proba-v

MONTHLY OPERATIONS REPORT

MOR#070

Reporting period from 16-Sep-2019 to 15-Oct-2019

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Signatures

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Release	Date	Pages	Description	Editor(s)/Reviewer(s)
1.0	**17/10/2019**	All	Initial version	

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1. Summary

In this reporting period, the majority of the synthesis products were nearly complete. There were no missing transfer frame files and only two automatic recoveries were recorded. The amount of decompression errors has been stable and at a low level since the yaw manoeuvres that were executed end of August 2019. The amount of geometric errors is variable but stay below a respectable level. End of September – early October some interference on the nominal acquisitions of calibration segments was noted in the Australasian area. This was solved after an update of the calibration campaigns.

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

10 new users registered and the total user community of PROBA-V surpassed 1700 users since this reporting period.

Tests were executed on a new cloud masking algorithm in development environment in preparation for 'Collection 2' of the data. Furthermore, all userVM's were migrated to the new OpenStack private cloud and old VM's were cleaned.

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	100.0	0.0
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

3. Image Processing Services

3.1. Ingested and archived products

Product Type	Total	Received	Missing data, ingested by VITO	Archived
METEO	240	240	0	240
TFF	300	300	0	300

Table 2: Ingested and archived products for this reporting period

3.2. Generated and archived products

Product Type	Total	Processed	Error	Archived
PROBAV_L1A - Calibration	297	297	0	297
PROBAV_L1A - Nominal	2561	2561	0	2561
PROBAV_L1C	2561	2561	0	2561
PROBAV_L2A_100M	894	894	0	894
PROBAV_L2A_300M	2561	2561	0	2560
PROBAV_L2A_1KM	2561	2561	0	2560
PROBAV_L3_S1_TOA_100M	30	30	0	30
PROBAV_L3_S1_TOC_100M	30	30	0	30
PROBAV_L3_S1_TOC_NDVI_100M	30	30	0	30
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	30	30	0	30
PROBAV_L3_S1_TOC_300M	30	30	0	30
PROBAV_L3_S10_TOC_300M	3	3	0	3
PROBAV_L3_S10_TOC_NDVI_300M	3	3	0	3
PROBAV_L3_S1_TOA_1KM	30	30	0	30
PROBAV_L3_S1_TOC_1KM	30	30	0	30
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

3.3. Backup and archiving service

Product type	Total Files	Total File Size (GB)
TFF	290	783.6
L1A	2776	1408.22
Database transaction logs	768	75.93
Database incremental back-up	40	9.18
Database full back-up	10	542.98

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

Product type	Total Files	Total File Size (GB)
PROBAV_TRANSFERFRAMES	289	839.72
PROBAV_L1A	2769	1510.61
PROBAV_L1C	2484	2903.47
PROBAV_L2A_100M	1754	1592.38
PROBAV_L2A_300M	4968	829.36
PROBAV_L2A_1KM	4968	108.89
PROBAV_L3_S1_TOA_100M	58	1680.21
PROBAV_L3_S1_TOC_100M	58	1742.10
PROBAV_L3_S1_TOC_NDVI_100M	58	195.41
PROBAV_L3_S5_TOA_100M	12	1228.54
PROBAV_L3_S5_TOC_100M	12	1281.29
PROBAV_L3_S5_TOC_NDVI_100M	12	143.39
PROBAV_L3_S1_TOA_300M	58	725.24
PROBAV_L3_S1_TOC_300M	58	749.38
PROBAV_L3_S10_TOC_300M	6	124.67
PROBAV_L3_S10_TOC_NDVI_300M	6	11.04
PROBAV_L3_S1_TOA_1KM	58	96.68
PROBAV_L3_S1_TOC_1KM	59	100.92
PROBAV_L3_S10_TOC_1KM	6	16.92
PROBAV_L3_S10_TOC_NDVI_1KM	6	1.39
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	232	0.29
METEO_METEOSERVICES	232	1.24
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	2570	3	146
PROBAV_L2A_100M	899	181	188
PROBAV_L2A_300M	2570	0	19
PROBAV_L2A_1KM	2570	0	18
PROBAV_L3_S1_TOA_100M	30	124	72
PROBAV_L3_S1_TOC_100M	30	189	1701
PROBAV_L3_S1_TOC_NDVI_100M	30	4	18
PROBAV_L3_S5_TOA_100M	6	0	1
PROBAV_L3_S5_TOC_100M	6	43	48
PROBAV_L3_S5_TOC_NDVI_100M	6	414	626
PROBAV_L3_S1_TOA_300M	30	91	87
PROBAV_L3_S1_TOC_300M	30	98	213
PROBAV_L3_S10_TOC_300M	3	26	26
PROBAV_L3_S10_TOC_NDVI_300M	3	734	743
PROBAV_L3_S1_TOA_1KM	30	122	120
PROBAV_L3_S1_TOC_1KM	30	74	109
PROBAV_L3_S10_TOC_1KM	3	42	46
PROBAV_L3_S10_TOC_NDVI_1KM	3	1609	1826

Table 6: Ordered and delivered products for this reporting period

3.5. End-user activity

10 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 **1708** with **120** different nationalities representing **1246** different companies/universities.

Product type	Africa	Asia	Europe	N-America	Oceania	S-America
PROBAV_L1C	0	174.24	7.55	0	0	0
PROBAV_L2A_100M	0	6.03	0.42	0	0	0.01
PROBAV_L2A_300M	0	0	4.12	0	0	0
PROBAV_L2A_1KM	0	0	0.58	0	0	0
PROBAV_L3_S1_TOA_100M	0	0	4.58	0	0	0.31
PROBAV_L3_S1_TOC_100M	0	0	1546.99	802.37	0	0
PROBAV_L3_S1_TOC_NDVI_100M	0	0.11	0.19	0	0	0
PROBAV_L3_S5_TOA_100M	0	0	0.45	0	0	0
PROBAV_L3_S5_TOC_100M	20.95	1363.38	3.61	0	0	0

PROBAV_L3_S5_TOC_NDVI_100M	1.43	13.27	3822.38	0	8.42	0.46
PROBAV_L3_S1_TOA_300M	0	0	644.79	0	0	0
PROBAV_L3_S1_TOC_300M	0	0	1035.75	365.52	0	0
PROBAV_L3_S10_TOC_300M	2.07	0	125.71	1.53	0	0
PROBAV_L3_S10_TOC_NDVI_300M	0	0.31	10.62	5.52	0	0.04
PROBAV_L3_S1_TOA_1KM	0	0.01	94.39	0	0	0
PROBAV_L3_S1_TOC_1KM	0	0.02	137.16	0	0	0
PROBAV_L3_S10_TOC_1KM	0.61	0.01	18.28	0.89	0	0
PROBAV_L3_S10_TOC_NDVI_1KM	3.43	8.82	0.78	0	0.05	0.01

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

Product Type	Global
L1C	181.79
PROBAV_L2A_100M	6.46
PROBAV_L2A_300M	4.12
PROBAV_L2A_1KM	0.58
PROBAV_L3_S1_TOA_100M	4.89
PROBAV_L3_S1_TOC_100M	2349.36
PROBAV_L3_S1_TOC_NDVI_100M	0.31
PROBAV_L3_S5_TOA_100M	0.45
PROBAV_L3_S5_TOC_100M	1387.95
PROBAV_L3_S5_TOC_NDVI_100M	3845.97
PROBAV_L3_S1_TOA_300M	644.79
PROBAV_L3_S1_TOC_300M	1401.27
PROBAV_L3_S10_TOC_300M	129.31
PROBAV_L3_S10_TOC_NDVI_300M	16.49
PROBAV_L3_S1_TOA_1KM	94.39
PROBAV_L3_S1_TOC_1KM	137.17
PROBAV_L3_S10_TOC_1KM	19.79
PROBAV_L3_S10_TOC_NDVI_1KM	13.08

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

Company	# Downloads
VUB	1426
VISIOTERRA	1385
UNIVERSITY OF ZIMBABWE	398
VITO	297
MURDOCH UNIVERSITY	245

CUIT	216
UNIVERSITY OF COPENHAGEN	216
POLITECNICO DI BARI	215
SHENZHEN UNIVERSITY	186
GOOGLE	164

Table 9: Top 10 user companies for the reporting period

Country	# Users
CHINA	171
BELGIUM	150
INDIA	82
FRANCE	81
BRAZIL	79
UNITED STATES	74
ITALY	72
UNITED KINGDOM	59
NETHERLANDS	57
GERMANY	52

Table 10: Top 10 countries with most registered users

List of issues raised by users:

Your submission to the PROBA-V helpdesk
probaC-mep and TErrascope VM
epod6.vgt.vito.be problem
jenkins onbereikbaar vanuit terrascope VM
Request an access to data
terrascope VM
jupyter notebooks to make available
RE: Proba-V MEP: migration of user VM's to Terrascope
sparkContext Error
geen connectie http://es1.vgt.vito.be:9200
RE: Proba-V MEP: migration of user VM's to Terrascope
hsf_dev_write group
Re: Fw: Proba-V MEP: migration of user VM's to Terrascope
telechargement
Gold explorer (treasures) underground.
PDF: N.A. - bart bomans - 2019/9/26 - paswoord
issue spark - reason: Max number of executor failures (1) reached)
SUPER DRINGEND !!!!!!!!!!!!
artifactory 404
Consulta
[Terrascope] Your VM request
Post sending files to client
Order "M0181227" is submitted

[user:j_leon] cannot access http://epod6.vgt.vito.be:8088/cluster/
spark-submit without interaction
User VM niet meer bereikbaar
2019-2020 Calendar purchase
Your data order C0181058

4. Image Calibration services

4.1. Radiometric Calibration

Calibration request type	Total	Processed	Not received	Error
CLOUDS	27	25	2	0
DARK CURRENT	25	23	2	0
MOON	2	2	0	0
RAYLEIGH	58	55	3	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	295	276	19
PROBA-V_L1B_INTERSECTION	779	441	338
PROBA-V_L1B_OVERLAPREGION	0	0	0

Table 12: Processed calibration images for this reporting period

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.

Similarly as in prevous months the Libya-4 calibration results for RED and NIR band of the RIGHT camera keep on showing a clear positive trend and/or bias over last 6 months. In the DCC results this trend is less obvious as the results are expressed relatively to the RED band, but explains the decreasing trend observed in the blue band DCCresults. The cause of this trend has not yet been found. Currently the increasing trend is not yet corrected for in the ICP files. Investigations are still ongoing.

No new bad pixel was 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_20191001_V01
- PROBAV_ICP_RADIOMETRIC#CENTER_20191001_V01
- PROBAV_ICP_RADIOMETRIC#RIGHT_20191001_V01

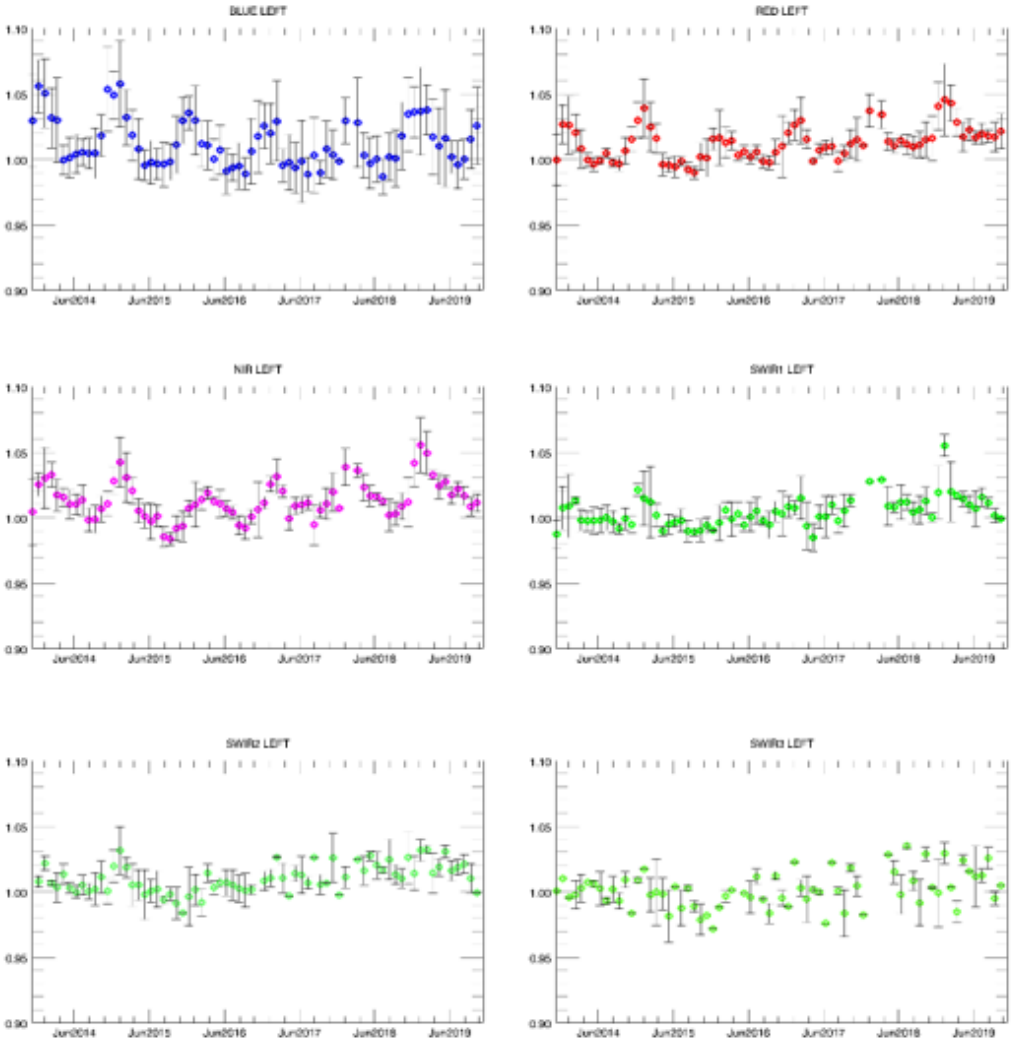

Figure 1. Libya-4 desert calibration results: LEFT monthly averaged results (collection 1)

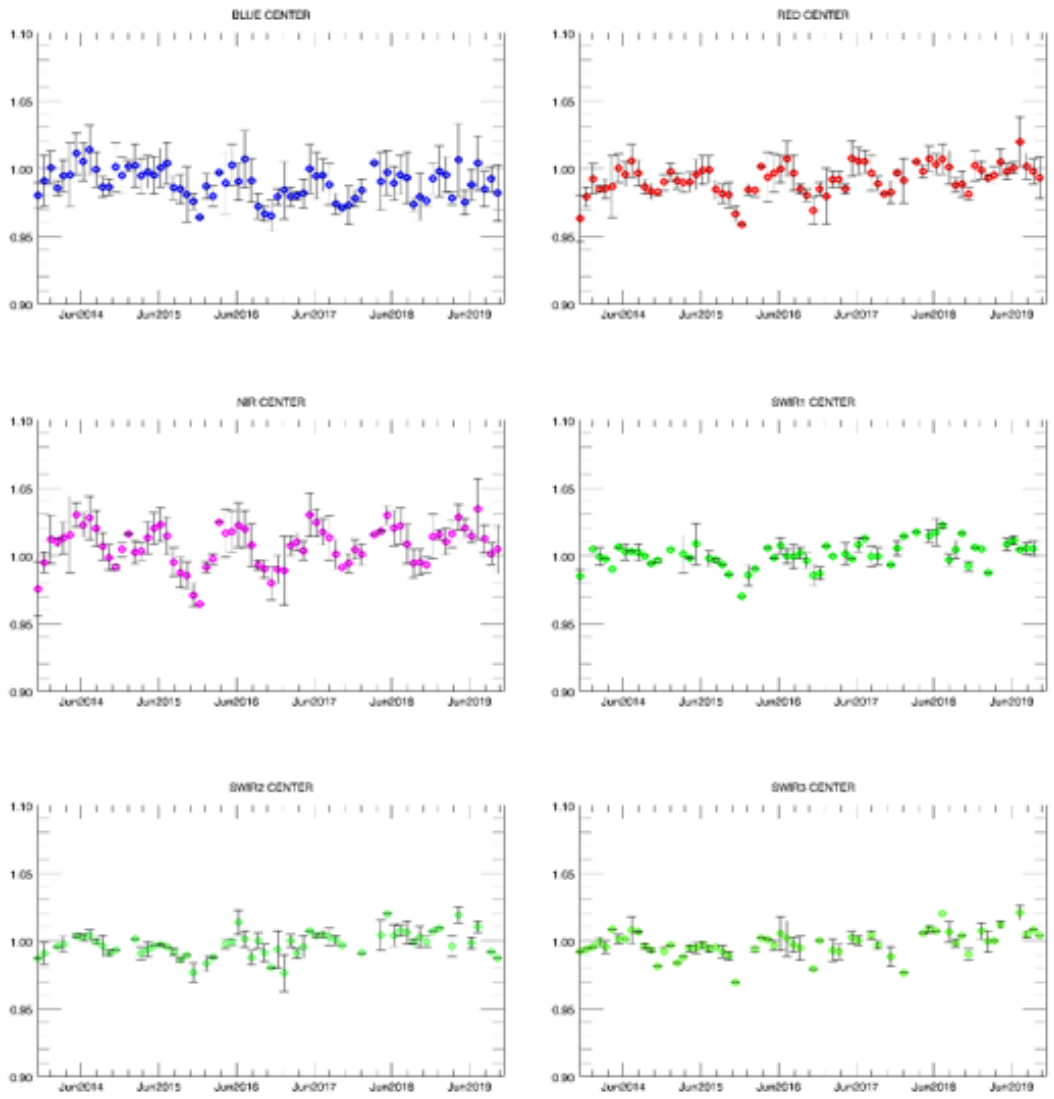

Figure 2. Libya-4 desert calibration results: CENTER monthly averaged results (collection 1)

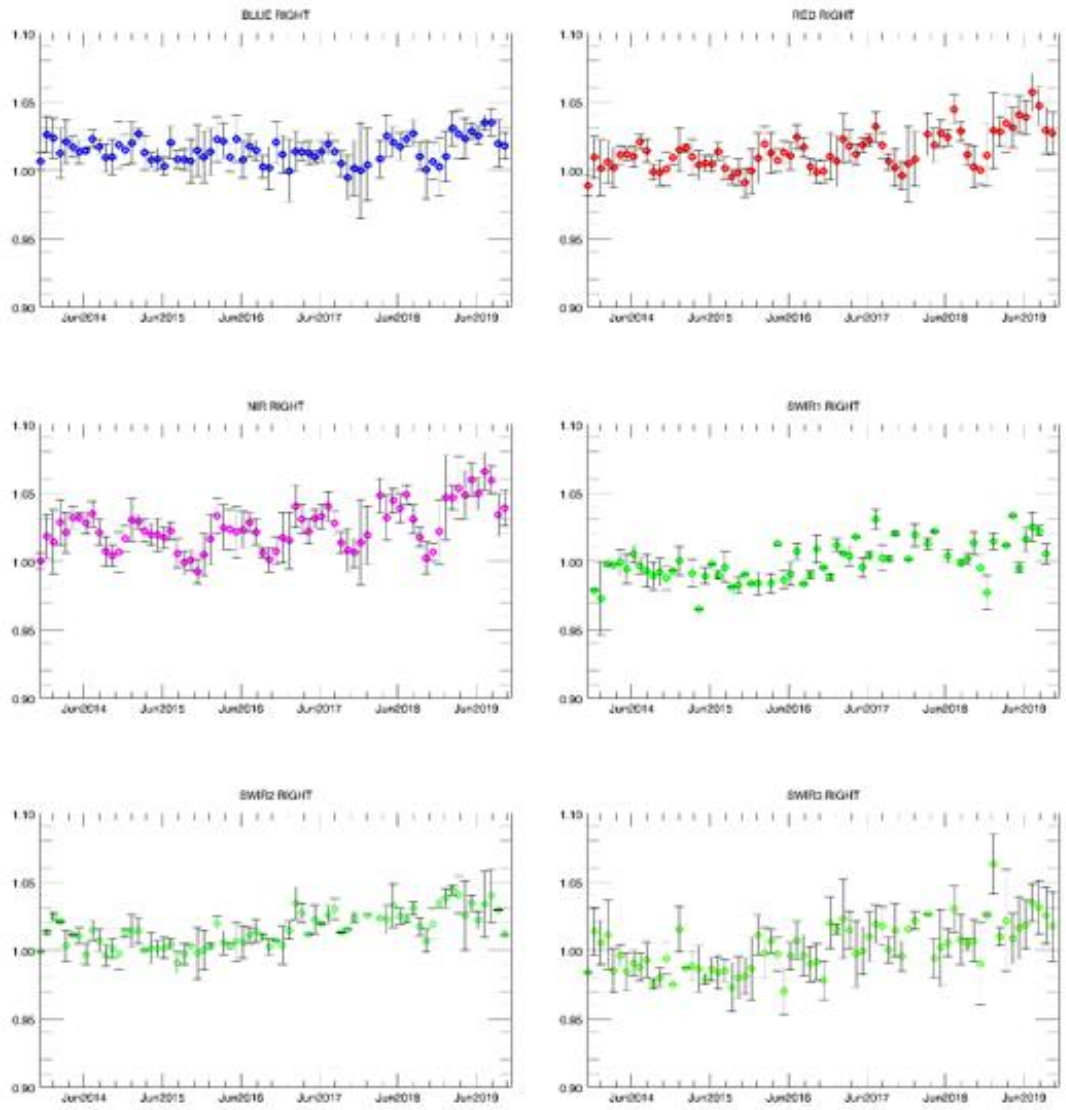

Figure 3. Libya-4 desert calibration results: RIGHT monthly averaged results (collection 1)

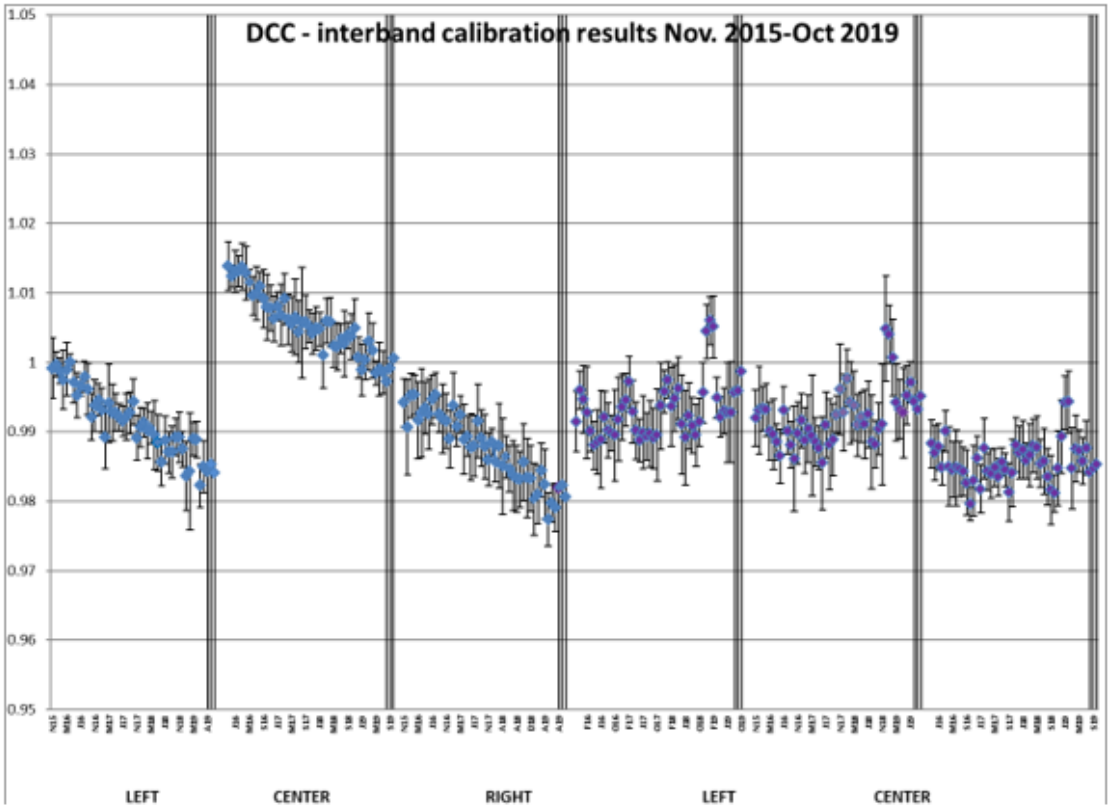

Figure 4. DCC inter-band calibration results: LEFT, CENTER and RIGHT camera (collection 1)

4.2. Geometric Calibration

Calibration image type	Total	Processed	Error
PROBA-V_L1C_INTERSECTION	13666	13666	0

Table13: Processed calibration images for this reporting period

During previous month, the average ALE was < 75 m (σ < 90 m). The daily values started off at 120 – 135 m, but quickly declined towards 50 – 70 m until 30/9.
After this date, the ALE gradually increased, but remained well below 90 m.

The average compliance was 99.25% (98.85 – 99.74% from BLUE – SWIR), with the minimum values (97.11 - 99.64%, BLUE – SWIR) occurring at the beginning of the reporting period.

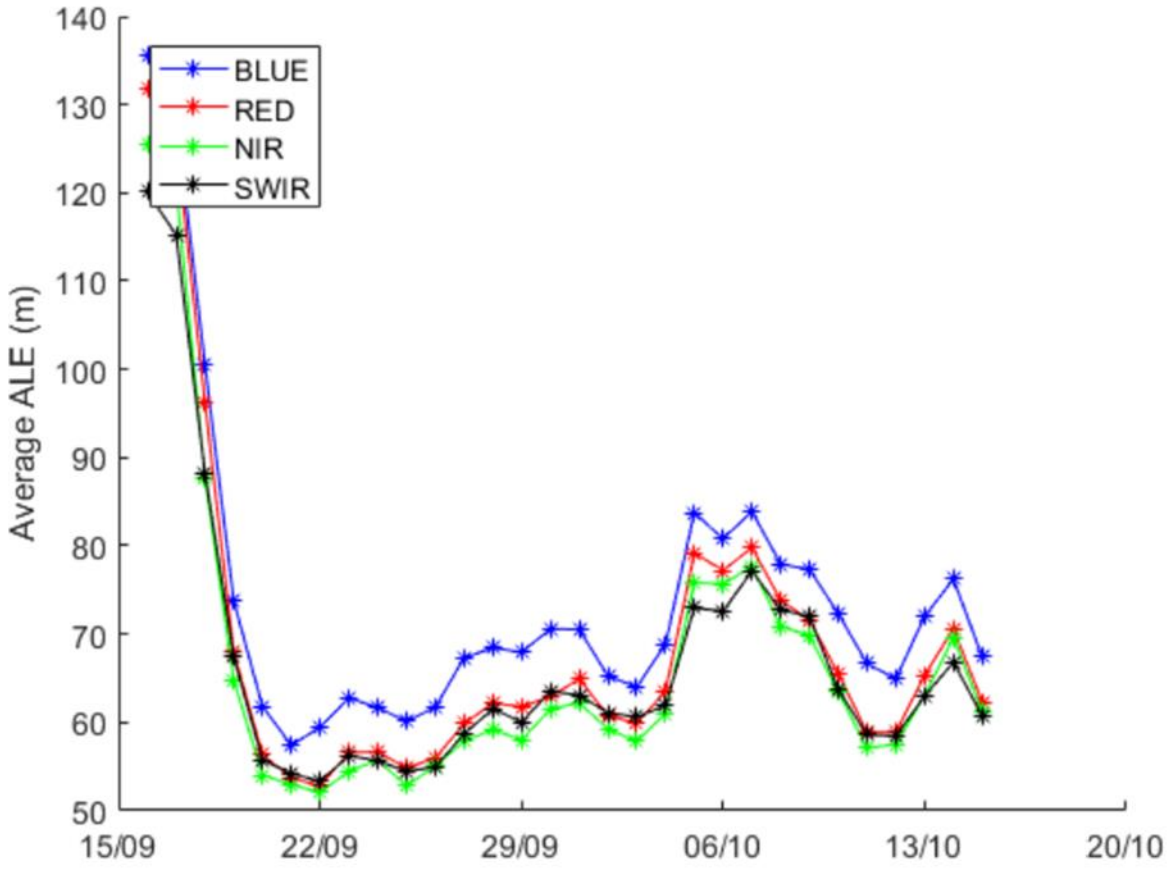

Figure 5. Daily absolute location error in this reporting period

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-63	Cloud shadow detection at high solar zenith angles not working properly	Open	11/05/2016	Software
PROBAVUS-65	Processing statuses L2 products	In Progress	16/09/2016	Software
PROBAVUS-68	ICP file version not taken into account when processing	In Progress	20/03/2017	Software
PROBAVUS-69	Version number of segment not filtered when querying for syntheses	Open	20/03/2017	Software
PROBAVUS-70	Investigate L2A artefact in data	Open	31/05/2017	Software
PROBAVUS-72	Status mask of data with decompression error is not correctly set	Open	22/06/2017	Software
PROBAVUS-75	Clear pixel edge in cloud shadow detection	Open	15/11/2017	Software
PROBAVUS-76	Large amount of geometric errors are detected	Open	29/01/2019	

0 new issues were logged during this reporting period
0 issue(s) was resolved and closed during this reporting period
0 issues are resolved but remain to be closed formally
0 issues are resolved but remain in the list logging purposes
8 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)	0	
Medium Gaps (< 10000 km²)	7	03/10, 28/09, 06/10, 01/10, 02/10, 27/09, 21/09
Minor Gaps (< 3600 km²)	5	23/09, 11/10, 17/09, 07/10, 04/10
Negligible Gaps (< 1000 km²)	16	25/09, 15/10, 05/10, 30/09, 10/10, 20/09, 29/09, 24/09, 19/09, 14/10, 09/10, 18/09, 08/10, 13/10, 12/10, 26/09
Complete synthesis (no gaps)	2	22/09, 16/09

Table14: Overview of S1 for this reporting period

Synthesis	Missing	Decom. Error	Geom. Error	Missing TFF	Autom. Recovery	VC4 Missing	Create Contours	Other
20190916	0.57%							
20190917	2.96%	1	3					
20190918	0.14%	1						
20190919	0.05%	3	2					
20190920	0.99%	2	11					
20190921	11.90%	4	30		2			
20190922	0.31%							
20190923	1.04%	3	4					
20190924	0.01%	2	2					
20190925	0.62%	1	2					
20190926	0.33%	1						
20190927	1.46%	1						1
20190928	0.84%	1	2					1
20190929	0.70%	1	1					
20190930	0.16%		9					
20191001	1.66%	4	3					1
20191002	0.53%	5	8					1
20191003	1.19%	3	3					1
20191004	1.18%		12					
20191005	0.34%	1	10					
20191006	1.48%	1	4					1
20191007	0.78%							1
20191008	0.73%	3						
20191009	0.49%	1	2					
20191010	0.95%		10					
20191011	5.00%	8	9			1		
20191012	0.02%	2	8					
20191013	0.77%		8					
20191014	0.52%	3	2					
20191015	0.81%	2	5					

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

All UserVM's of the PROBA-V MEP environment have been moved to the newly supported OpenStack environment, increasing performance, stability and security. During this process 'old' VM's that were not used anymore were cleaned.

Preparations are ongoing to prepare for the next collection 'C2'. Test are being performed on a new cloud mask.