TOC_1KM	10	26.47
PROBAV_L3_S10_TOC_NDVI_1KM	12	2.61
ICP_GEOMETRIC_CENTRE	1	0.01
ICP_GEOMETRIC_LEFT	1	0.01
ICP_GEOMETRIC_RIGHT	1	0.01
ICP_RADIOMETRIC_CENTRE	1	0.04
ICP_RADIOMETRIC_LEFT	1	0.04
ICP_RADIOMETRIC_RIGHT	1	0.04
METEO_ECMWF	248	0.31
METEO_METEOSERVICES	247	1.32
POLARMOTION	1	0.00

Table 5: Archived data volumes for this reporting period

3.4. Dissemination service

Product type	Added to catalogue	Ordered	Delivered
PROBAV_L1C	2592	136	662
PROBAV_L3_S1_TOA_100M	32	129	140
PROBAV_L3_S1_TOC_100M	31	437	640
PROBAV_L3_S1_TOC_NDVI_100M	30	1124	1015
PROBAV_L3_S5_TOA_100M	6	1	5
PROBAV_L3_S5_TOC_100M	6	931	1009
PROBAV_L3_S5_TOC_NDVI_100M	6	464	542
PROBAV_L3_S1_TOA_300M	32	275	290
PROBAV_L3_S1_TOC_300M	32	3519	3437
PROBAV_L3_S10_TOC_300M	3	68	72
PROBAV_L3_S10_TOC_NDVI_300M	3	43	72
PROBAV_L3_S1_TOA_1KM	32	148	287
PROBAV_L3_S1_TOC_1KM	32	185	194
PROBAV_L3_S10_TOC_1KM	3	205	207
PROBAV_L3_S10_TOC_NDVI_1KM	3	282	286

Table 6: Ordered and delivered products for this reporting period

3.5. End-user activity

25 new user(s) were registered in this reporting period.

The total number of users registered for PROBA-V data and that have ordered data is **612** with **89** different nationalities representing **489** different companies/universities.

Product type	Africa	Asia	Europe	N-America	Oceania	S-America
PROBAV_L1C			1446.90			
PROBAV_L3_S1_TOA_100M			34.41			
PROBAV_L3_S1_TOC_100M		681.35	734.43			0.02
PROBAV_L3_S1_TOC_NDVI_100M		47.50	0.54			
PROBAV_L3_S5_TOA_100M		0.34	1.73			
PROBAV_L3_S5_TOC_100M	28.03	10.58	2607.97	1057.22		27.52
PROBAV_L3_S5_TOC_NDVI_100M		45.50	17.38			0.57
PROBAV_L3_S1_TOA_300M		0.30	1196.07			0.32
PROBAV_L3_S1_TOC_300M		588.66	3415.95			7.27
PROBAV_L3_S10_TOC_300M	3.64	3.62	126.28			0.03
PROBAV_L3_S10_TOC_NDVI_300M	0.63	1.12	0.72			0.05
PROBAV_L3_S1_TOA_1KM	0.14	0.02	118.64	0.02		

PROBAV_L3_S1_TOC_1KM	0.14	0.04	205.55	0.00		
PROBAV_L3_S10_TOC_1KM	0.65	0.21	215.81	17.00		
PROBAV_L3_S10_TOC_NDVI_1KM	1.08	0.08	13.16			0.00

Table 7: Data download (GB) in total per Origin of the User for the reporting period

Product Type	Global
L1C	1446.90
PROBAV_L3_S1_TOA_100M	34.53
PROBAV_L3_S1_TOC_100M	1415.80
PROBAV_L3_S1_TOC_NDVI_100M	48.04
PROBAV_L3_S5_TOA_100M	2.07
PROBAV_L3_S5_TOC_100M	3731.32
PROBAV_L3_S5_TOC_NDVI_100M	63.45
PROBAV_L3_S1_TOA_300M	1196.69
PROBAV_L3_S1_TOC_300M	4072.19
PROBAV_L3_S10_TOC_300M	133.56
PROBAV_L3_S10_TOC_NDVI_300M	2.53
PROBAV_L3_S1_TOA_1KM	118.81
PROBAV_L3_S1_TOC_1KM	205.72
PROBAV_L3_S10_TOC_1KM	233.66
PROBAV_L3_S10_TOC_NDVI_1KM	14.32

Table 8: Data download (GB) in total for the reporting period

Company	# of downloaded products
RADI	2603
Institute of Remote Sensing and Digital Earth	1555
VITO	818
RBINS	539
Wageningen University	429
Space Research Institute RAS (IKI RAN)	262
Universite catholique de Louvain	261
IFSULDEMINAS	223
Infoterra	169
VUB	164

Table 9: Top 10 user companies for the reporting period



Company	# of registered users
BELGIUM	63
CHINA	49
ITALY	33
FRANCE	27
UNITED KINGDOM	26
BRAZIL	26
UNITED STATES	24
NETHERLANDS	22
INDIA	20
ARGENTINA	18

Table 10: Top 10 countries with most registered users

List of issues raised by users:

ProbaV:

- problems converting HDF5 downloads
- Request for PROBA-V RSR
- Request for S1 TOA 300m information on cloud and snow percentage
- PROBA-V 300 m syntheses: Percent of cloud cover and snow cover.

PDF portal:

- forgotten username/password (2x)
- not authorization to access PROBA-V data
- NDVI data request and creating account
- tab missing in product portal?
- password forgotten
- Order "M0148030"
- Grid data formats, geoservices and near real time data cost.
- Non downloadable files (files for the ROI, but without link for downloading).

4. Image Calibration services

4.1. Radiometric Calibration

Calibration request type	Total	Processed	Not received	Error
CLOUDS	28	20	8	0
DARK CURRENT	37	27	10	0
MOON	1	1	0	0
RAYLEIGH	86	58	28	0
SNOW				
SUN_GLINT	89	48	41	0

Table 11: Calibration Image requests for this reporting period

Calibration image type	Total	Valid	Invalid
PROBA_V_L1A_CALIBRATION	1	1	0
PROBA-V_L1B_CALIBRATION	443	274	41
PROBA-V_L1B_INTERSECTION	704	409	295
PROBA-V_L1B_OVERLAPREGION	0	0	0

Table 12: Processed calibration images for this reporting period

(*) Due to insufficient overlap with the calibration region of interest, not enough pixels (e.g. clouds contamination), site not sufficiently uniform (illumination), etc.

Long-term monthly Libya-4 mean plots for different cameras are given in Figure 1, Figure 2 and Figure 3. Deep convective clouds interband calibration results are given in Figure 4.

A slight increase in the Libya-4 desert calibration results for the BLUE strips of the LEFT camera is observed; while for the VNIR strips of the CENTER and RIGHT cameras a decrease is observed. As similar seasonal patterns were also observed in 2013 and 214; it is thought to be a model/aerosol related seasonal uncertainty. Furthermore the trend is not confirmed by the other calibration methods (ie DCC, Rayleigh, Moon). Therefore it is decided to not yet update the ICP absolute calibration parameters, but to closely follow the trend during the next months.

An update of the dark current values will therefore be done in the next days. Furthermore the status of the following SWIR pixel will be changed to BAD: CENTER SWIR3 pixel 994.

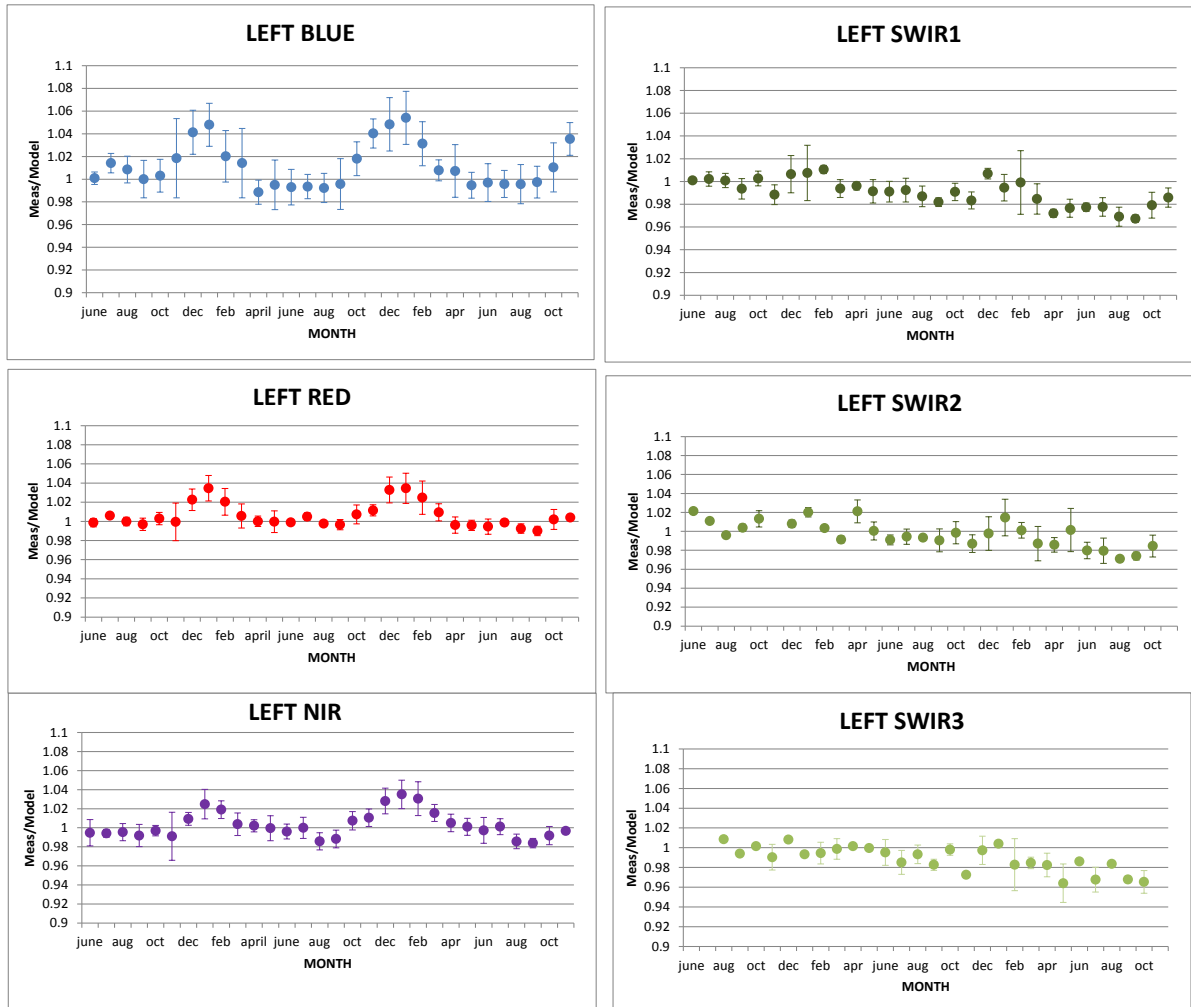


Figure 1. Libya-4 desert calibration results: LEFT monthly averaged results

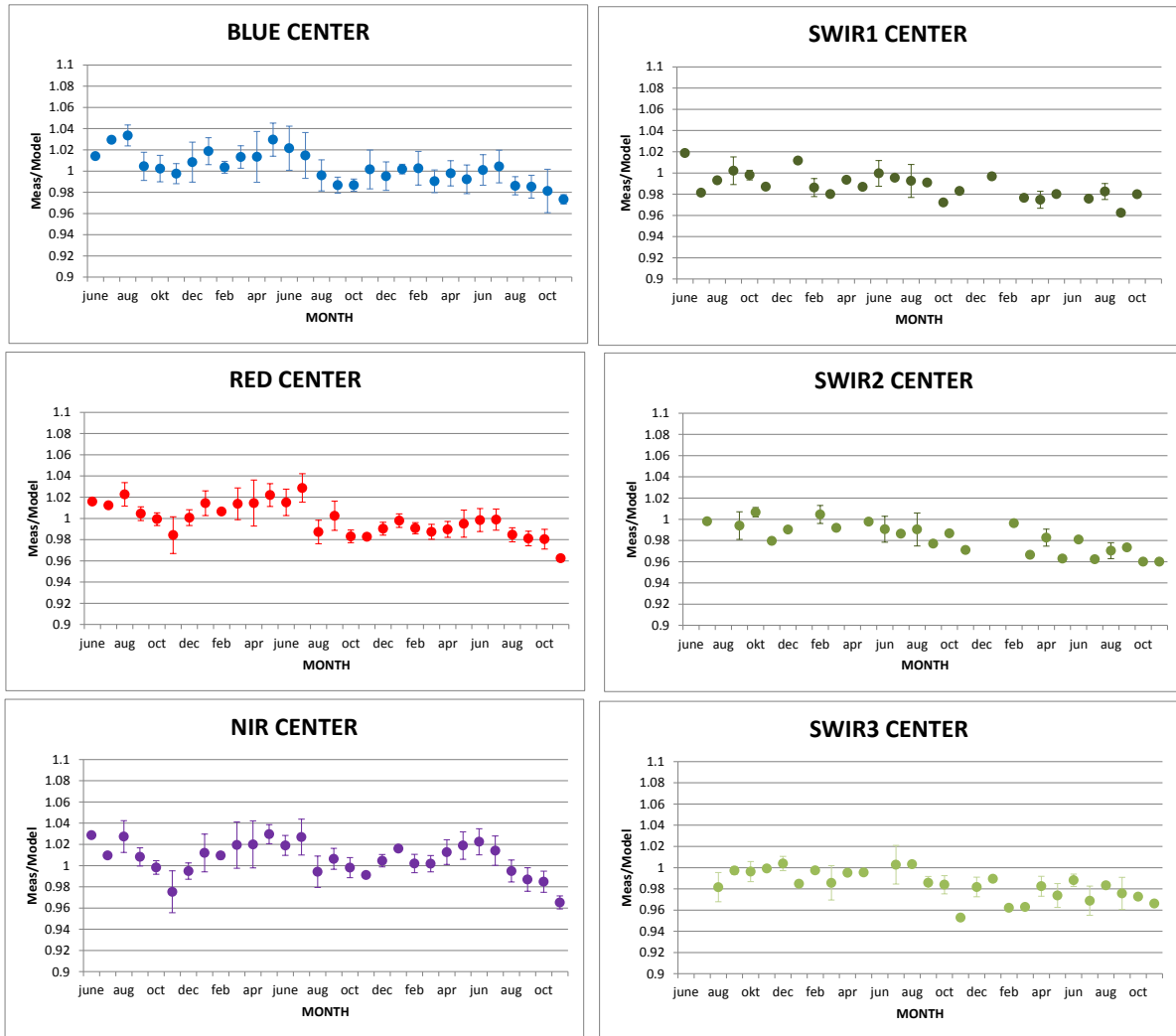


Figure 2. Libya-4 desert calibration results: CENTER monthly averaged results

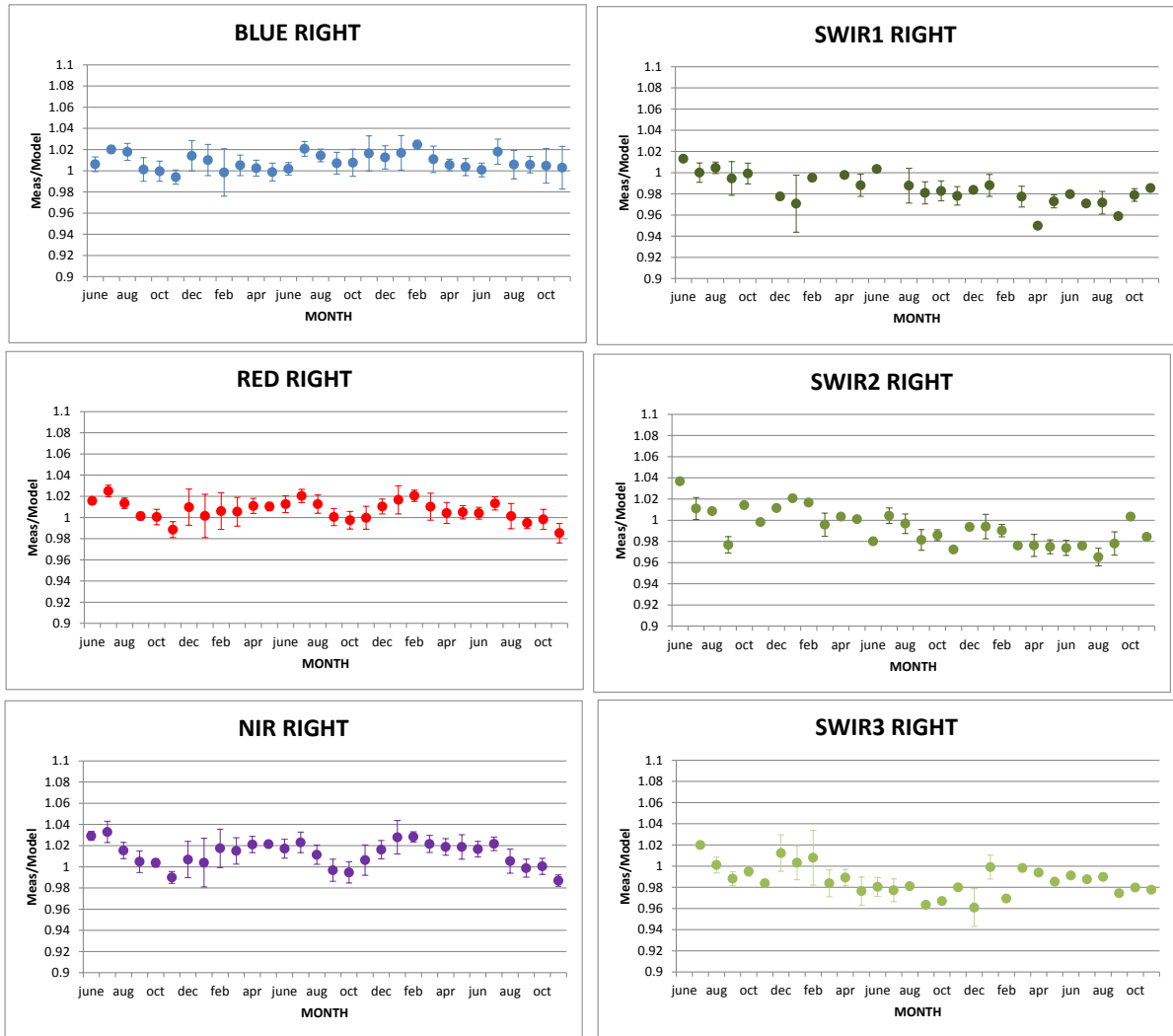


Figure 3. Libya-4 desert calibration results: RIGHT monthly averaged results

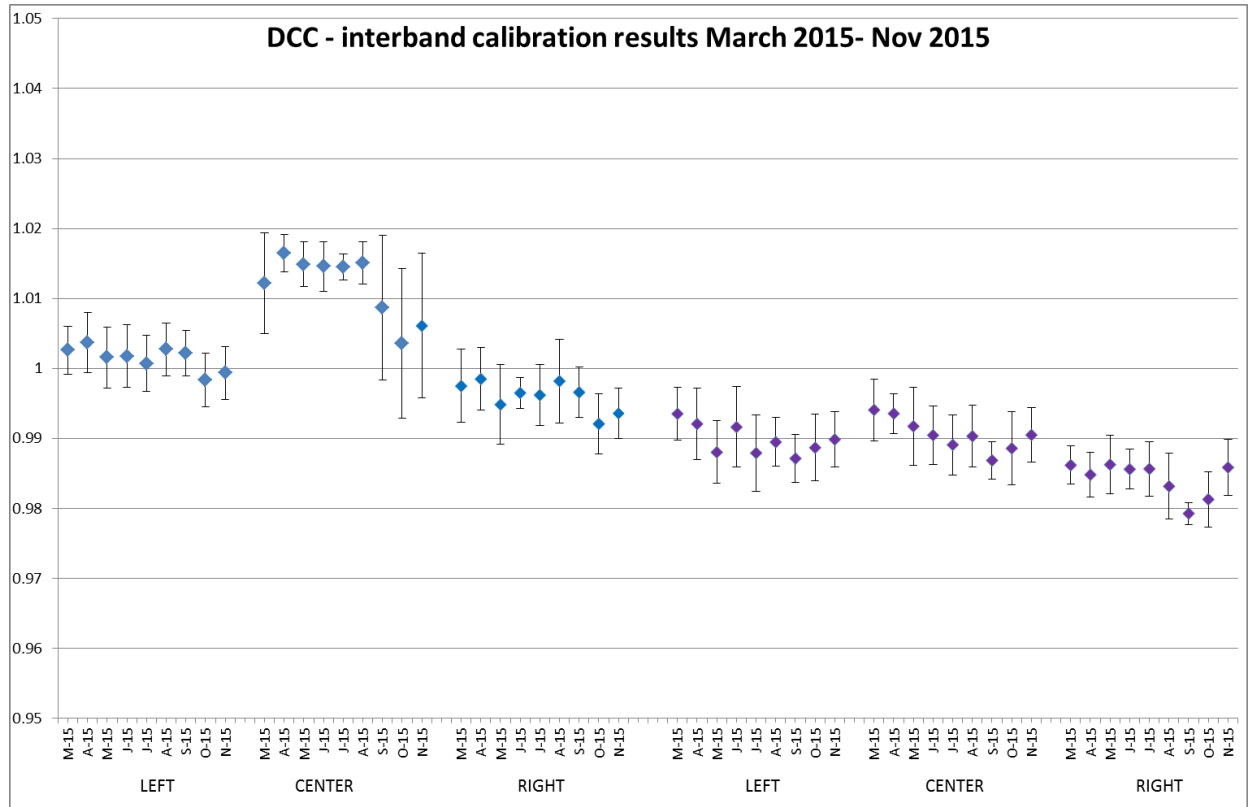


Figure 4. DCC inter-band calibration results: LEFT, CENTER and RIGHT camera

Radiometric ICP file

ICP dark values and pixel status will be updated in the coming days.

The current ICP files are

- PROBAV_ICP_RADIOMETRIC#LEFT_20151031_V01
- PROBAV_ICP_RADIOMETRIC#CENTER_20151031_V01
- PROBAV_ICP_RADIOMETRIC#RIGHT_20151031_V01

4.2. Geometric Calibration

Calibration image type	Total	Processed	Error
PROBA-V_L1C_INTERSECTION	13979	13979	

Table 13: Processed calibration images for this reporting period

During the previous month, the average ALE was < 78 m ($\sigma < 86$ m). Daily values started at 70 – 80 m, but rapidly increased from 26/10 onwards to values of > 110 m at 31/10. This increase necessitated the implementation of updated ICP files at 2/11. The updated ICP files resulted in a sharp decline of the ALE to values between 60 and 75 m. The daily ALE evolution is shown in Figure 5.

The geometric accuracy was within the requirement of < 300 m, with an average compliance of > 99.5%. Daily values were above 99% until 27/10 and decreased afterwards, reaching a minimum value of 97.9% for the BLUE channel at 1/11. After the implementation of the updated ICP files at 2/11, daily compliance values increased again to well above 99%.

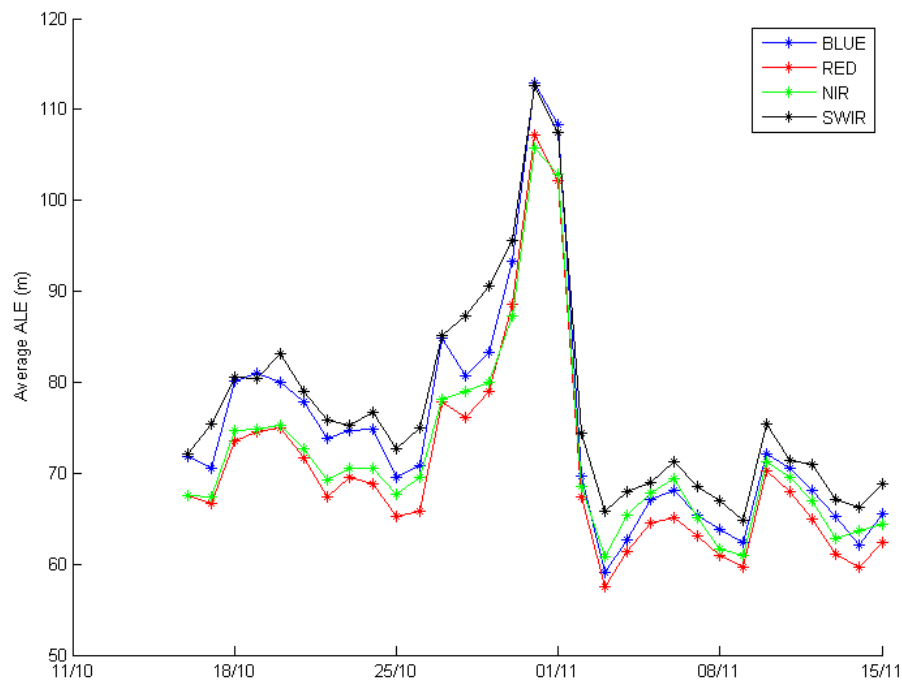


Figure 5: Absolute Location Error for this reporting period

Geometric ICP file

- PROBAV_ICP_GEOMETRIC#LEFT_20151027_V01
- PROBAV_ICP_GEOMETRIC#CENTER_20151027_V01
- PROBAV_ICP_GEOMETRIC#RIGHT_20151027_V01

5. Anomalies

5.1. System related issues

A detailed description of each issue is available in the issue tracking system <http://jira.vgt.vito.be>

Key	Summary	Status	Created	Component/s
PROBAVUS-7	Very small images fail to process	Resolved	10/01/2014	General
PROBAVUS-58	Sync workflow only resets active threads from 'Synchronizing' to 'ToBeSynchronized'	Resolved	16/11/2015	Software

- 1 new issue was logged during this reporting period
- 0 issue(s) was resolved and closed during this reporting period
- 1 issue is resolved but remain to be closed formally
- 1 issue is resolved but remain in the list logging purposes
- 0 issue(s) is open and remain to be solved

5.2. Image processing issues

A detailed description of each issue is available in the Weekly Report and the image processing tracking system <https://juniper.vgt.vito.be/ciptools>

The below table gives an overview of the S1's of this reporting period:

	# S1	Dates
Major Gaps (> 21600 km² (missing TFF))	0	
Large Gaps (< 21600 km²)	1	04/11
Medium Gaps (< 10000 km²)	4	19/10, 07/11, 22/10, 15/11
Minor Gaps (< 3600 km²)	8	27/10, 14/11, 16/10, 12/11, 24/10, 10/11, 03/11, 13/11
Negligible Gaps (< 1000 km²)	18	23/10, 18/10, 09/11, 30/10, 26/10, 31/10, 05/11, 20/10, 25/10, 06/11, 11/11, 01/11, 21/10, 02/11, 28/10, 17/10, 08/11, 29/10
Complete synthesis (no gaps)	0	

Table 14: Overview of S1 for this reporting period

6. Scheduled activities for the next period(s)

- Software upgrades:
 - HTTP to HTTPS upgrade of the PDF: The planned upgrade is delayed due to used library version issues on the current instalment of the PDF. Further development is ongoing to support this in a future release of the PDF.
- Hardware:
 - No hardware upgrades are planned for the coming period.
- Development:
 - An improvement of the cloud detection algorithm is under investigation.
 - Development is ongoing to make the PROBA-V data CF-compliant.
- No other activities scheduled.

7. Operational remarks

No operational remarks