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MONTHLY OPERATIONS REPORT

MOR#056

Reporting period from 16-Jul-2018 to 15-Aug-2018

DOCUMENT CONTROL

Signatures

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1. Summary

In this reporting period, the majority of the synthesis products were nearly complete. Most missing data in the synthesis products were caused by decompression and geometric errors and some automatic recoveries of the platform.

One transfer frame file was missing due to an antenna problem in Kiruna; several files were delayed due to network issues, but with minor impact on production.

The three yaw maneuver campaigns (on July 9, 18 and 27) were successfully performed over the Niger1 site for the three different cameras and will be analyzed in the coming weeks and compared to the results retrieved on the basis of the yaw maneuvers performed last year.

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

No new developments are expected in the coming period.

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	248	248	0	248
TFF	310	309	1[(*)]	309

Table 2: Ingested and archived products for this reporting period

[(*)] missing TFF: 17776 due to an antenna problem at the Kiruna DRS.

3.2. Generated and archived products

Product Type	Total	Processed	Error[(*)]	Archived
PROBAV_L1A - Calibration	317	316	1	316
PROBAV_L1A - Nominal	2634	2630	5	2629
PROBAV_L1C	2630	2630	0	2629
PROBAV_L2A_100M	926	926	0	926
PROBAV_L2A_300M	2630	2630	0	2630
PROBAV_L2A_1KM	2630	2630	0	2630
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

[(*)] 6 x L1A error due to geometric processing

3.3. Backup and archiving service

Product type	Total Files	Total File Size (GB)
TFF	304	701.97
L1A	2852	1427.22
Database transaction logs	660	56.86
Database incremental back-up	34	5.95
Database full back-up	6	190.27

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

Product type	Total Files	Total File Size (GB)
PROBAV_TRANSFERFRAMES	285	719.73
PROBAV_L1A	2767	1478.12
PROBAV_L1C	2459	2858.50
PROBAV_L2A_100M	1068	881.23
PROBAV_L2A_300M	3001	461.14
PROBAV_L2A_1KM	3016	64.41
PROBAV_L3_S1_TOA_100M	33	868.40
PROBAV_L3_S1_TOC_100M	33	900.21
PROBAV_L3_S1_TOC_NDVI_100M	34	109.56
PROBAV_L3_S5_TOA_100M	7	669.38
PROBAV_L3_S5_TOC_100M	8	807.35
PROBAV_L3_S5_TOC_NDVI_100M	8	92.32
PROBAV_L3_S1_TOA_300M	37	429.16
PROBAV_L3_S1_TOC_300M	36	430.61
PROBAV_L3_S10_TOC_300M	4	85.33
PROBAV_L3_S10_TOC_NDVI_300M	3	5.31
PROBAV_L3_S1_TOA_1KM	36	60.00
PROBAV_L3_S1_TOC_1KM	36	61.61
PROBAV_L3_S10_TOC_1KM	3	9.41
PROBAV_L3_S10_TOC_NDVI_1KM	3	0.72
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	231	0.29
METEO_METEOSERVICES	262	1.40
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	2629	102	246
PROBAV_L2A_100M	925	2811	3413
PROBAV_L2A_300M	2629	39	2110
PROBAV_L2A_1KM	2630	2	5
PROBAV_L3_S1_TOA_100M	31	455	436
PROBAV_L3_S1_TOC_100M	31	211	1531
PROBAV_L3_S1_TOC_NDVI_100M	31	6	12
PROBAV_L3_S5_TOA_100M	6	13	12
PROBAV_L3_S5_TOC_100M	6	114	115
PROBAV_L3_S5_TOC_NDVI_100M	6	965	1197
PROBAV_L3_S1_TOA_300M	31	133	131
PROBAV_L3_S1_TOC_300M	31	1489	1937
PROBAV_L3_S10_TOC_300M	3	50	48
PROBAV_L3_S10_TOC_NDVI_300M	3	4	8
PROBAV_L3_S1_TOA_1KM	31	99	104
PROBAV_L3_S1_TOC_1KM	31	188	232
PROBAV_L3_S10_TOC_1KM	3	11	14
PROBAV_L3_S10_TOC_NDVI_1KM	3	235	197

Table 6: Ordered and delivered products for this reporting period

3.5. End-user activity

13 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 **1468** with **117** different nationalities representing **1103** different companies/universities.

Product type	Africa	Asia	Europe	N-America	Oceania	S-America
PROBAV_L1C	0	541.33	0	0	0	3.09
PROBAV_L2A_100M	426.53	0	2114.47	0	0	1.32
PROBAV_L2A_300M	0	0.02	599.17	0	0	0
PROBAV_L2A_1KM	0	0	0.02	0	0	0
PROBAV_L3_S1_TOA_100M	0	0.33	90.58	0	0.10	0
PROBAV_L3_S1_TOC_100M	0	199.42	827.72	729.83	0	0
PROBAV_L3_S1_TOC_NDVI_100M	0	0.40	0.02	20.60	0	0
PROBAV_L3_S5_TOA_100M	0	0	521.53	0	0	0.01
PROBAV_L3_S5_TOC_100M	16.85	3.19	646.66	0	0	0

PROBAV_L3_S5_TOC_NDVI_100M	0	48.86	4.23	0	0	0.52
PROBAV_L3_S1_TOA_300M	0	2.67	1035.14	0	0	0
PROBAV_L3_S1_TOC_300M	91.62	0.03	1107.22	312.93	0	0
PROBAV_L3_S10_TOC_300M	2.13	1.04	188.36	0	0	0
PROBAV_L3_S10_TOC_NDVI_300M	0	0.39	0	0	0	0.04
PROBAV_L3_S1_TOA_1KM	0	0.00	154.57	0	0	0
PROBAV_L3_S1_TOC_1KM	0	24.58	265.89	0	0	0
PROBAV_L3_S10_TOC_1KM	0.39	0	17.54	0.87	0	0
PROBAV_L3_S10_TOC_NDVI_1KM	0	1.06	0.71	0	0	0.01

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

Product Type	Global
L1C	544.42
PROBAV_L2A_100M	2542.32
PROBAV_L2A_300M	599.19
PROBAV_L2A_1KM	0.02
PROBAV_L3_S1_TOA_100M	91.01
PROBAV_L3_S1_TOC_100M	1756.97
PROBAV_L3_S1_TOC_NDVI_100M	21.02
PROBAV_L3_S5_TOA_100M	521.53
PROBAV_L3_S5_TOC_100M	666.70
PROBAV_L3_S5_TOC_NDVI_100M	53.61
PROBAV_L3_S1_TOA_300M	1037.81
PROBAV_L3_S1_TOC_300M	1511.79
PROBAV_L3_S10_TOC_300M	191.53
PROBAV_L3_S10_TOC_NDVI_300M	0.43
PROBAV_L3_S1_TOA_1KM	154.57
PROBAV_L3_S1_TOC_1KM	290.48
PROBAV_L3_S10_TOC_1KM	18.80
PROBAV_L3_S10_TOC_NDVI_1KM	1.78

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

Company	# Downloads
ESA	3451
NARSS	2681
VITO	2194
SPACE RESEARCH INSTITUTE RAS (IKI RAN)	948
CSIR-IHBT	940

JIANGXI NORMAL UNIVERSITY	224
NANJING NORMAL UNVIERSITY	172
AIRBUS	169
PLANETA	143
EFTAS	121

Table 9: Top 10 user companies for the reporting period

Country	# Users
CHINA	144
BELGIUM	119
FRANCE	69
UNITED STATES	67
BRAZIL	66
ITALY	66
INDIA	65
UNITED KINGDOM	55
NETHERLANDS	51
GERMANY	48

Table 10: Top 10 countries with most registered users

List of issues raised by users:

- Example image from Central America
- sharing files with just one other user
- Aanpassingen aan hspf_* gebruikers en groepen
- PYTHONPATH
- SPARK_MAJOR_VERSION=2 spark-submit --version
- 2 groepen hebben geen permissie om docker binary uit te voeren.
- mep_airflow' lid laten worden van 3 groepen
- submitting new job
- i need your help
- Twee additionele gebruikers met keytab
- Spark2 niet geinstalleerd op nieuwe Airflow insanties!?
- Nieuwe postgresql servers
- Notice: This node does not have a role, it should at least have the base role!
- Paswoordloze toegang tot 3 machines
- Test account

4. Image Calibration services

4.1. Radiometric Calibration

Calibration request type	Total	Processed	Not received	Error
CLOUDS	27	23	4	0
DARK CURRENT	30	27	3	0
MOON	3	3	0	0
RAYLEIGH	72	62	10	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	3	3	0
PROBA-V_L1B_CALIBRATION	313	274	34
PROBA-V_L1B_INTERSECTION	752	78	674
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.

For the blue bands a degradation trend remains visible in the different calibration results. This might indicate that the parameters in the degradation model need to be revised. On the other hand an over-correction in the SWIR results is visible. Therefore also for SWIR bands a revision is required. Calibration results retrieved on the basis of the different methods and desert sites will be analyzed in order to update the degradation model.

Two new bad pixels have been identified : LEFT SWIR1 PixelID 2 and CENTER SWIR1 pixel 819.

The three yaw maneuver campaigns (on July 9,18 and 27) were successfully performed over the Niger1 site for the three different cameras and will be analyzed in the coming weeks and compared to the results retrieved on the basis of the yaw maneuvers performed last year.

Radiometric ICP file

Two bad pixels will be added to the ICP file. Both the SWIR and BLUE LEFT/CENTER absolute calibration coefficients will be updated following a linear degradation model, except for the SWIR RIGHT strips. Furthermore the dark currents will be updated.

The current ICP files are :

- PROBAV_ICP_RADIOMETRIC#LEFT_20180801_V01
- PROBAV_ICP_RADIOMETRIC#CENTER_20180801_V01
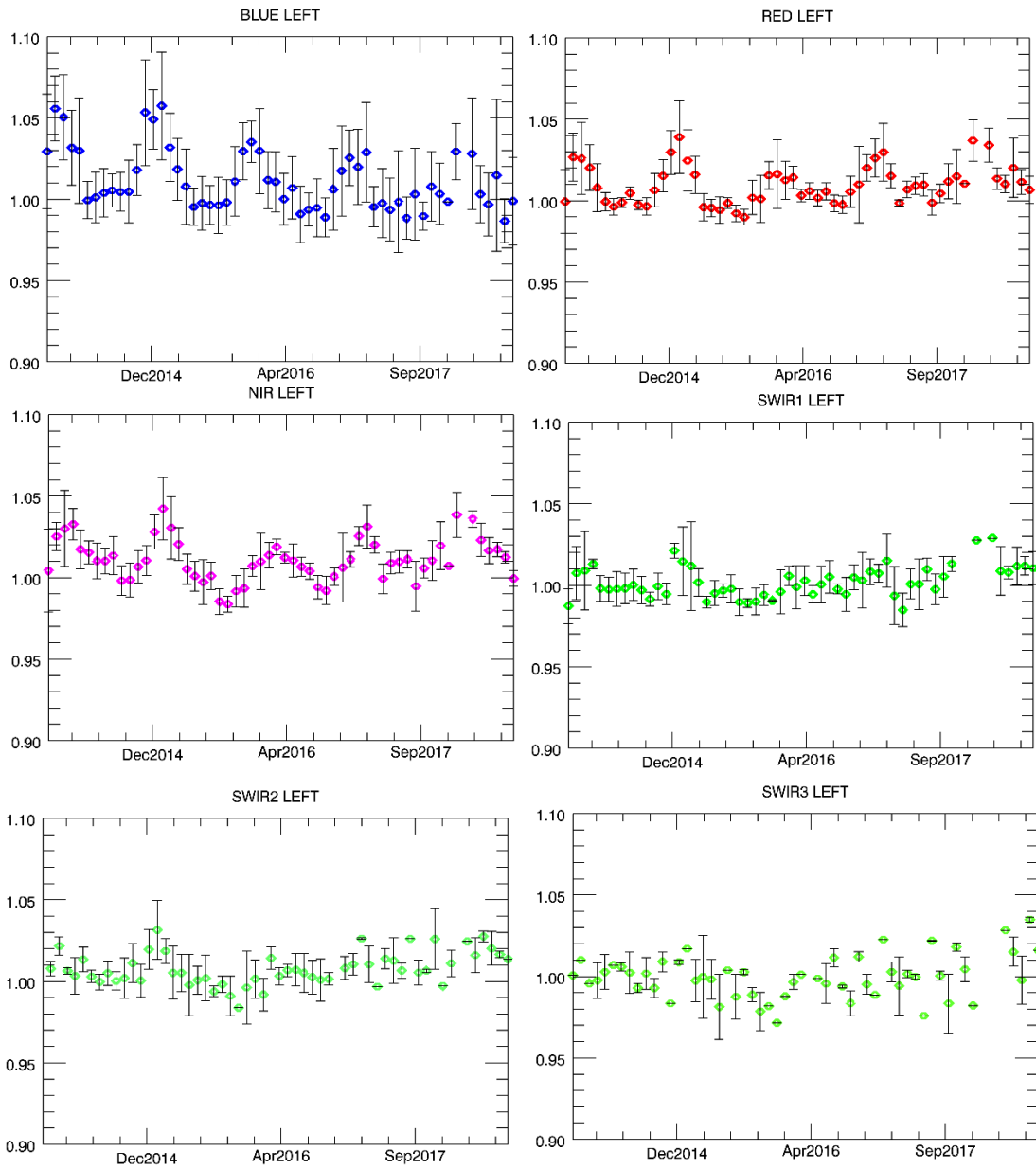- PROBAV_ICP_RADIOMETRIC#RIGHT_20180801_V01

Figure 1. Libya-4 desert calibration results: LEFT monthly averaged results (collection 1)
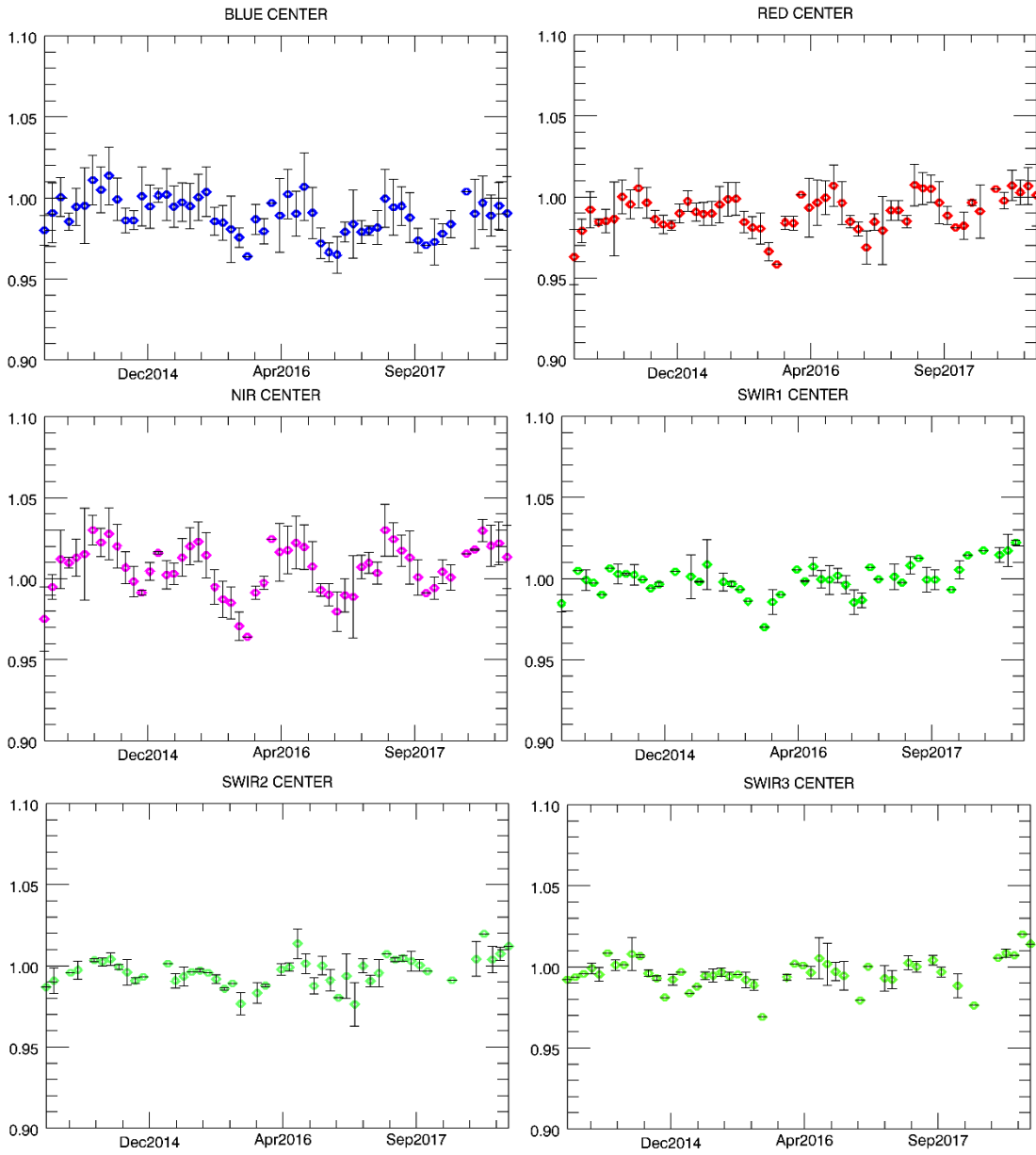
Figure 2. Libya-4 desert calibration results: CENTER monthly averaged results (collection 1)
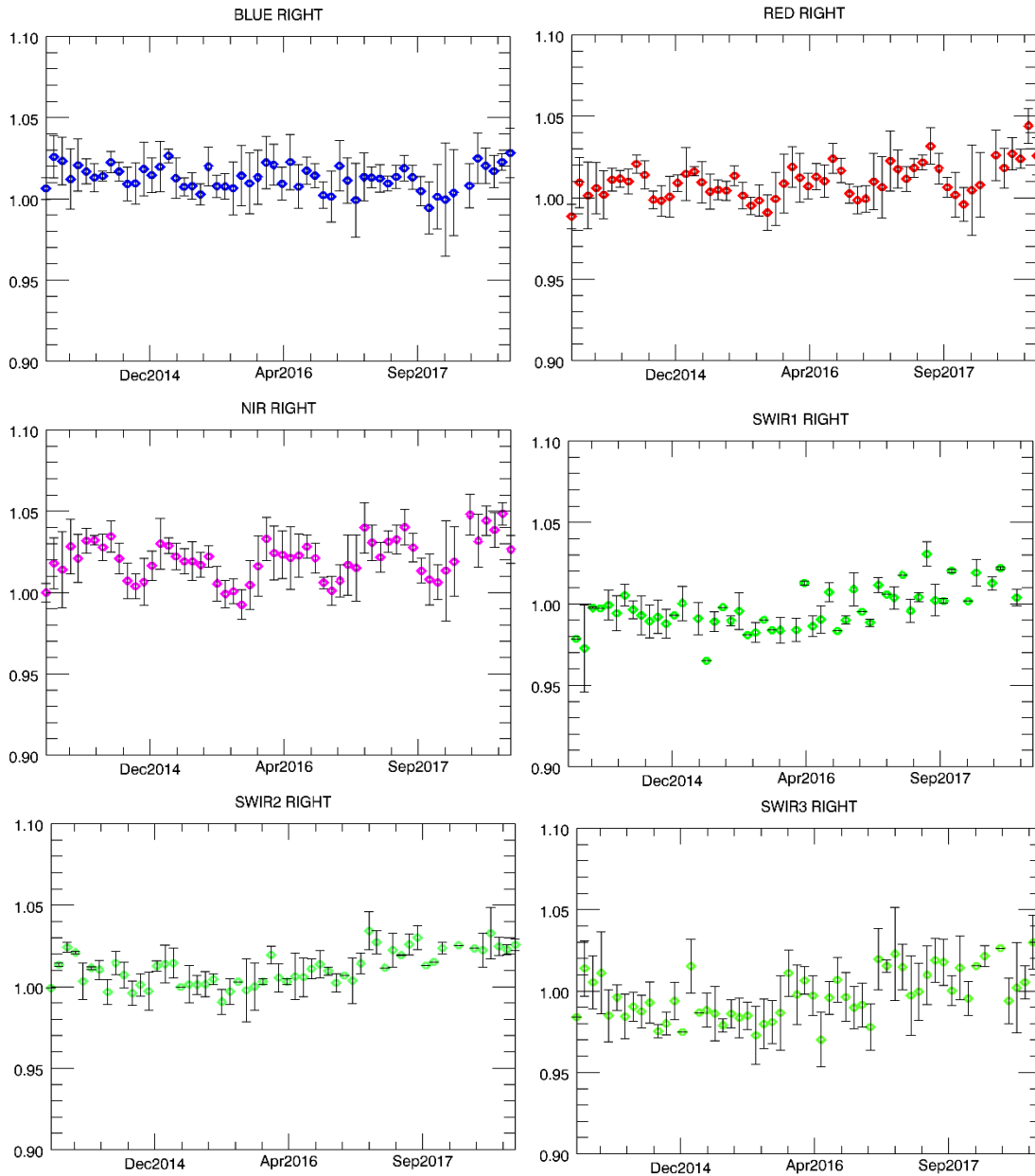
Figure 3. Libya-4 desert calibration results: RIGHT monthly averaged results (collection 1)
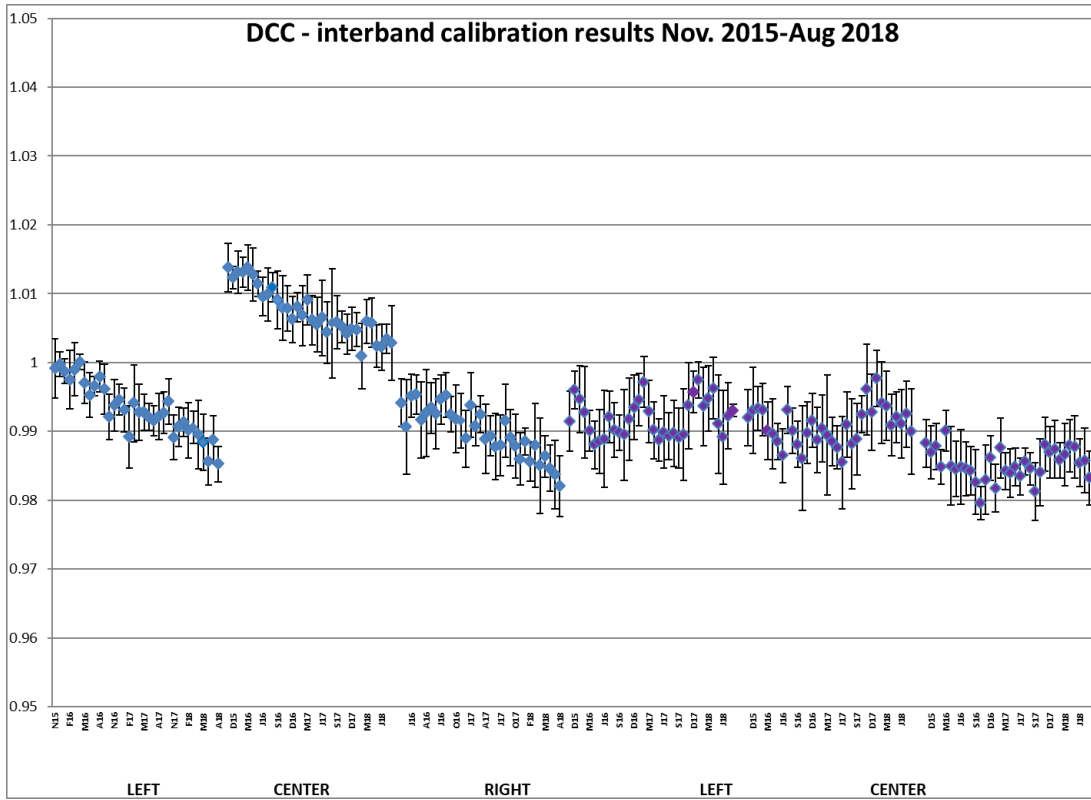
Figure 4. DCC inter-band calibration results: LEFT, CENTER and RIGHT camera (collection 1)

4.2. Geometric Calibration

Calibration image type	Total	Processed	Error
PROBA-V_L1C_INTERSECTION	14175	14175	0

Table13: Processed calibration images for this reporting period

Due to a processing issue, we unfortunately can only report on the period 8/07 to 4/08. We will report on the period 5/08 to 15/08 in the next Monthly Operations Report.
Within this period, the ALE gradually increased to 95 - 100 m on 30/07, and then gradually dropped to 70 – 75 m.

Geometric ICP file

- PROBAV_ICP_GEOMETRIC#LEFT_20160907_V01
- PROBAV_ICP_GEOMETRIC#CENTER_20160907_V01
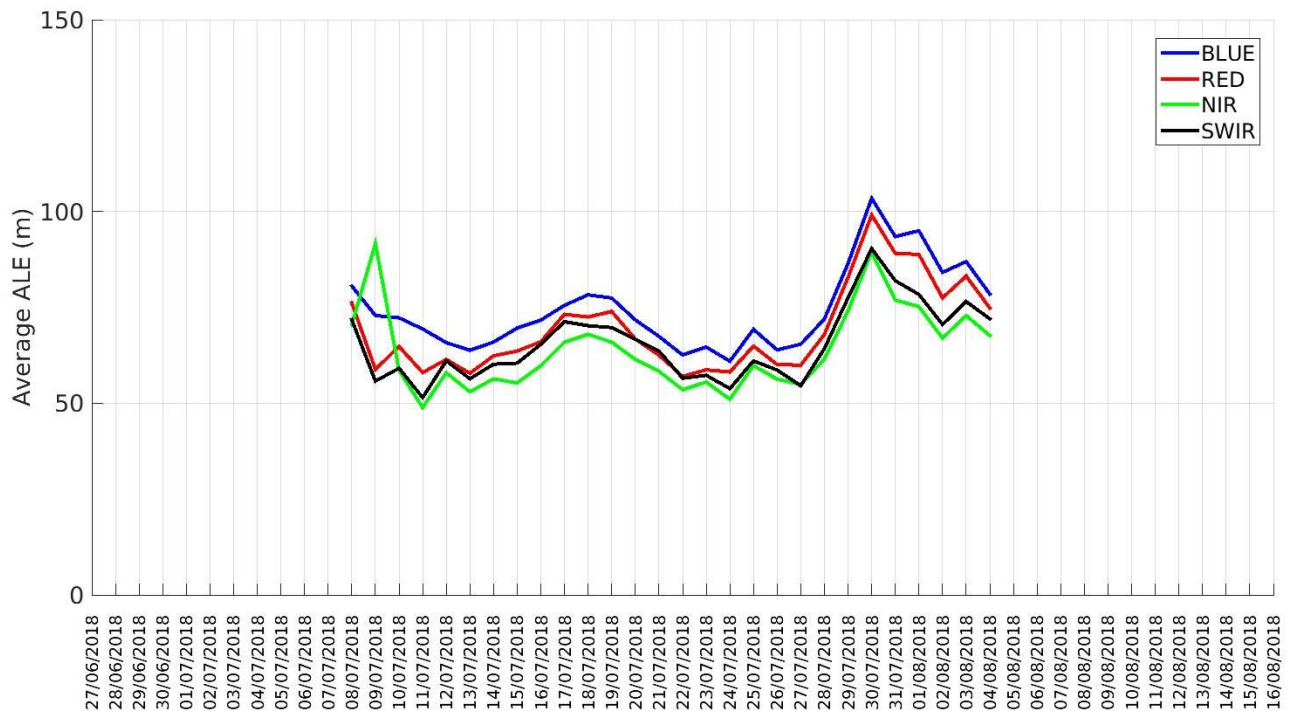- PROBAV_ICP_GEOMETRIC#RIGHT_20160907_V01

Figure 5 - Daily ALE evolution for 08/07 – 04/08

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-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-66	Cloud cover percentages on PDF products are not reliable	Resolved	19/10/2016	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

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
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)	3	26/07, 18/07, 25/07
Medium Gaps (< 10000 km²)	2	21/07, 27/07
Minor Gaps (< 3600 km²)	3	31/07, 15/08, 04/08
Negligible Gaps (< 1000 km²)	20	13/08, 08/08, 03/08, 28/07, 02/08, 23/07, 12/08, 14/08, 09/08, 30/07, 20/07, 24/07, 19/07, 05/08, 16/07, 10/08, 01/08, 22/07, 17/07, 11/08
Complete synthesis (no gaps)	3	29/07, 07/08, 06/08

Table14: Overview of S1 for this reporting period

Synthesis	Missing	Decom. Error	Geom. Error	Missing TFF	Autom. Recovery	VC4 Missing	Create Contours	Other
20180716	0.01%		2					
20180717	0.03%	2	8					
20180718	7.96%	3	5				3	
20180719	0.21%		1					
20180720	0.01%	2						
20180721	2.30%	2	6		1			
20180722	0.74%	3	2					
20180723	1.47%	4	3			2		
20180724	0.16%	2	7					
20180725	8.78%	4	5	2 - 1[(*)]			1	
20180726	25.85%	1	5	3 - 0[(*)]				
20180727	5.70%	3	1			1	2	
20180728	0.26%	3	2					
20180729	0.00%							
20180730	0.01%		2					
20180731	0.24%	1	6		1			
20180801	0.27%	3	7					
20180802	0.22%	1	2					
20180803	0.02%	4	5					
20180804	0.45%	1	11			1		
20180805	0.01%	1	5					
20180806	0.32%							
20180807	0.00%							
20180808	0.15%	4	2					
20180809	0.01%	2						
20180810	0.27%	1	4					
20180811	0.32%	1	6					1
20180812	0.01%	1	3					1
20180813	0.02%		4					
20180814	0.03%	1	4					
20180815	1.05%	5	13	1	1			

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

[(*)] In the end, most of the data was received from the DRS and added a few days later through reprocessing the data. Only on 25/07, one TFF was missing.

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