MONTHLY OPERATIONS REPORT

MOR#026

Reporting period from 16-Jan-2016 to 15-Feb-2016

DOCUMENT CONTROL

Signatures

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Change record

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1.0	18/02/2016	All	Initial version	

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1. Summary

In the past month, the majority of the syntheses were complete. Most of the data gaps are caused by decompression errors, which only have a negligible impact on end products. Other possible causes of missing data in the past month are missing VC4 data during downlink or some invalid quaternion data which causes the processing to flag corresponding scanlines to 'No data'. One synthesis products show a large gap, five a medium gap; all other syntheses have minor or negligible gaps.

One transfer frame file dated 02/02/2016 was only delivered on 11/02/2016 due to manual processing at the Kiruna DRS and using incorrect filename. This new data was reprocessed and added to the 02/02/2016 synthesis products.

Currently, a development is ongoing to improve the cloud detection algorithm. Once implemented, all historic data will be reprocessed.

For the geometric quality, 2 sets of ICP files needed to be generated in order to keep the daily absolute location error within boundaries of 100 m. For radiometry, the absolute calibration parameters of the different SWIR strips have been updated on 06/02/2016 to correct for the observed degradation in the calibration results observed over the different desert sites.

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	99.99	0.01[**]
Worker Nodes	100.0	0.0
PDF	100.0	0.0

Table 1: System Infrastructure availability for this reporting period

[*] PSTFS 12: Short interruption registered
[**] PMASTER11: Some downtime registered due to a network issue, no effect on nominal operations

3. Image Processing Services

3.1. Ingested and archived products

Product Type	Total	Received	Missing data, ingested by VITO	Archived
METEO	248	248		247
TFF	310	310	0 [(*)]	310

Table 2: Ingested and archived products for this reporting period

[(*)] TFF08740 (dated 02/02/2016) was only delivered on 11/02/2016

3.2. Generated and archived products

Product Type	Total	Processed	Error	Archived
PROBAV_L1A - Calibration	311	311		311
PROBAV_L1A - Nominal	2602	2600	2 [(*)]	2601
PROBAV_L1C	2600	2600		2600
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

[(*)] 2 x L1A error: PROBAV#2_20160125152607, PROBAV#2_20160120154432 due to decompression errors

3.3. Backup and archiving service

Product type	Total Files	Total File Size (GB)
TFF	301	765.6
L1A	2838	1368.17
Database transaction logs	739	50.58
Database incremental back-up	80	25.05
Database full back-up	40	853.21

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

Product type	Total Files	Total File Size (GB)
PROBAV_TRANSFERFRAMES	310	848.78
PROBAV_L1A	2919	1517.83
PROBAV_L1C	2700	3066.06
PROBAV_L3_S1_TOA_100M	70	1792.32
PROBAV_L3_S1_TOC_100M	70	1544.48
PROBAV_L3_S1_TOC_NDVI_100M	70	172.75
PROBAV_L3_S5_TOA_100M	14	1362.64
PROBAV_L3_S5_TOC_100M	13	1164.88
PROBAV_L3_S5_TOC_NDVI_100M	13	125.77
PROBAV_L3_S1_TOA_300M	74	887.79
PROBAV_L3_S1_TOC_300M	71	774.00
PROBAV_L3_S10_TOC_300M	7	135.61
PROBAV_L3_S10_TOC_NDVI_300M	6	9.60
PROBAV_L3_S1_TOA_1KM	71	112.29
PROBAV_L3_S1_TOC_1KM	71	102.62
PROBAV_L3_S10_TOC_1KM	6	15.77
PROBAV_L3_S10_TOC_NDVI_1KM	6	1.18
ICP_GEOMETRIC_CENTRE	1	0.01
ICP_ GEOMETRIC _LEFT	1	0.01
ICP_ GEOMETRIC _RIGHT	1	0.01
ICP_RADIOMETRIC_CENTRE	2	0.08
ICP_RADIOMETRIC_LEFT	2	0.08
ICP_RADIOMETRIC_RIGHT	2	0.08
METEO_ECMWF	248	0.31
METEO_METEOSERVICES	247	1.32
POLARMOTION	3	0.00

Table 5: Archived data volumes for this reporting period

3.4. Dissemination service

Product type	Added to catalogue	Ordered	Delivered
PROBAV_L1C	2696	213	320
PROBAV_L3_S1_TOA_100M	32	1206	847
PROBAV_L3_S1_TOC_100M	31	2201	1147
PROBAV_L3_S1_TOC_NDVI_100M	31	981	501
PROBAV_L3_S5_TOA_100M	6	2	3
PROBAV_L3_S5_TOC_100M	6	131	165
PROBAV_L3_S5_TOC_NDVI_100M	6	595	599
PROBAV_L3_S1_TOA_300M	31	1587	1242
PROBAV_L3_S1_TOC_300M	31	1558	1859
PROBAV_L3_S10_TOC_300M	3	216	199
PROBAV_L3_S10_TOC_NDVI_300M	3	82	92
PROBAV_L3_S1_TOA_1KM	31	570	620
PROBAV_L3_S1_TOC_1KM	31	582	583
PROBAV_L3_S10_TOC_1KM	3	107	184
PROBAV_L3_S10_TOC_NDVI_1KM	3	115	282

Table 6: Ordered and delivered products for this reporting period

3.5. End-user activity

26 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 **705** with **92** different nationalities representing **553** different companies/universities.

Product type	Africa	Asia	Europe	N-America	Oceania	S-America
PROBAV_L1C		1.50	726.74			0.64
PROBAV_L3_S1_TOA_100M		0.17	1690.63	0.30		
PROBAV_L3_S1_TOC_100M	0.02	585.81	646.19			
PROBAV_L3_S1_TOC_NDVI_100M	0.00	10.07	0.68	0.00		
PROBAV_L3_S5_TOA_100M		0.03	0.59			
PROBAV_L3_S5_TOC_100M	37.44		2025.69			38.37
PROBAV_L3_S5_TOC_NDVI_100M		23.97	7.67	0.79		0.70
PROBAV_L3_S1_TOA_300M		0.03	2625.95	0.11		
PROBAV_L3_S1_TOC_300M		41.57	1298.84	179.55	0.16	30.97
PROBAV_L3_S10_TOC_300M	1.88		1774.54	5.16		
PROBAV_L3_S10_TOC_NDVI_300M		0.75	0.11			0.07
PROBAV_L3_S1_TOA_1KM		0.23	287.68			

PROBAV_L3_S1_TOC_1KM			248.74	0.01		
PROBAV_L3_S10_TOC_1KM	0.62		21.04	3.39		
PROBAV_L3_S10_TOC_NDVI_1KM	0.00	0.39	1.56			

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

Product Type	Global
L1C	728.88
PROBAV_L3_S1_TOA_100M	1691.09
PROBAV_L3_S1_TOC_100M	1232.02
PROBAV_L3_S1_TOC_NDVI_100M	10.75
PROBAV_L3_S5_TOA_100M	0.62
PROBAV_L3_S5_TOC_100M	2101.51
PROBAV_L3_S5_TOC_NDVI_100M	33.13
PROBAV_L3_S1_TOA_300M	2626.08
PROBAV_L3_S1_TOC_300M	1551.09
PROBAV_L3_S10_TOC_300M	1781.58
PROBAV_L3_S10_TOC_NDVI_300M	0.93
PROBAV_L3_S1_TOA_1KM	287.90
PROBAV_L3_S1_TOC_1KM	248.75
PROBAV_L3_S10_TOC_1KM	25.05
PROBAV_L3_S10_TOC_NDVI_1KM	1.94

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

Company	# of downloaded products
VITO	2113
zrc	961
Universidad de Alcala	891
IFSULDEMINAS	671
BIT Mesra, Ranchi	553
Institute of Remote Sensing and Digital Earth	394
NCU	353
University of Leicester	353
RADI	343
Airbus	164

Table 9: Top 10 user companies for the reporting period

Company	# of registered users
BELGIUM	73
CHINA	62
ITALY	40
FRANCE	30
UNITED KINGDOM	29
BRAZIL	29
UNITED STATES	28
NETHERLANDS	23
INDIA	21
GERMANY	21

Table 10: Top 10 countries with most registered users

List of issues raised by users:

ProbaV:
- username/password lost
- layers in PROBA S10 TOC
- user vraag ivm download PROBA-V data
- email change PROBA mailing
- HD-AT RITM0014525 Image of the week Zhangye Danxia Landforms
- Sending of "probav_pdf_do_not_reply" mails

PDF portal:
- GIO-PDF: N.A. - register

4. Image Calibration services

4.1. Radiometric Calibration

Calibration request type	Total	Processed	Not received	Error
CLOUDS	21	15	6	0
DARK CURRENT	27	20	7	0
MOON	4	2	2	0
RAYLEIGH	70	53	17	0
SNOW	18	12	6	0
SUN_GLINT	0	00		0

Table 11: Calibration Image requests for this reporting period

Calibration image type	Total	Valid	Invalid
PROBA_V_L1A_CALIBRATION	2	2	0
PROBA-V_L1B_CALIBRATION[*]	309	268	41
PROBA-V_L1B_INTERSECTION[*]	689	387	302
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.

Radiometric ICP file
The absolute calibration parameters of the different SWIR strips have been updated on February 6, 2016 to correct for the observed degradation in the calibration results observed over the different desert sites. The following changes have been made:
- LEFT SWIR1 : increase radiance with 0.84 %
- LEFT SWIR2 : increase radiance with 1.04 %
- LEFT SWIR3 : increase radiance with 1.83 %
- CENTER SWIR1: increase radiance with 1.19%
- CENTER SWIR2: increase radiance with 1.29%
- CENTER SWIR3: increase radiance with 1.16%
- RIGHT SWIR1 : increase radiance with 1.28 %
- RIGHT SWIR2: increase radiance with 0.78 %
- RIGHT SWIR3: increase radiance with 0.90 %

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. For the VNIR

strips calibration results from the Libya4, Rayleigh and DCC methods remain relatively stable and therefore no update of the VNIR absolute calibration coefficients is performed.

For a few pixels the dark current has suddenly increased in the last month, which might cause the presence of a few stripes. An update of the SWIR dark current values is required to correct for this.

Radiometric ICP file

ICP dark values will be updated in the coming days.

The current ICP files are

- PROBAV_ICP_RADIOMETRIC#LEFT_20160206_V01
- PROBAV_ICP_RADIOMETRIC#CENTER_ 20160206_V01
- PROBAV_ICP_RADIOMETRIC#RIGHT_ 20160206_V01
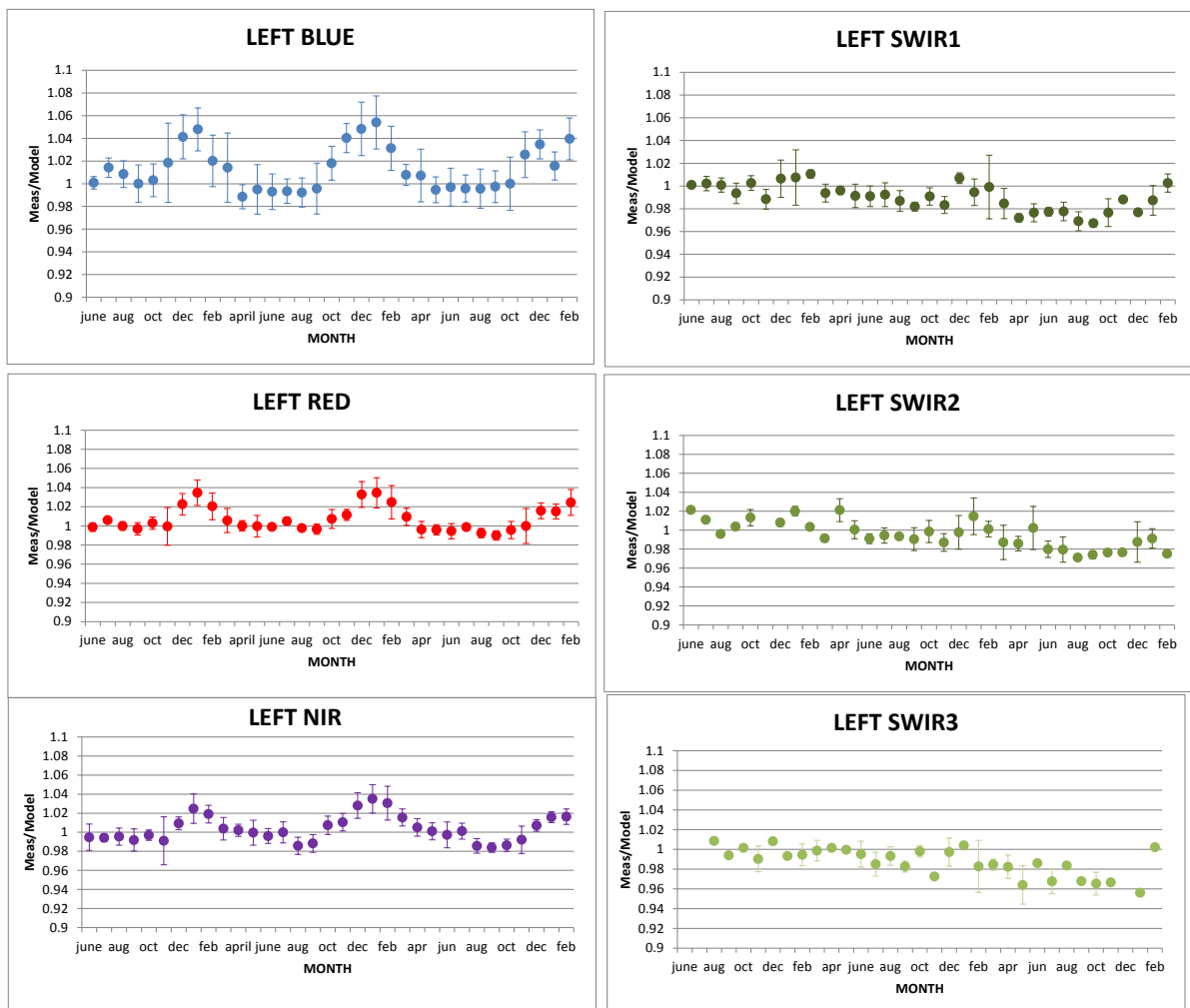
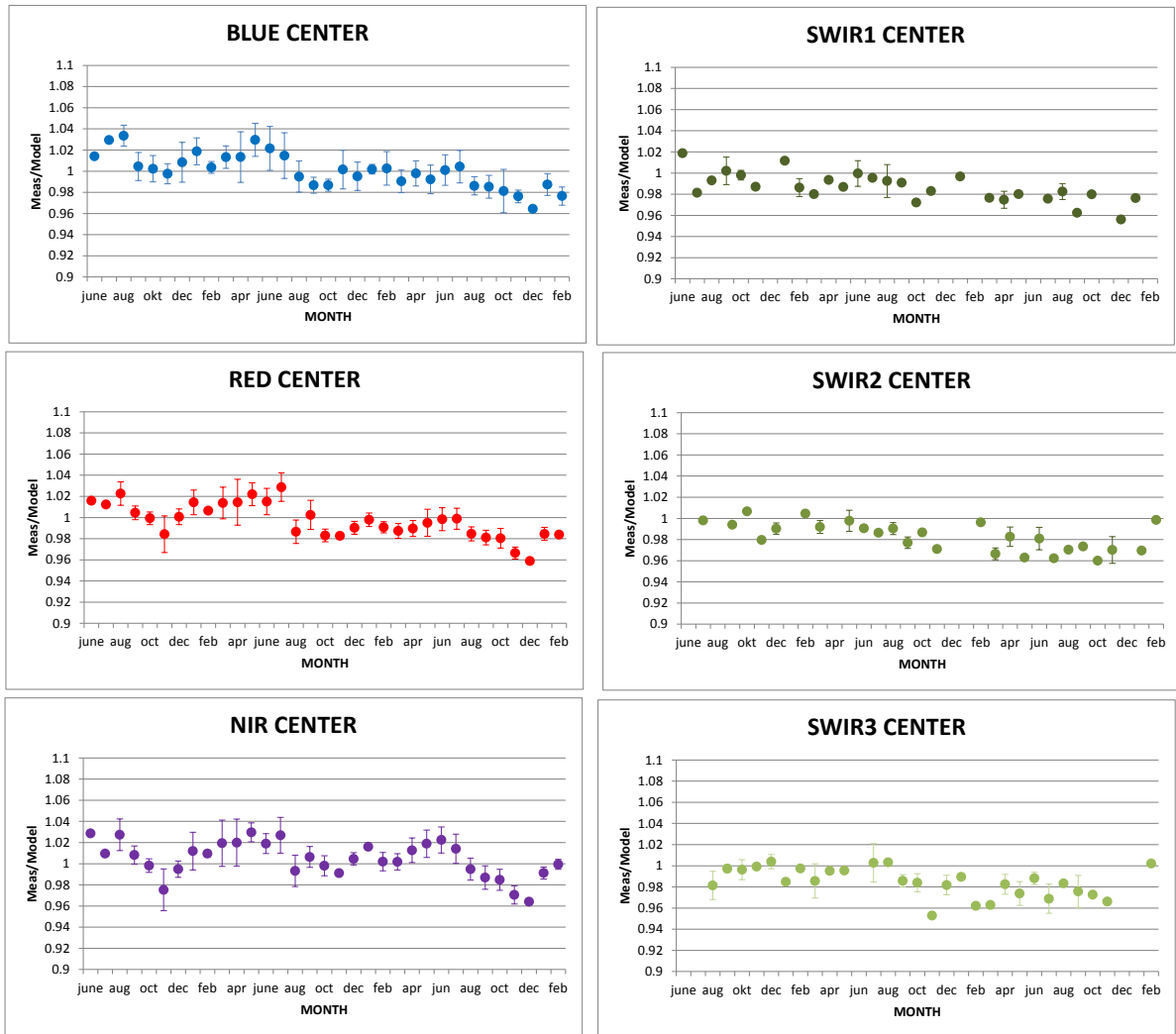*Figure 1. Libya-4 desert calibration results: LEFT monthly averaged results*

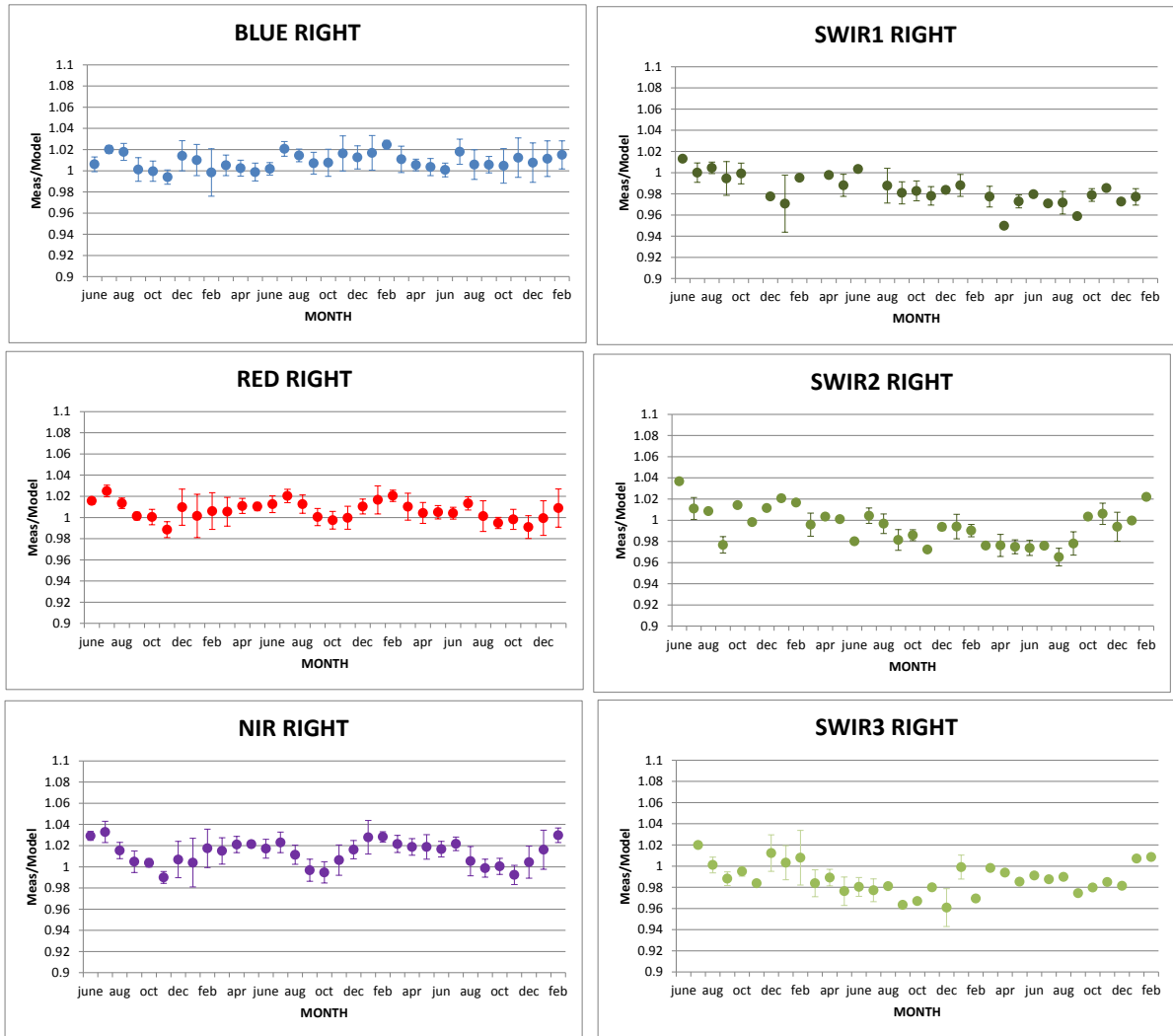*Figure 2. Libya-4 desert calibration results: CENTER monthly averaged results*

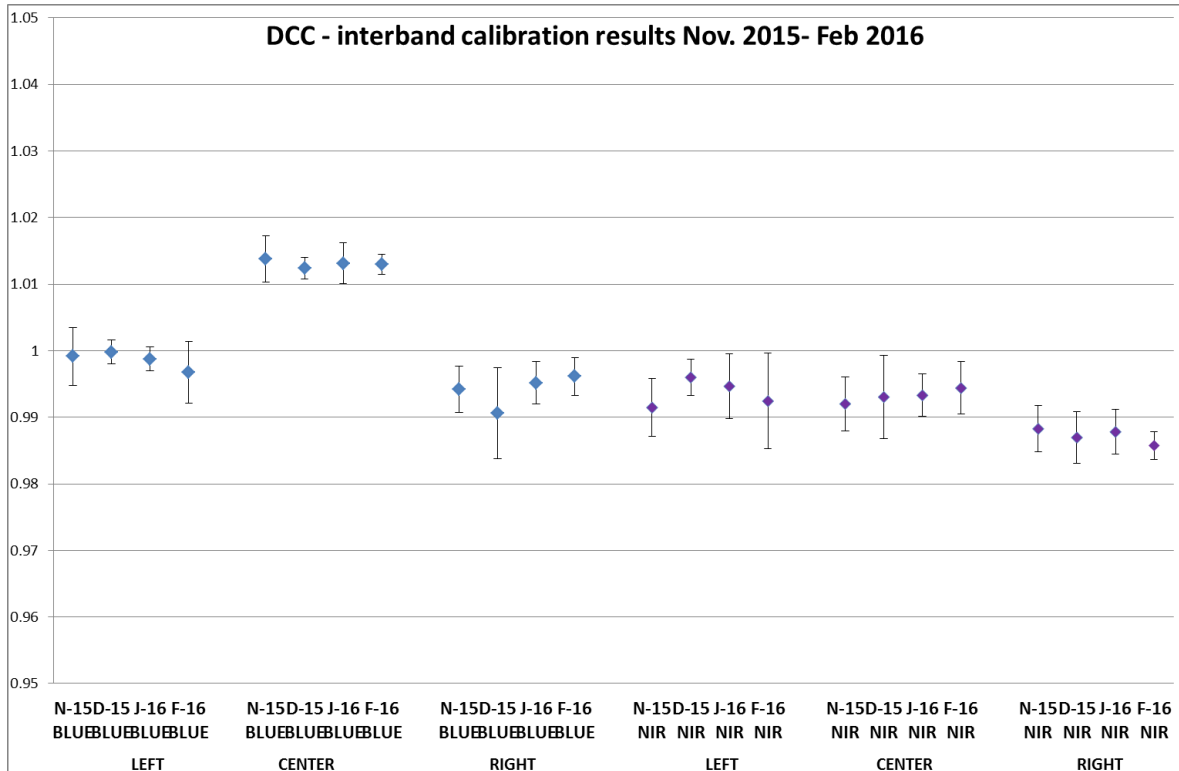*Figure 3. Libya-4 desert calibration results: RIGHT monthly averaged results*

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

4.2. Geometric Calibration

Calibration image type	Total	Processed	Error
PROBA-V_L1C_INTERSECTION	14162	14162	0

Table 13: Processed calibration images for this reporting period

Geometric ICP file

During previous month, the average ALE was 102 m (σ < 101 m). Daily values started off at 60 – 65 m and increased to peak values of 135-140 m at 20/01, followed by a gradual decline to ~110 m thereafter. At this point a new set of ICP files were implemented and applied. A second increase followed from 06/02 to 14/02, in which values eventually peaked at 140 – 145 m. On 16/02, again a new set of ICP were generated and applied. The daily ALE evolution can be seen in Figure 5.

The geometric accuracy was within the requirement of < 300 m, with an average compliance of 97.6%. Daily compliance values decreased to below 97% for the VNIR channels between 20/01 and 25/01, but increased rapidly to > 99%. A second decrease in daily compliance values to below 97% for the VNIR channels was noticed from06/02 to 14/02.

- PROBAV_ICP_GEOMETRIC#LEFT_20160216_V01
- PROBAV_ICP_GEOMETRIC#CENTER_20160216_V01
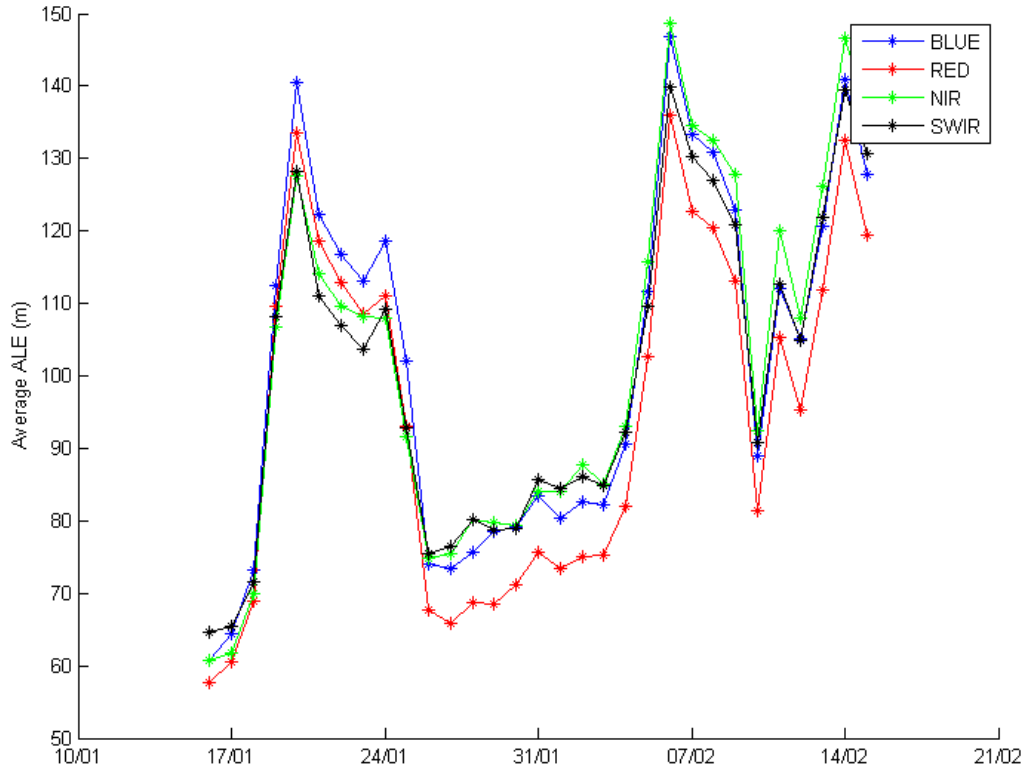- PROBAV_ICP_GEOMETRIC#RIGHT_20160216_V01

Figure 5 - Daily ALE values for this reporting period

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-60	LTDA Restore fails when product destination already exists on disk	Open	22/01/2016	Software

1 new issue were logged during this reporting period
0 issue(s) was resolved and closed during this reporting period
1 issue(s) are resolved but remain to be closed formally
0 issues are 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	02/02
Medium Gaps (< 10000 km²)	4	10/02, 07/02, 21/01, 25/01
Minor Gaps (< 3600 km²)	2	03/02, 20/01
Negligible Gaps (< 1000 km²)	24	12/02, 23/01, 28/01, 18/01, 13/02, 08/02, 29/01, 24/01, 19/01, 09/02, 14/02, 04/02, 30/01, 26/01, 05/02, 31/01, 15/02, 16/01, 17/01, 27/01, 22/01, 01/02, 11/02, 06/02
Complete synthesis (no gaps)	0	

Table 14: Overview of S1 for this reporting period

6. Scheduled activities for the next period(s)

- Software upgrades:
  On 22/02/2016, and upgrade of the PDF to HTTPS is planned.

- Hardware:
  No hardware upgrades planned

- Development:
  An improvement of the cloud detection algorithm is under investigation.

- No other activities scheduled.

7. Operational remarks

No operational remarks