

Proba-V QWG#12
Introduction

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Outline



- Mission Status and Highlights
- QWG Agenda items
 - ✓ Status and Calibration
 - ✓ Collection 2
 - ✓ Continuity with S3
 - ✓ Experimental Phase
- Meeting Objectives
- Actions and Agenda



Proba-V Status and Quality

Mission Status

- **Operation Phase** discontinued on 30 June 2020 to limit impact of the orbital drift
- **Experimental Phase** started on 1st July 2020: acquisitions of Europe/Africa + ad-hoc campaigns
- **1st PV-Cubesat (VNIR)** will be launched in Aug 2021: Cal/Val Plan in preparation

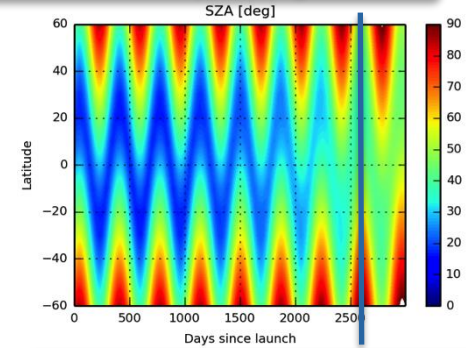
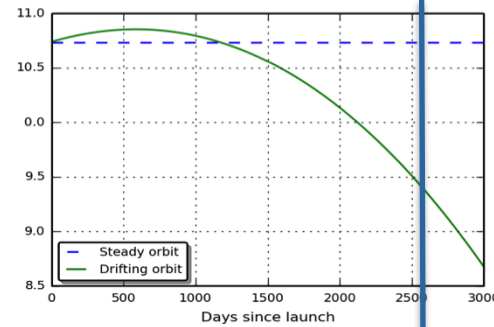
Data Quality

- **Radiometric** accuracy largely within MRD Req. (5% absolute, 3% inter-band/multi-temporal)
- **Geometric** accuracy exceeds MRD Req. (70 m in VNIR) with no sign of degradation

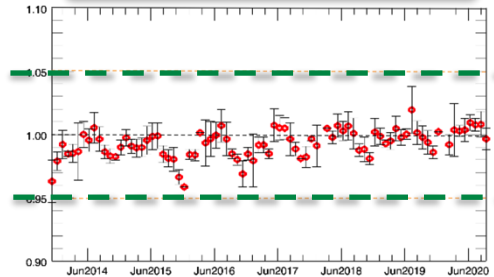
C2 Re-Processing Status

- **New cloud mask:** development and validation of the new cloud mask completed, ready for C2
- **New A/C:** new SMAC with updated LUT (>140 aerosol models) using AOD from climatology; development completed, validation on-going
- **Re-processing plan:** PDGS integration on-going, verification over limited dataset in Jan 2021, start during Q1 2021 (\approx 6 months duration)

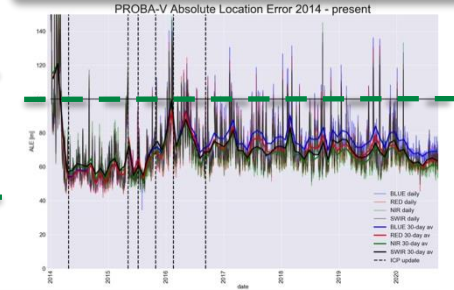
Projected evolution of LTDN and SZA up to Aug 2021



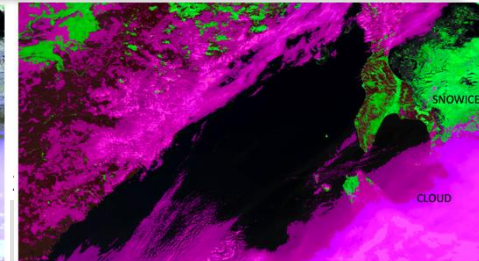
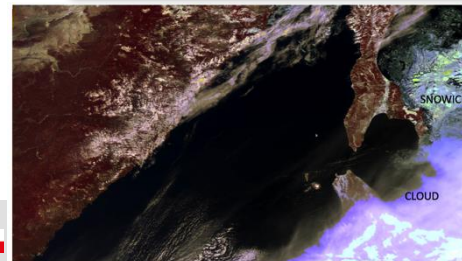
Radiometry absolute RED



Geometry absolute all bands



C2 Cloud Mask over icy (green) cloudy (magenta) scene



Proba-V Highlights



Exploitation activities

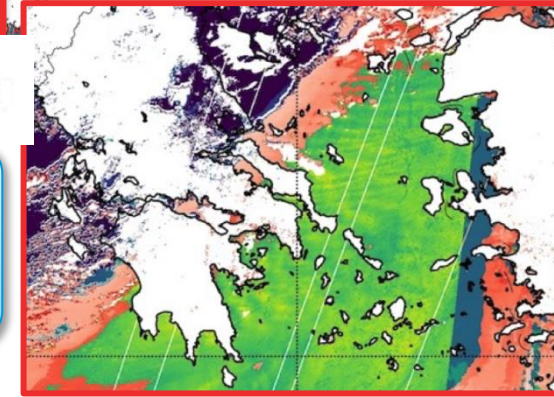
- **SPAR@MEP:** Europe processing of 2019 on-going; unique dataset of AOD/SR @1km; Global processing of SPOT-PV 20 years @5km to start in Q1 2021
- **LC@100m:** Final deliverable 100m global LC map, which largely improves crop/grassland layers, release when journal paper will be accepted

Experimental Phase

- Companion **Cubesats** to progressively complement/expand Proba-V observations capabilities (Hyper, TIR), first PV-CC VNIR for launch in Q1 2021

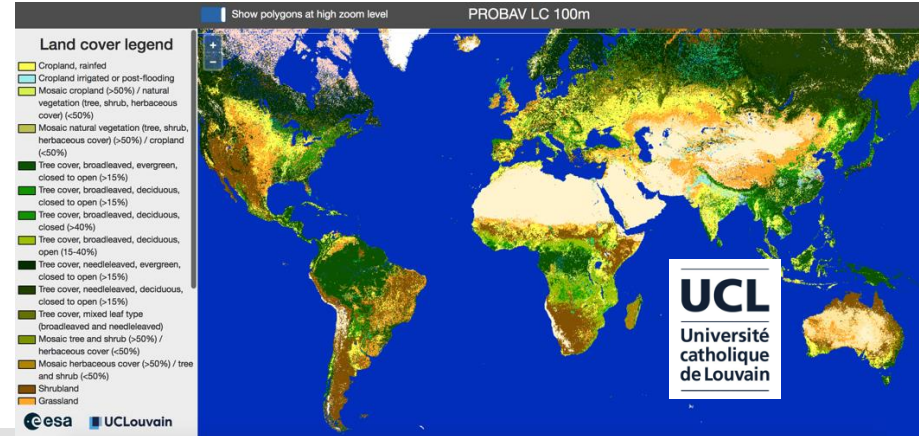
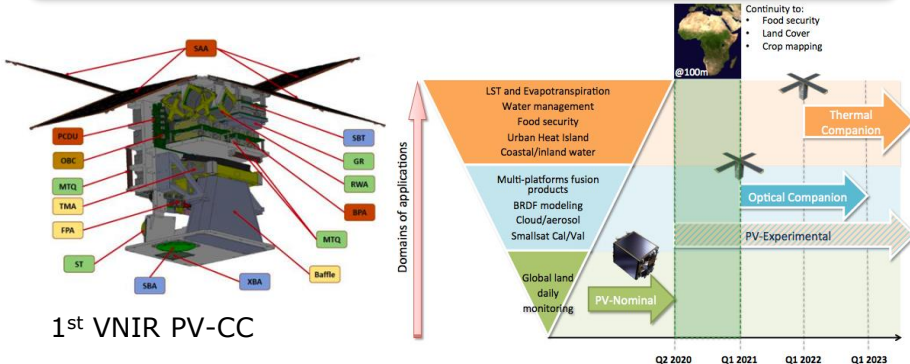


SPAR@MEP AOD @1km for a dust event showing fine spatial patterns (orographic waves)



100m LC map with improved crop layer

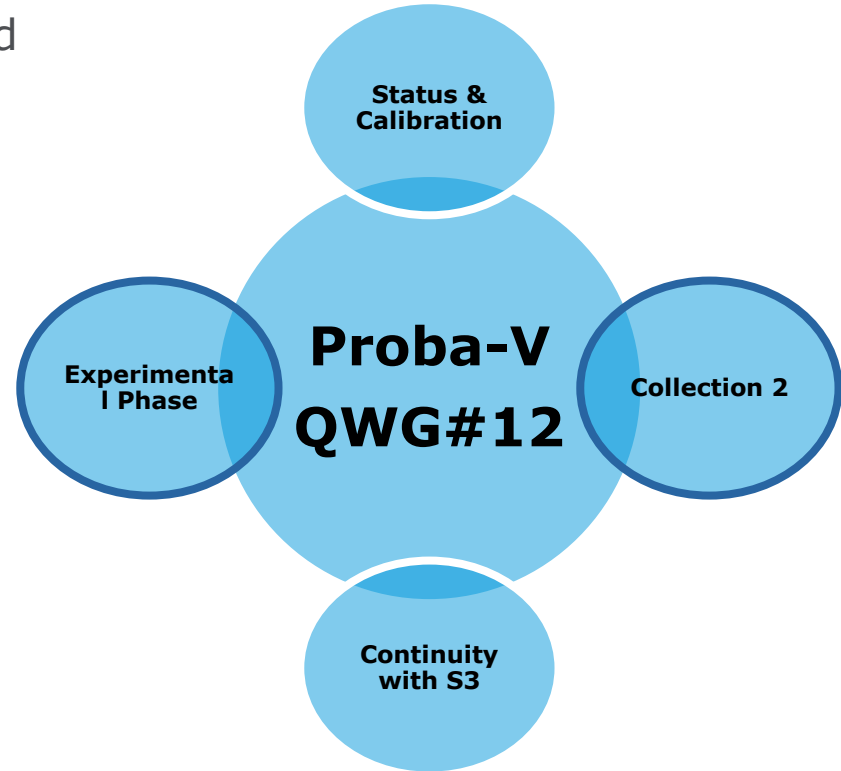
Experimental Phase Strategy with Companion Cubesats



Discussion points for QWG Meeting#12

The following points will be reviewed and discussed within this QWG Meeting:

- Mission Status and Calibration
- Collection 2
- Continuity with S3
- Experimental Phase

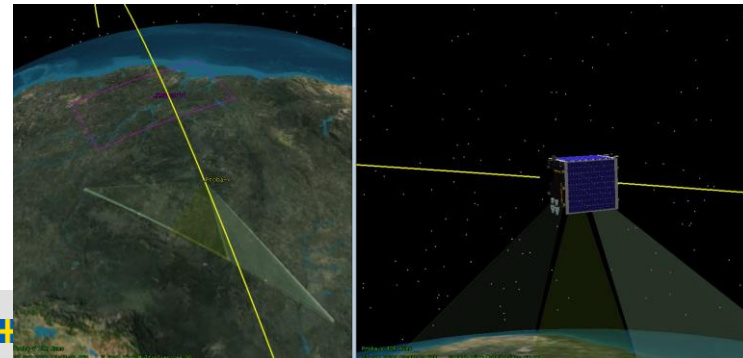
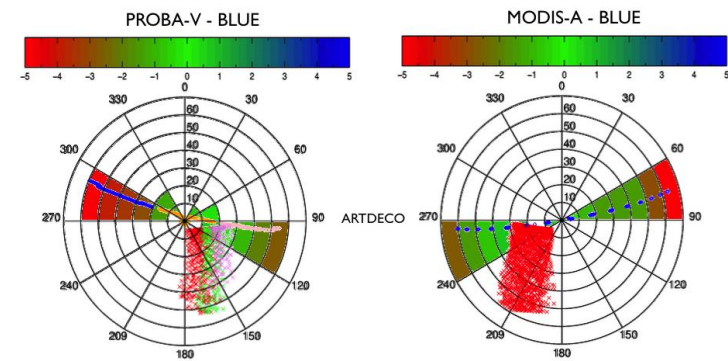


Mission Status and Calibration

- Flight and Ground Segment overall **performances** are excellent with no sign of degradation
- **Radiometric** and **Geometric accuracy** are largely within the mission goal requirements
- An **independent** assessment over Libya-4 recently performed by YG demonstrated excellent accuracy (<3%), though minor discrepancy in Blue/left

Discussion points :

- Review **status** of FS/GS performances and discuss expectations for mission experimental phase
- Review and finalize radiometric calibration factors to be applied for C2 reprocessing
- Review results of recent experimental campaigns (**Moon** and **Super-resolution**)

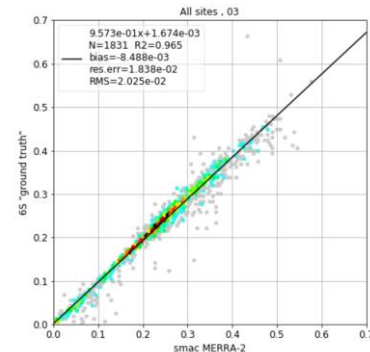
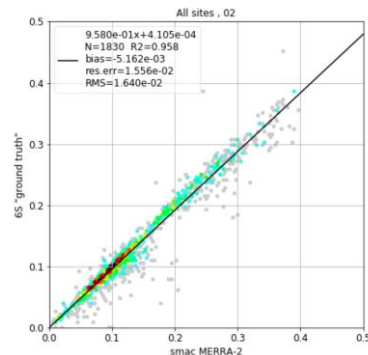
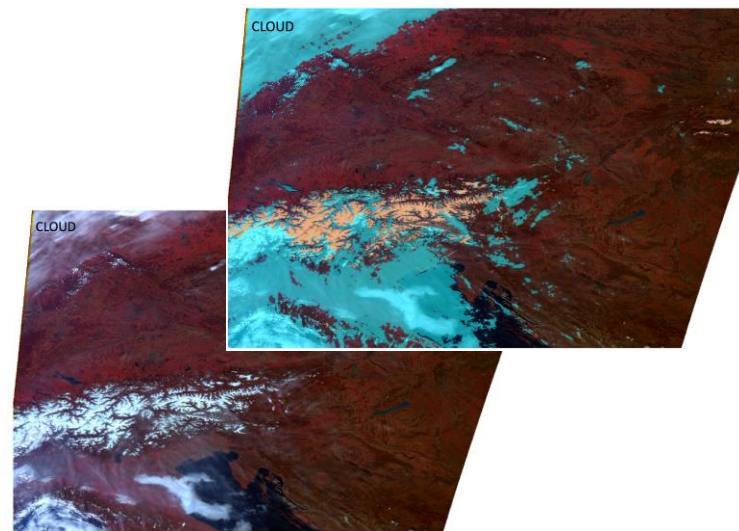


Collection 2

- Development, verification and validation of the new **Cloud Mask** (Uni. Valencia) completed for all resolutions (1km, 333m and 100m)
- Development of the new **AC** algorithm (HYGEOS) well advanced with prototype & TDS provided to VITO and successfully integrated in the PDGS
- Assessment of the best AOD **climatology** (CAM5 Vs. MERRA-2) to be presented during the meeting

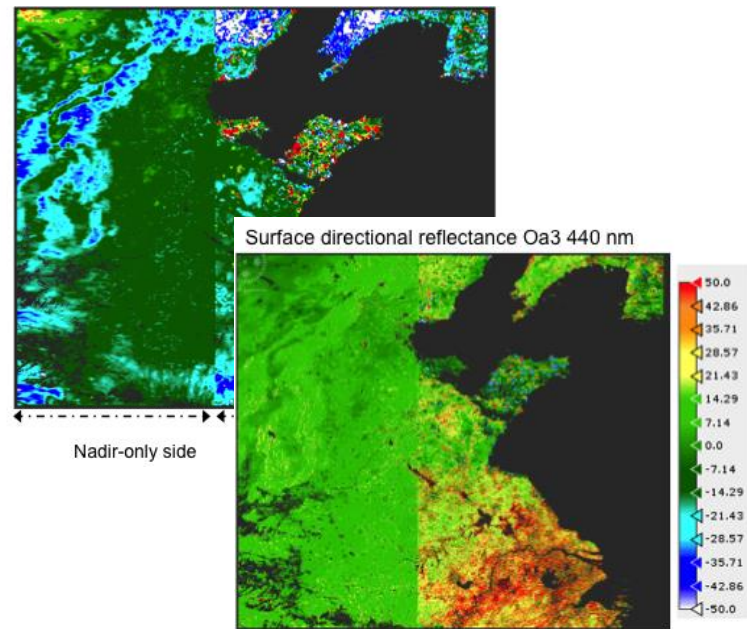
Discussion points :

- Freeze baseline and review **plan** for C2 reprocessing: not conclusive results on the choice of AOD, extend validation, MERRA-2 daily + continental seems best
- Discuss proposals for C3, e.g.: consistent LTDR SPOT-PV-S3, cloud shadow, ARD compliancy, TOA uncertainties (S3 methods), TOC uncertainties (MC



Continuity with S-3

- S3-SYN processing updates reported at last QWG: impact of SLSTR radiometric **correction** factors on AOD and SDR presented, especially in the dual-view portion of the swath; clear impact as well for SYN-VGT products, notably in the MIR
- Several planned **upgrades** on SYN-VGT branch presented at last QWG
- **Consistency** assessment of S3 SYN-VGT against Proba-V on-going at VITO: latest results will be presented during the meeting
- **Transition** from Proba-V to S3 at CGLS, originally planned on 1st July 2020, delayed due to issues in the operational processing chain, it is currently on-going, starting from NDVI @300m

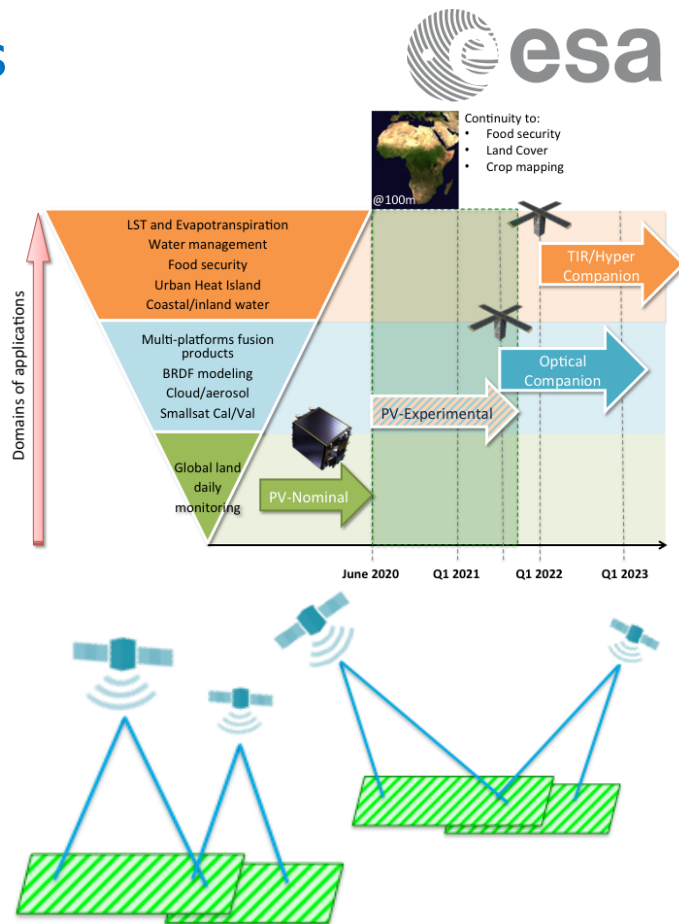


Experimental Phase – Overall objectives

- **Progressively** complement and expand Proba-V observation capabilities addressing new application domains and working towards constellation concept

1st VNIR PV-CC

- **General Objective:** Verify the FS/GS in-flight performances of the platform/payloads, gathering lessons learnt, paving the way for future PV-CC (TIR, Hyper)
- **Cal/Val Objective:** Demonstrate capability of accurately characterize radiometric/geometric accuracy of PV-CC sensor benchmarking with Proba-V
- **Exploitation Objective:** Demonstrate feasibility of using PV-CC in synergy with Proba-V (or other Sentinels) to derive multi-sources blended products using concomitant observations in near-nadir or stereo-view mode

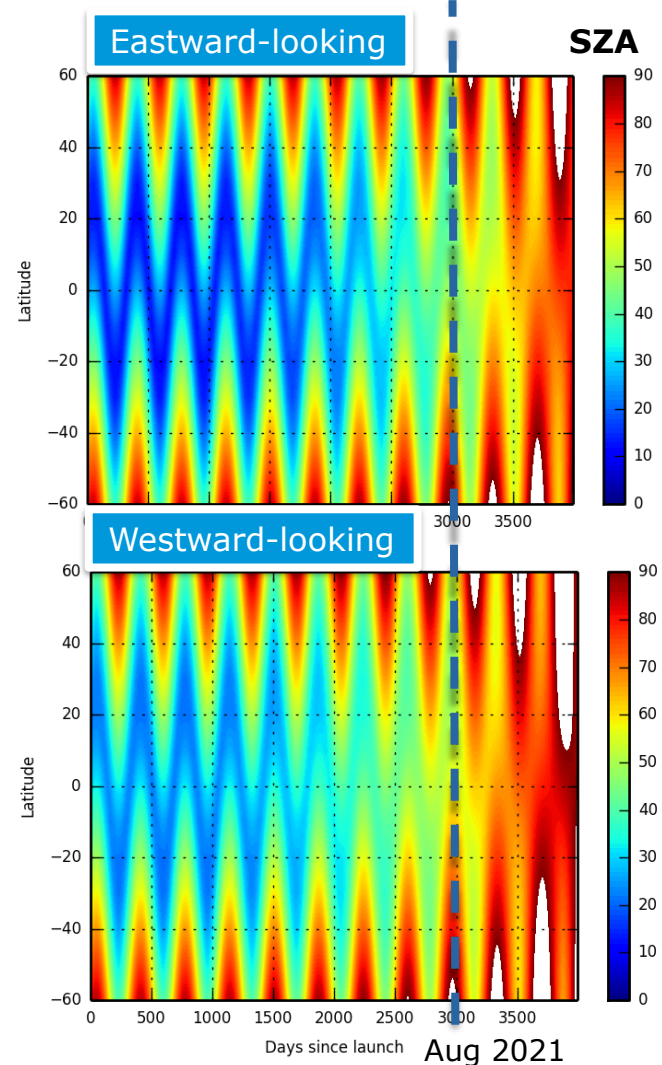


Experimental Phase – Challenges

- Overall strategy still valid: using PV-CC series to **complement** & **expand** PV observation capabilities
- Initial **schedule** has drifted owing to shift in launch date of 1st PV-CC (VNIR), currently set during Aug-Nov 2021
- **Synergy** with Proba-V arguable, overpass $\approx 8:30$ at PV-CC launch (nadir), in eastward PV camera acceptable SZA conditions in 2021 SH summer and 2022 NH summer, in westward camera very challenging conditions with exacerbation of atmospheric & directional effects

Discussion points:

- Good confidence on Cal/Val Plan for 1st PV-CC: largely re-using methods/tools developed at VITO for Proba-V
- PV-CC Exploitation Plan to be re-discussed, in view of the different overpasses and extreme SZA conditions



Current QWG Meeting Main Objectives



- **C2 reprocessing**
 - To review the final AC validation results
 - To freeze the baseline including choice of AOD climatology
 - To review and consolidate C2 verification and reprocessing plan
 - To prepare the ground for future evolutions towards C3
- **Experimental Phase**
 - To discuss on potential new experimental acquisitions
 - To review and discuss the current status of PV-CC
 - To present and discuss on the Cal/Val Plan
 - To present and discuss on the Exploitation Plan beyond 2021



Past Meetings Action Items

- Actions from QWG#11 completed and detailed **report** provided by VITO : “*Proba-V QWG#11 – VITO Actions*”, v2, 27/10/2020, E. Swinnen
- The content of the report will be presented during this meeting
- For detailed answer to the AI, please refer to the report available in the QWG document

Repository:

<http://proba-v.skytek.com/home>

- Tracking of Action Items (Excel sheet) status is also available in document repository

PROBA-V QUALITY WORKING GROUP 11 – VITO ACTIONS

Change record

Release	Date	Pages	Description	Editor(s)/Reviewer(s)
v1	14/10/2020	All	First answers	VITO team
V2	26/10/2020	All	Final answers	VITO team



Agenda

27/10/20

Mission Status
Calibration & Data Quality
10:00 – 12:00

Discussion 12:00 – 12:30

LUNCH – 12:30 – 14:00

Algorithm C2 Baseline
14:00 – 15:30

Discussion 15:30 – 16:30

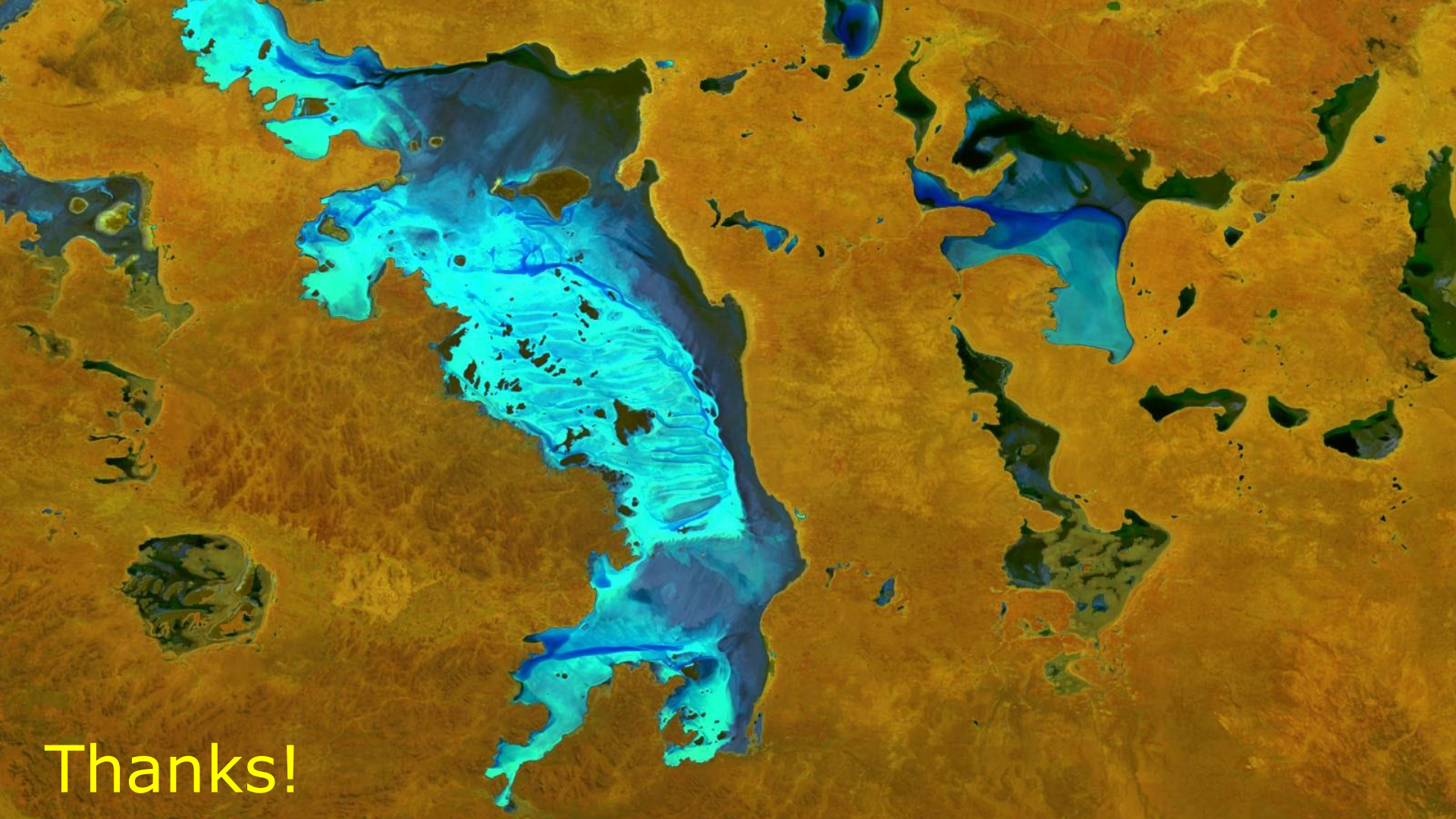
28/10/20

Continuity
Experimental Phase
10:00 – 12:00

Discussion 12:00 – 12:30

LUNCH – 12:30 – 14:00

Final Discussion
Wrap-up
14:00 – 15:30



Thanks!