



# MONTHLY OPERATIONS REPORT

**MOR#068**

**Reporting period from 16-Jul-2019 to 15-Aug-2019**

**Reference: *PROBA-V\_D5\_MOR-068\_08\_v1.0***

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## DOCUMENT CONTROL

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## 1. Summary

In this reporting period, the majority of the synthesis products were nearly complete. Three missing transfer frame files and five automatic recoveries were recorded with a visual impact. The amount of decompression errors and geometric errors fluctuated randomly between 0 and 20 on a daily basis.

No major anomalies were recorded in the radiometric and geometric quality assessment.

12 new users registered and downloaded data in the past month. In total 6.5 TB of data was downloaded.

In the following period, multi-viewing-angle and yaw maneuvers are planned to prepare for the experimental mission phase. These maneuvers will lead to a partial loss of data.

## 2. System Infrastructure

Category	% Up Time	% Down Time
Switches	100.0	0.0
Database Servers	99,99	0.01
Mid Term File Servers	100.0	0.0
Short Term File Servers	100.0	0.0
Master Servers	100.0	0.0
Worker Nodes	99,98	0.02
PDF	99,99	0.01

*Table 1: System Infrastructure availability for this reporting period*

## 3. Image Processing Services

### 3.1. Ingested and archived products

Product Type	Total	Received	Missing data, ingested by VITO	Archived
METEO	248	248	0	248
TFF	310	307	3	307

Table 2: Ingested and archived products for this reporting period

(\*) TFF 21433: antenna problems; TFF 21533: baseband; TFF 21619: ftp problems

### 3.2. Generated and archived products

Product Type	Total	Processed	Error (*)	Archived
PROBAV_L1A - Calibration	266	266	0	266
PROBAV_L1A - Nominal	2598	2594	4	2597
PROBAV_L1C	2594	2594	0	2594
PROBAV_L2A_100M	905	905	0	905
PROBAV_L2A_300M	2594	2594	0	2594
PROBAV_L2A_1KM	2594	2594	0	2594
PROBAV_L3_S1_TOA_100M	31	31	0	31
PROBAV_L3_S1_TOC_100M	31	31	0	31
PROBAV_L3_S1_TOC_NDVI_100M	31	31	0	31
PROBAV_L3_S5_TOA_100M	6	6	0	6
PROBAV_L3_S5_TOC_100M	6	6	0	6
PROBAV_L3_S5_TOC_NDVI_100M	6	6	0	6
PROBAV_L3_S1_TOA_300M	31	31	0	31
PROBAV_L3_S1_TOC_300M	31	31	0	31
PROBAV_L3_S10_TOC_300M	3	3	0	3
PROBAV_L3_S10_TOC_NDVI_300M	3	3	0	3
PROBAV_L3_S1_TOA_1KM	31	31	0	31
PROBAV_L3_S1_TOC_1KM	31	31	0	31
PROBAV_L3_S10_TOC_1KM	3	3	0	3
PROBAV_L3_S10_TOC_NDVI_1KM	3	3	0	3

Table 3: Generated and archived products for this reporting period

(\*) 4 L1A error due generating L1A

### 3.3. Backup and archiving service

Product type	Total Files	Total File Size (GB)
TFF	301	791.12
L1A	2769	1407.25
Database transaction logs	768	78.52
Database incremental back-up	40	16.65
Database full back-up	10	518.2

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

Product type	Total Files	Total File Size (GB)
PROBAV_TRANSFERFRAMES	307	877.42
PROBAV_L1A	2864	1560.64
PROBAV_L1C	2596	3043.52
PROBAV_L2A_100M	2003	1854.77
PROBAV_L2A_300M	5744	963.64
PROBAV_L2A_1KM	5743	126.68
PROBAV_L3_S1_TOA_100M	68	1961.52
PROBAV_L3_S1_TOC_100M	67	1991.99
PROBAV_L3_S1_TOC_NDVI_100M	69	239.58
PROBAV_L3_S5_TOA_100M	13	1325.16
PROBAV_L3_S5_TOC_100M	13	1369.54
PROBAV_L3_S5_TOC_NDVI_100M	13	157.28
PROBAV_L3_S1_TOA_300M	67	823.70
PROBAV_L3_S1_TOC_300M	68	863.78
PROBAV_L3_S10_TOC_300M	7	140.90
PROBAV_L3_S10_TOC_NDVI_300M	7	12.82
PROBAV_L3_S1_TOA_1KM	68	112.23
PROBAV_L3_S1_TOC_1KM	68	115.10
PROBAV_L3_S10_TOC_1KM	7	19.11
PROBAV_L3_S10_TOC_NDVI_1KM	7	1.60
ICP_GEOMETRIC_CENTRE	0	0
ICP_GEOMETRIC_LEFT	0	0
ICP_GEOMETRIC_RIGHT	0	0
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	248	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	2595	3	140
PROBAV_L2A_100M	898	0	0
PROBAV_L2A_300M	2593	0	0
PROBAV_L2A_1KM	2593	0	2
PROBAV_L3_S1_TOA_100M	31	38	62
PROBAV_L3_S1_TOC_100M	31	247	1921
PROBAV_L3_S1_TOC_NDVI_100M	31	1	71
PROBAV_L3_S5_TOA_100M	6	319	317
PROBAV_L3_S5_TOC_100M	6	290	287
PROBAV_L3_S5_TOC_NDVI_100M	6	456	628
PROBAV_L3_S1_TOA_300M	31	65	66
PROBAV_L3_S1_TOC_300M	31	101	208
PROBAV_L3_S10_TOC_300M	3	22	22
PROBAV_L3_S10_TOC_NDVI_300M	3	1068	1081
PROBAV_L3_S1_TOA_1KM	31	62	67
PROBAV_L3_S1_TOC_1KM	31	78	112
PROBAV_L3_S10_TOC_1KM	3	2312	2314
PROBAV_L3_S10_TOC_NDVI_1KM	3	814	822

Table 6: Ordered and delivered products for this reporting period

### 3.5. End-user activity

12 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 **1682** with **120** different nationalities representing **1230** different companies/universities.

Product type	Africa	Asia	Europe	N-America	Oceania	S-America
PROBAV_L1C	0	168.84	8.31	0	0	0
PROBAV_L2A_100M	0	0	0	0	0	0
PROBAV_L2A_300M	0	0	0	0	0	0
PROBAV_L2A_1KM	0	0	0.07	0	0	0
PROBAV_L3_S1_TOA_100M	0	0.07	3.75	0.10	0	0.91
PROBAV_L3_S1_TOC_100M	0.88	195.11	1657.84	778.86	0	0
PROBAV_L3_S1_TOC_NDVI_100M	0	0.12	2.40	0	0	0
PROBAV_L3_S5_TOA_100M	0	0	8.00	0	0	0
PROBAV_L3_S5_TOC_100M	17.36	1429.77	5.76	0	0	0

PROBAV_L3_S5_TOC_NDVI_100M	4.57	1.18	7.14	0	0	2.86
PROBAV_L3_S1_TOA_300M	0	0	647.70	0	0	0
PROBAV_L3_S1_TOC_300M	0.30	0	1044.13	311.02	0	0
PROBAV_L3_S10_TOC_300M	1.84	0.01	123.08	0	0	0
PROBAV_L3_S10_TOC_NDVI_300M	0.47	5.97	58.85	0	0	0.06
PROBAV_L3_S1_TOA_1KM	0	0	96.55	0	0	0
PROBAV_L3_S1_TOC_1KM	0	0	162.51	0	0	0
PROBAV_L3_S10_TOC_1KM	61.63	0	20.27	3.82	0	29.48
PROBAV_L3_S10_TOC_NDVI_1KM	0.02	5.78	4.06	0.19	0	0.01

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

Product Type	Global
L1C	177.15
PROBAV_L2A_100M	0
PROBAV_L2A_300M	0
PROBAV_L2A_1KM	0.07
PROBAV_L3_S1_TOA_100M	4.83
PROBAV_L3_S1_TOC_100M	2632.69
PROBAV_L3_S1_TOC_NDVI_100M	2.52
PROBAV_L3_S5_TOA_100M	8.00
PROBAV_L3_S5_TOC_100M	1452.89
PROBAV_L3_S5_TOC_NDVI_100M	15.74
PROBAV_L3_S1_TOA_300M	647.70
PROBAV_L3_S1_TOC_300M	1355.44
PROBAV_L3_S10_TOC_300M	124.92
PROBAV_L3_S10_TOC_NDVI_300M	65.34
PROBAV_L3_S1_TOA_1KM	96.55
PROBAV_L3_S1_TOC_1KM	162.51
PROBAV_L3_S10_TOC_1KM	115.20
PROBAV_L3_S10_TOC_NDVI_1KM	10.05

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



Company	# Downloads
UNIVERSITY OF MANNOUBA TUNIS	2126
VISIOTERRA	1563
INRA	706
AVIA-GIS	684
INRGREF	641
UNIVERSITY OF VALENCIA	376
VITO	334
CENTER FOR ATMOSPHERIC AND ENVIRONMENTAL MODELING	227
ARID LAND RESEARCH CENTER	201
INPE	167

Table 9: Top 10 user companies for the reporting period

Country	# Users
CHINA	169
BELGIUM	148
INDIA	81
FRANCE	79
BRAZIL	76
UNITED STATES	73
ITALY	70
UNITED KINGDOM	59
NETHERLANDS	56
GERMANY	51

Table 10: Top 10 countries with most registered users

**List of issues raised by users:**

Python3.6 interactief  
 RE: Proba-V MEP: migration of user VM's to Terrascope  
 Copernicus raster maps  
 Python3 / upgrade GLX  
 URGENT request to reboot Terrascope VM  
 RE: [VITO RS] Re: failed execution on some epods due to import error libgdal  
 RE: Order "C0179289" is submitted  
 RE: Proba-V MEP: migration of user VM's to Terrascope  
 Re: Proba-V MEP: migration of user VM's to Terrascope  
 R: Proba-V MEP: migration of user VM's to Terrascope  
 RE: Proba-V MEP: migration of user VM's to Terrascope  
 Re: Proba-V MEP: migration of user VM's to Terrascope  
 Order "C0180464" is submitted  
 Re: Proba-V MEP: ESA snappy conflict  
 Order "C0179287" is submitted

## Monthly Operations Report

*PROBA-V Operations*

*Contract No. 4000111291/14/I-LG - 1310174*

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# proba-v

Problem with dashboard  
problems with sparkContext when running job from eclipse  
Hard disk warning email flood  
RE: Notebook server  
RE: [VITO RS] Re: RE: Proba-V MEP: migration of user VM's to Terrascope  
FW: mep\_cgs gebruiker

## 4. Image Calibration services

### 4.1. Radiometric Calibration

Calibration request type	Total	Processed	Not received	Error
CLOUDS	16	16	0	0
DARK CURRENT	23	22	1	0
MOON	2	2	0	0
RAYLEIGH	54	48	6	0
SNOW	0	0	0	0
SUN_GLINT	0	0	0	0

Table 11: Calibration Image requests for this reporting period

Calibration image type	Total	Valid	Invalid
PROBA_V_L1A_CALIBRATION	2	0	2
PROBA-V_L1B_CALIBRATION	264	230	34
PROBA-V_L1B_INTERSECTION	772	475	297
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 and Figure 2 and Figure 3. Deep convective clouds interband calibration results are given in Figure 4.

The Libya-4 calibration results for RED and NIR band of mainly the RIGHT camera keep on showing a clear positive trend over last 6 months. This in turns leads to a decreasing trend observed in the DCC calibration results for the BLUE band as the DCC results are expressed relatively to the RED band. Currently the increasing trend is not yet corrected for in the ICP files. Investigations are ongoing to see how this can be best accounted for in the ICP file.

No new bad pixel were identified.

#### **Radiometric ICP file**

The BLUE LEFT/CENTER absolute calibration coefficients will be updated following a linear degradation model.

Furthermore, the dark currents will be updated.

The current ICP files are

- PROBAV\_ICP\_RADIOMETRIC#LEFT\_20190801\_V01
- PROBAV\_ICP\_RADIOMETRIC#CENTER\_20190801\_V01
- PROBAV\_ICP\_RADIOMETRIC#RIGHT\_20190801\_V01

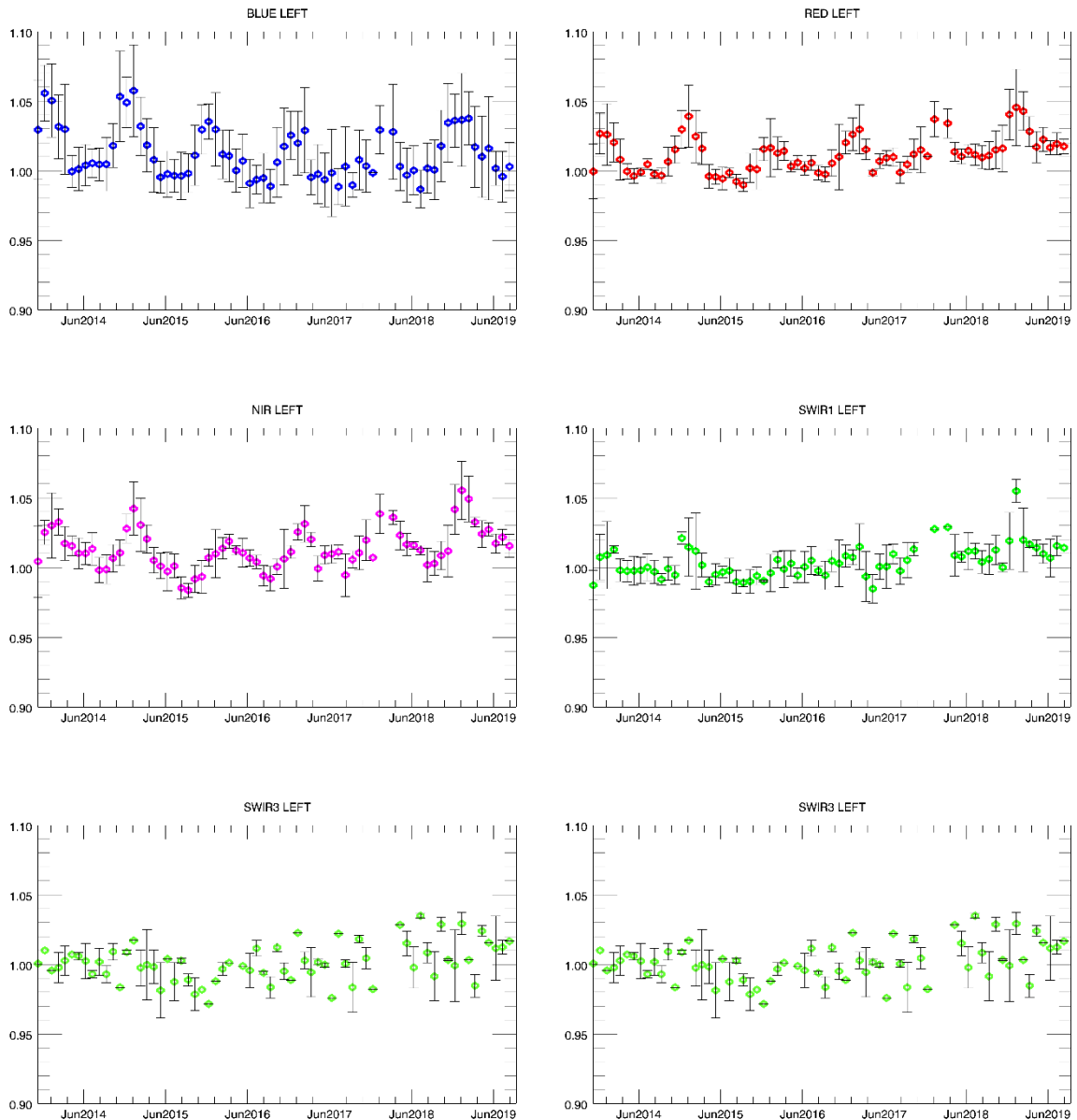


Figure 1. Libya-4 desert calibration results: LEFT monthly averaged results (collection 1)

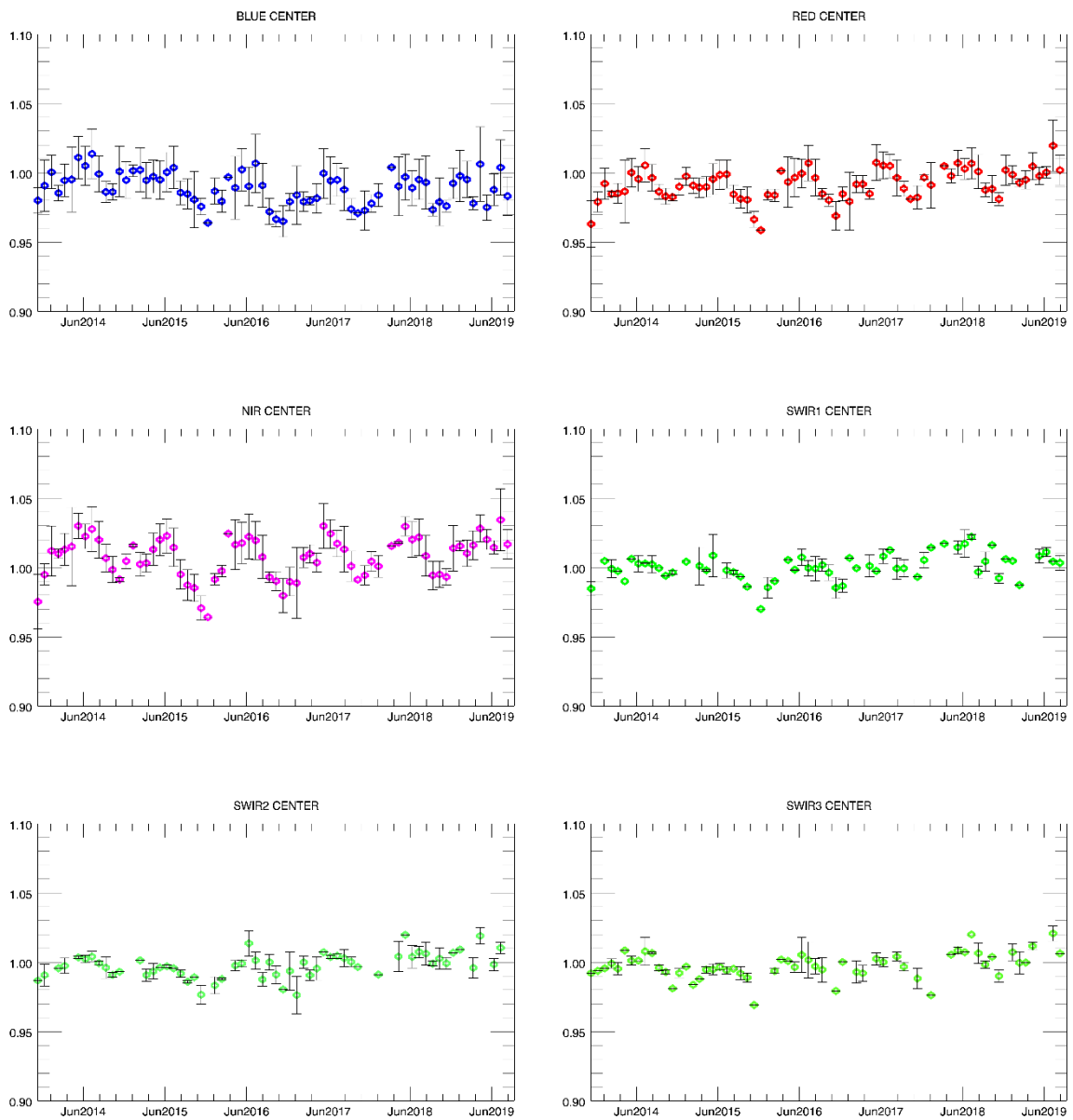


Figure 2. Libya-4 desert calibration results: CENTER monthly averaged results (collection 1)

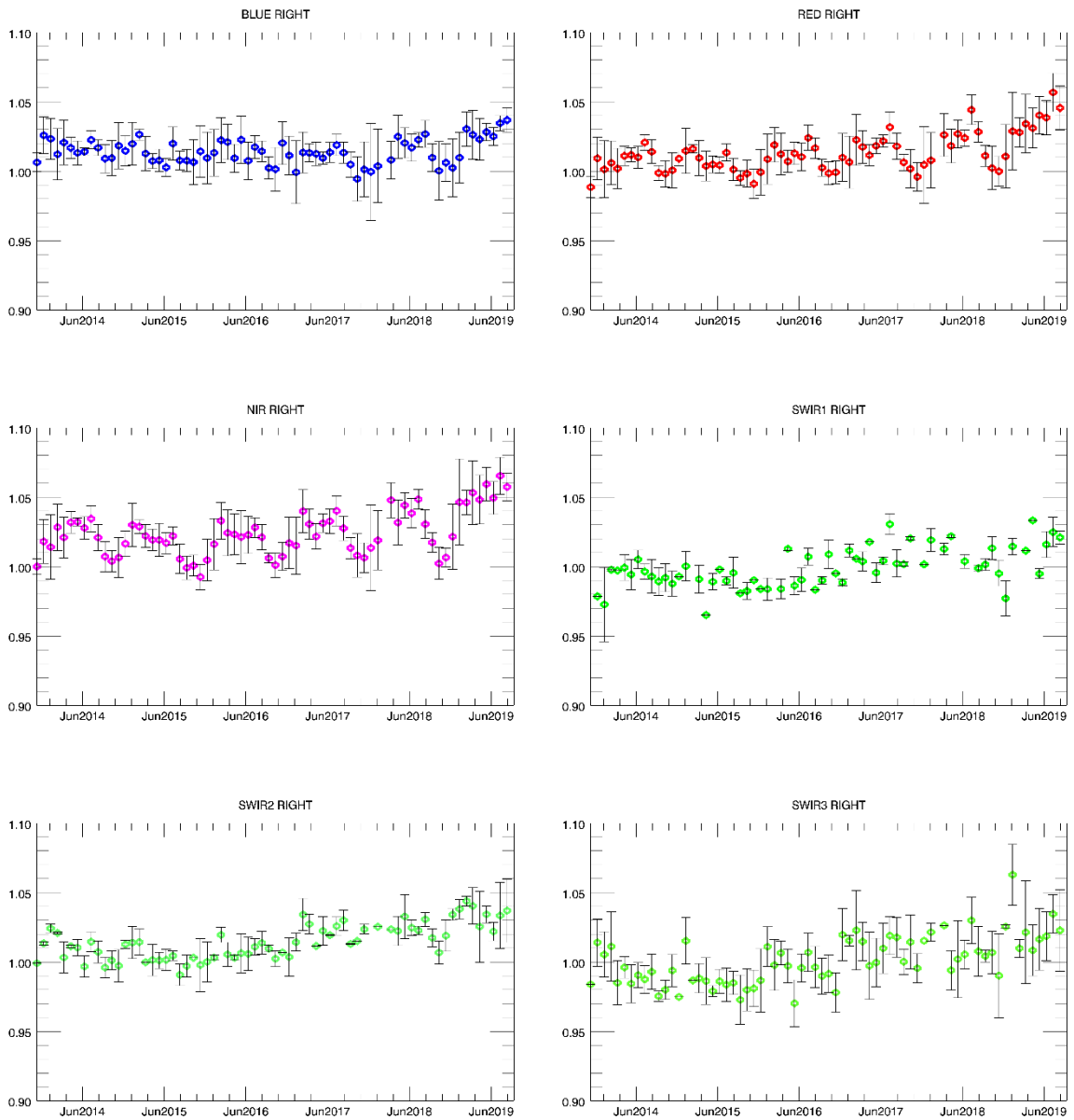


Figure 3. Libya-4 desert calibration results: RIGHT monthly averaged results (collection 1)

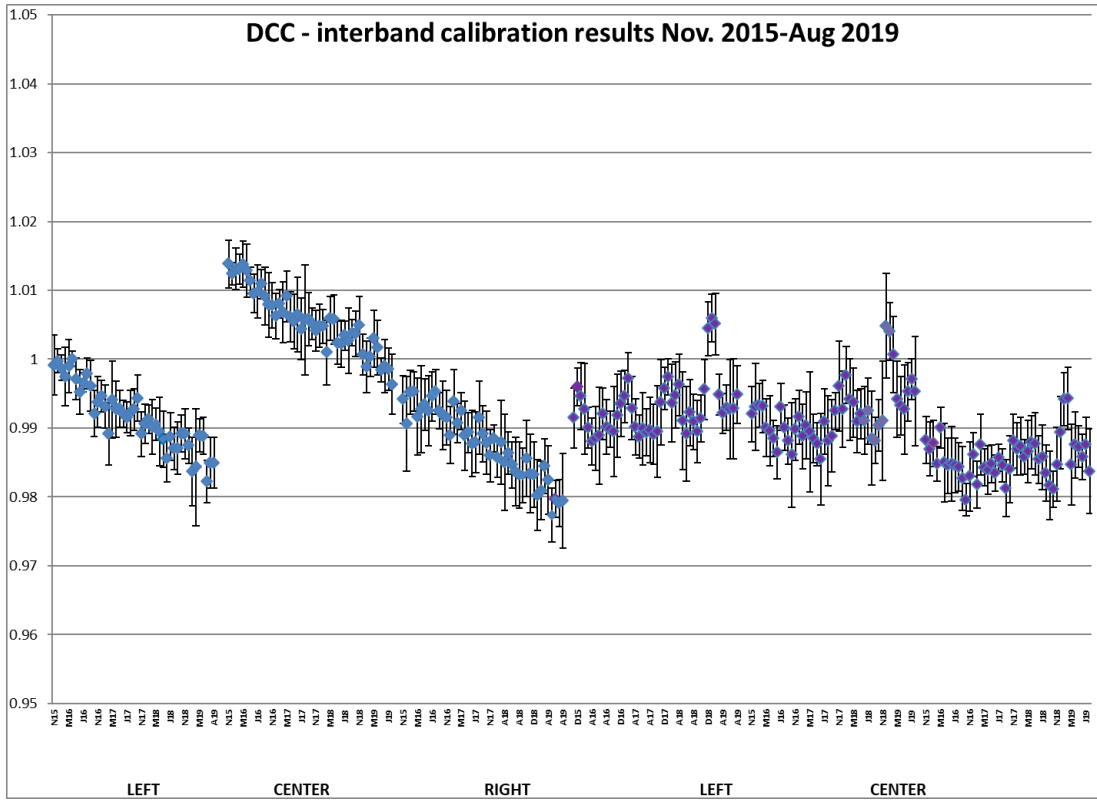


Figure 4. DCC inter-band calibration results: LEFT, CENTER and RIGHT camera (collection 1)

## 4.2. Geometric Calibration

Calibration image type	Total	Processed	Error
PROBA-V_L1C_INTERSECTION	14100	14100	0

Table13: Processed calibration images for this reporting period

During previous month, the average ALE was < 81 m ( $\sigma < 95$  m). The first half of the period, ALE values were generally well below 80 m. From 3/8 through 8/8, values sharply increased towards peak values of 93 – 109 m.

This was followed by a quick decline towards ALE values between 60 and 80 m.

The average compliance was 99.15% (96.86 – 99.63% from BLUE – SWIR). Significantly lower values were observed during 3/8 – 8/8, with lowest values of 96.86 – 99.63 (BLUE – SWIR) on 5/8.

Similar to the ALE, the compliance increased to normal values again during the remainder of the reporting period.

### Geometric ICP file

- PROBAV\_ICP\_GEOMETRIC#LEFT\_20160907\_V01
- PROBAV\_ICP\_GEOMETRIC#CENTER\_20160907\_V01
- PROBAV\_ICP\_GEOMETRIC#RIGHT\_20160907\_V01

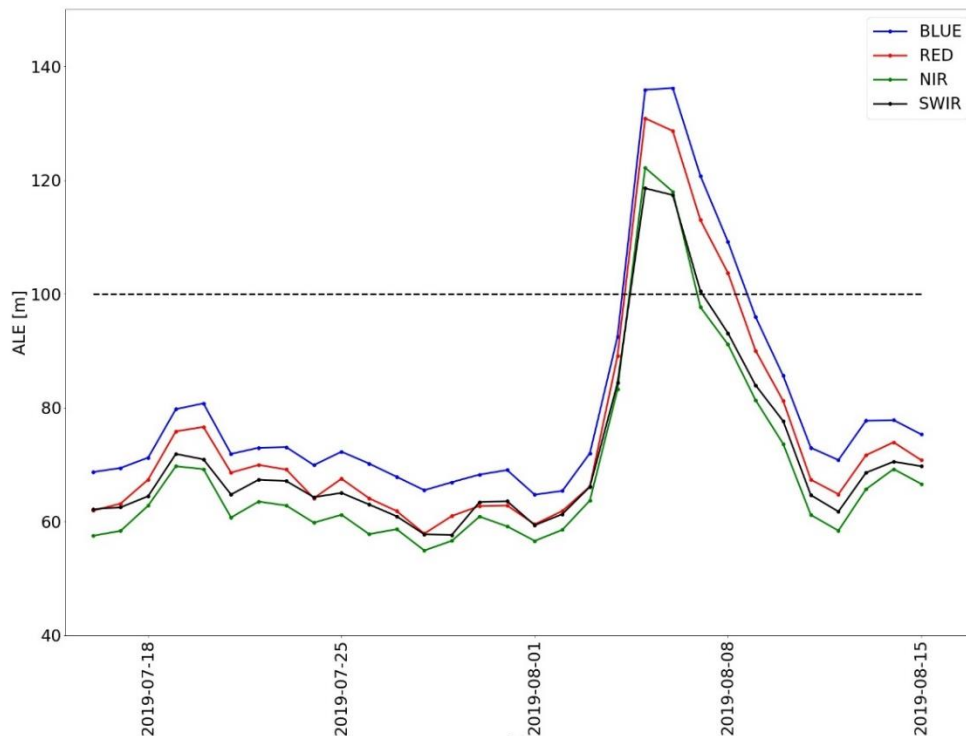


Figure 5 - Average ALE for this reporting period



## 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
<a href="#">PROBAVUS-7</a>	Very small images fail to process	Resolved	10/01/2014	General
<a href="#">PROBAVUS-63</a>	Cloud shadow detection at high solar zenith angles not working properly	Open	11/05/2016	Software
<a href="#">PROBAVUS-65</a>	Processing statuses L2 products	In Progress	16/09/2016	Software
<a href="#">PROBAVUS-66</a>	Cloud cover percentages on PDF products are not reliable	Resolved	19/10/2016	Software
<a href="#">PROBAVUS-68</a>	ICP file version not taken into account when processing	In Progress	20/03/2017	Software
<a href="#">PROBAVUS-69</a>	Version number of segment not filtered when querying for syntheses	Open	20/03/2017	Software
<a href="#">PROBAVUS-70</a>	Investigate L2A artefact in data	Open	31/05/2017	Software
<a href="#">PROBAVUS-72</a>	Status mask of data with decompression error is not correctly set	Open	22/06/2017	Software
<a href="#">PROBAVUS-75</a>	Clear pixel edge in cloud shadow detection	Open	15/11/2017	Software

- 0** new issues were logged during this reporting period
- 0** issue(s) was resolved and closed during this reporting period
- 3** issues are resolved but remain to be closed formally
- 1** issues are resolved but remain in the list logging purposes
- 5** 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
<b>Major Gaps (&gt; 21600 km<sup>2</sup> (missing TFF))</b>	1	24/07
<b>Large Gaps (&lt; 21600 km<sup>2</sup>)</b>	0	
<b>Medium Gaps (&lt; 10000 km<sup>2</sup>)</b>	2	11/08, 07/08
<b>Minor Gaps (&lt; 3600 km<sup>2</sup>)</b>	5	03/08, 15/08, 21/07, 16/07, 23/07
<b>Negligible Gaps (&lt; 1000 km<sup>2</sup>)</b>	23	01/08, 27/07, 22/07, 06/08, 17/07, 05/08, 10/08, 31/07, 26/07, 09/08, 14/08, 04/08, 25/07, 30/07, 20/07, 29/07, 13/08, 08/08, 19/07, 28/07, 12/08, 02/08, 18/07
<b>Complete synthesis (no gaps)</b>	0	

Table14: Overview of S1 for this reporting period

Synthesis	Missing	Decom. Error	Geom. Error	Missing TFF	Autom. Recovery	VC4 Missing	Create Contours	Other
20190716	1.93%	17	5		1		1	
20190717	0.30%	9	4					
20190718	0.15%	16	14					
20190719	0.82%	18	11					
20190720	0.24%	12	13					
20190721	0.71%	28	7		1			
20190722	0.18%	17	8					
20190723	4.29%	20	21			1	1	
20190724	22.80%	17	18	1	1	1		
20190725	0.27%	18	10					
20190726	0.03%	8						
20190727	0.08%	9	5					
20190728	0.79%	12	2					
20190729	0.18%	11	3					
20190730	0.21%	17	7					
20190731	0.18%	16	13					
20190801	0.73%	22	8					
20190802	0.21%	18	7					
20190803	7.14%	16	9	1				
20190804	0.17%	17	8					
20190805	0.15%	13	8					
20190806	0.84%	12	6					
20190807	2.50%	12	18		1			
20190808	0.77%	14	12					
20190809	0.18%	21	12					
20190810	0.66%	9	14					
20190811	6.46%	15	9	1				1
20190812	0.33%	18	3					
20190813	0.06%	12						
20190814	0.12%	15	3					
20190815	3.15%	16	7		1		1	

Table 15: List of synthesis with an error overview of the missing percentages and errors for this reporting period

## 6. Scheduled activities for the next period(s)

- Software upgrades:  
No software upgrades planned
- Hardware:  
No hardware upgrades planned
- Development:  
No new developments planned
- No other activities scheduled.

## 7. Operational remarks

No operational remarks