

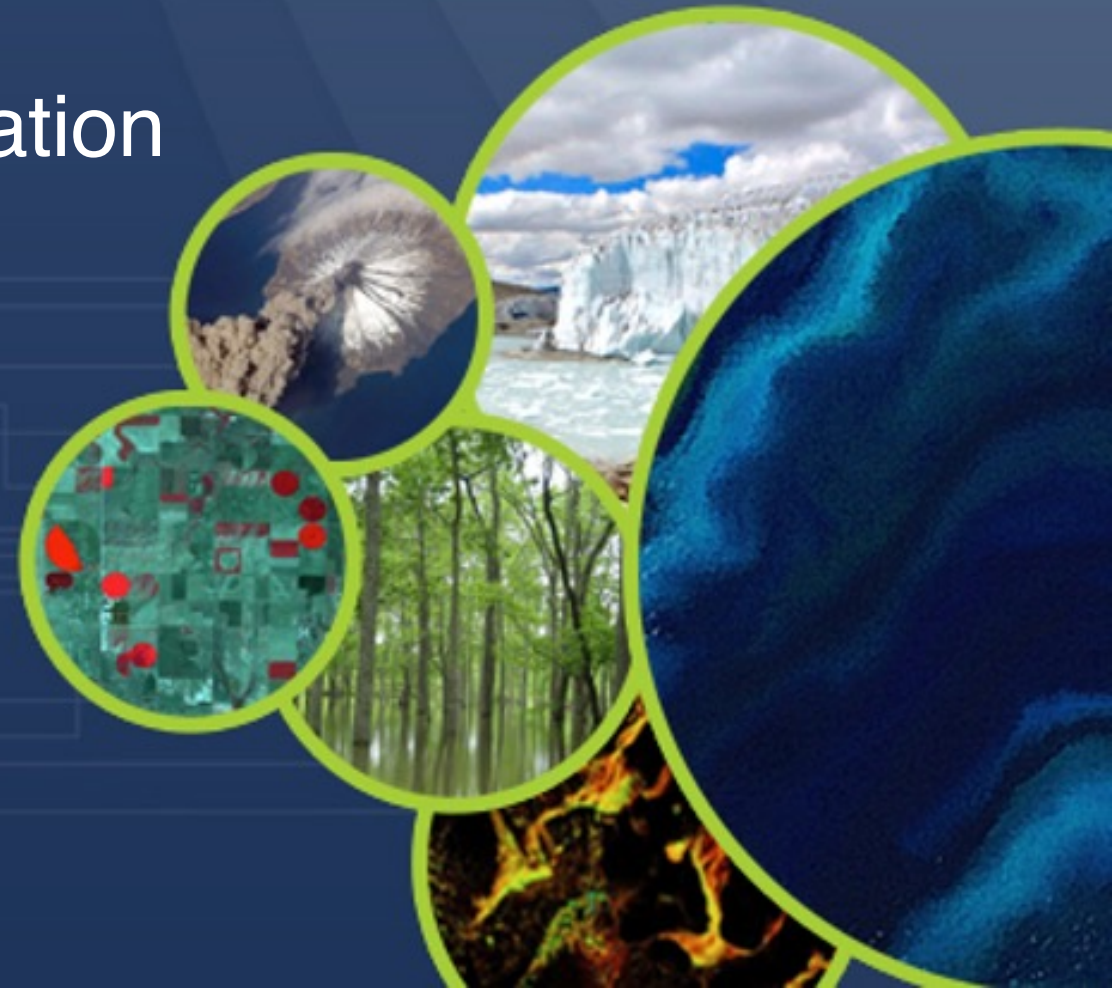


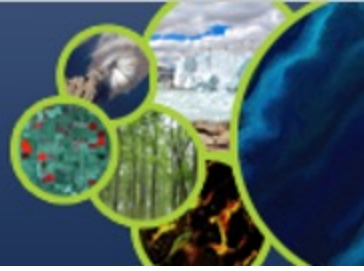
Committee on Earth Observation Satellites

# Working Group Calibration & Validation

## **TMSG & DEMIX progress**

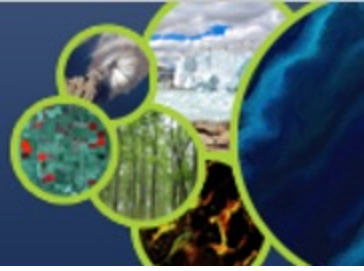
Peter Strobl, EC-JRC, WGCV  
CEOS WGCV #49, Virtual Meeting Session  
Hosted on Webex  
29 June 2021





- Proceedings of the Terrain Mapping SubGroup (TMSG)
  - Re-activated early 2020
  - as of Jun 28<sup>th</sup> 2021:
    - o 58 subscriptions
    - o 14 countries
    - o ~50% with CEOS background
    - o ~30% Geomorphometry.org
    - o ~35 expressed interest in the intercomparison exercise DEMIX
  - plenary postponed (waiting for DEMIX progress) envisaged for Q3 2021 (virtual, maybe in conjunction with Geomorphometry 2021, 13-17 Sep, Perugia, IT)

Subscription page: [https://ec.europa.eu/eusurvey/runner/WGCV-TMSG\\_membership](https://ec.europa.eu/eusurvey/runner/WGCV-TMSG_membership)

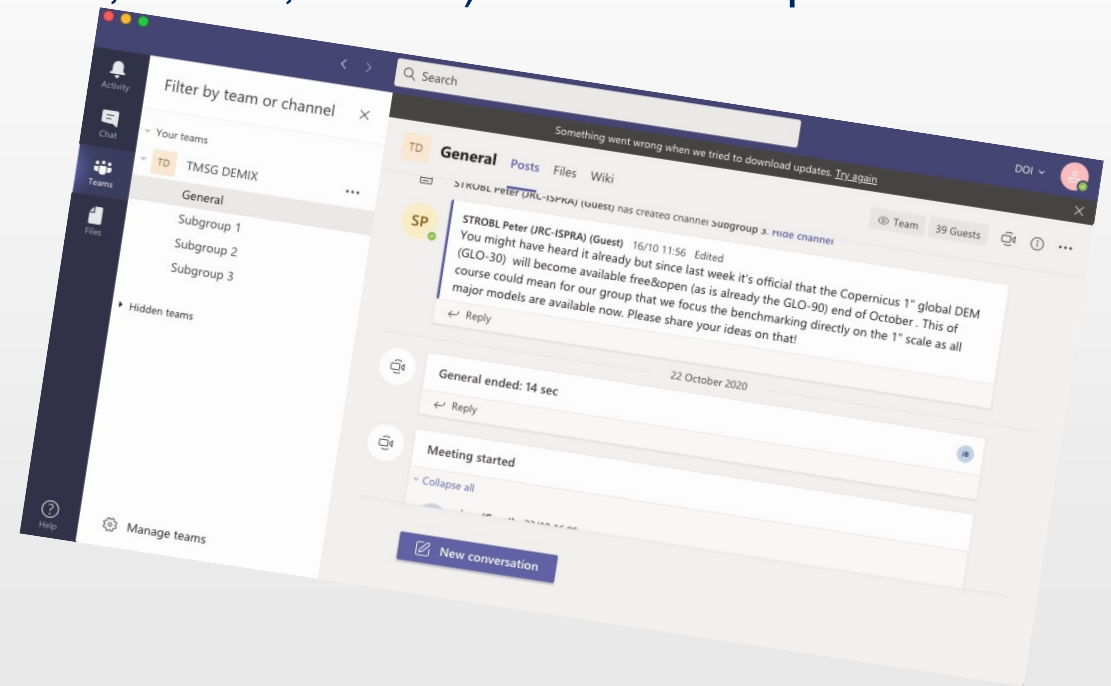


## Status:

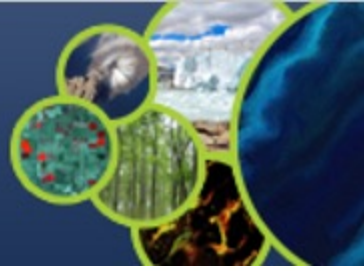
- DEMIX call for participation issued 5 May 2020
- Kick-off meeting held with 26 participants on 26&30 June 2020
- ~25 participants active (CAS, DLR, EC, ESA, ISRO, JAXA, NASA, USGS) + domain experts & industry

## Progress:

- All sub-groups are currently active:
  - 1) terminology and analytical basis
  - 2) algorithms and software – open source tool box
  - 3) platforms and processing
- TEAMS channel (thanks USGS!)
  - ❖ regular meetings of all 3 subgroups
  - ❖ meeting recordings available to allow catch-up
  - ❖ document sharing

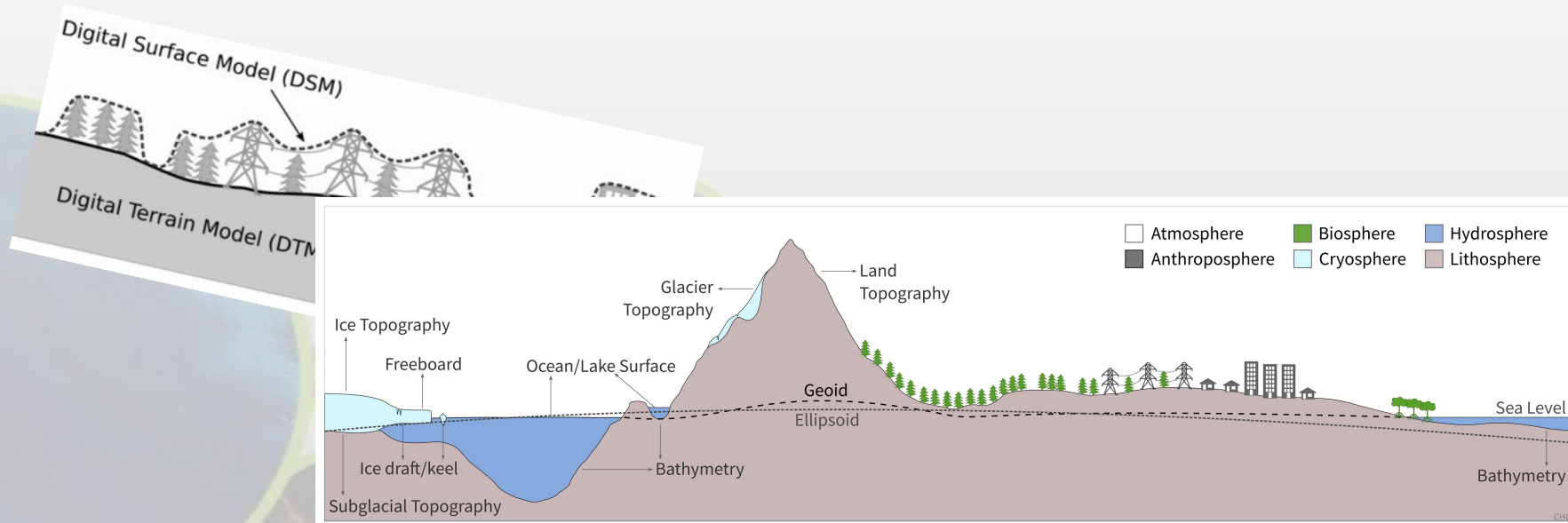




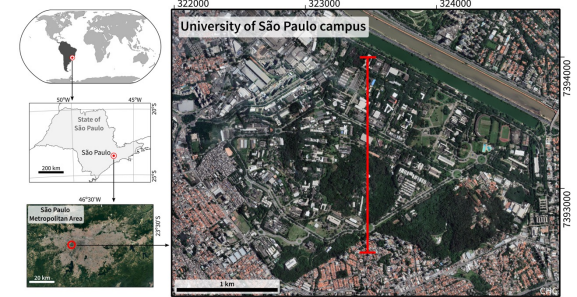


## Progress:

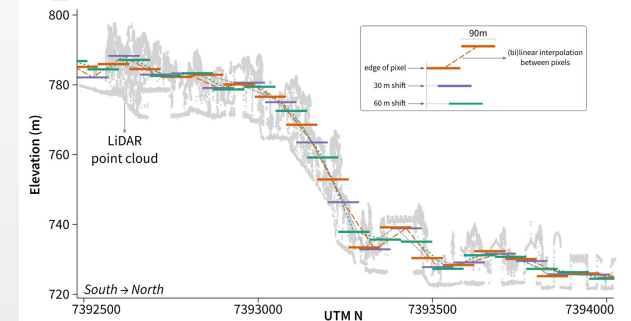
- Revised terminology and comprehensive definitions (glossary) finished
- Peer reviewed paper in preparation



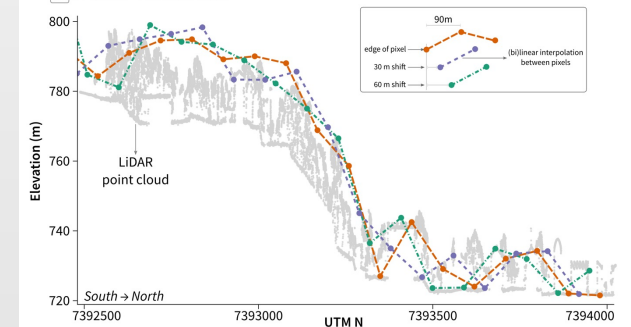
**A** Location of topographic profiles



**B** Profiles - Pixel is Area



**C** Profiles - Pixel is Point

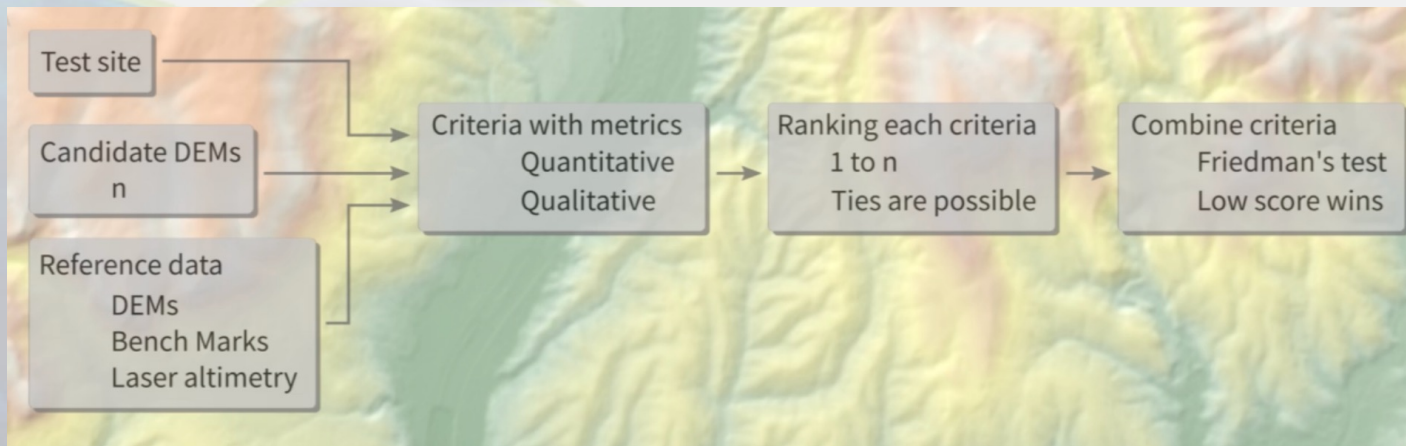
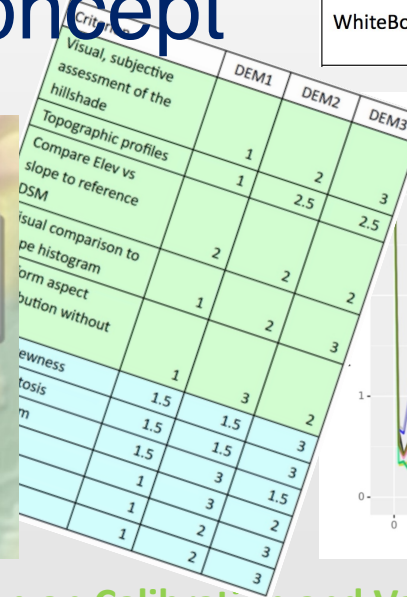




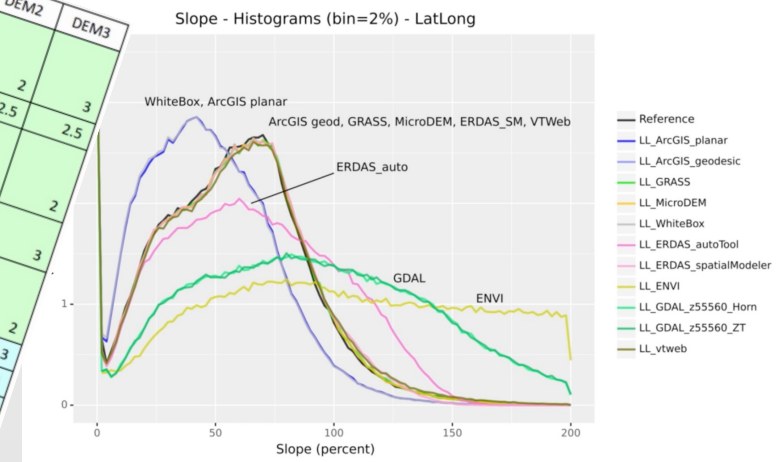
## Progress:

- Extensive test of algorithms and tools
- Initial test protocol developed
- Tests ongoing
- Implementation of ‘wine contest’ concept

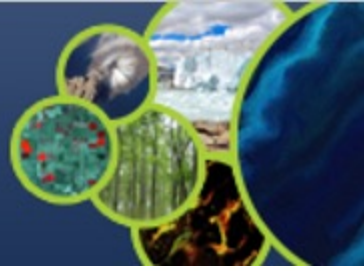
Software	Tested running	Windows	Linux	Works with (distorted) Lat/Lon DEM	Works with UTM DEM
GRASS	Command line or in QGIS	Yes	Yes	Yes	Yes
MICRODEM	GUI or command line	Yes	No	Yes	Yes
SAGA	In QGIS	Yes		Yes	Yes
ArcGIS	GUI	Yes	No	Only Geodesic algorithm	Both algorithms
ERDAS	GUI	Yes	Yes	Only Spatial Modeler	Both algorithms
GDAL	Command line or in QGIS	Yes	Yes	No	Yes
ENVI	GUI	Yes	Yes	No	Yes
WhiteBox	GUI or command line	Yes	Yes	No	Yes

Criteria	DEM1	DEM2	DEM3
Visual, subjective assessment of the hillshade			
Topographic profiles	1	2	3
Compare Elev vs slope to reference DSM	1	2.5	2.5
Visual comparison to reference histogram	2	2	2
Form aspect	1	2	3
Proportion without			
Sharpness	1	2	3
Continuity	1.5	3	2
Consistency	1.5	1.5	3
Smoothness	1.5	1.5	3
Completeness	1	3	1.5
Accuracy	1	3	2
Reliability	1	2	3
Usability	1	2	3

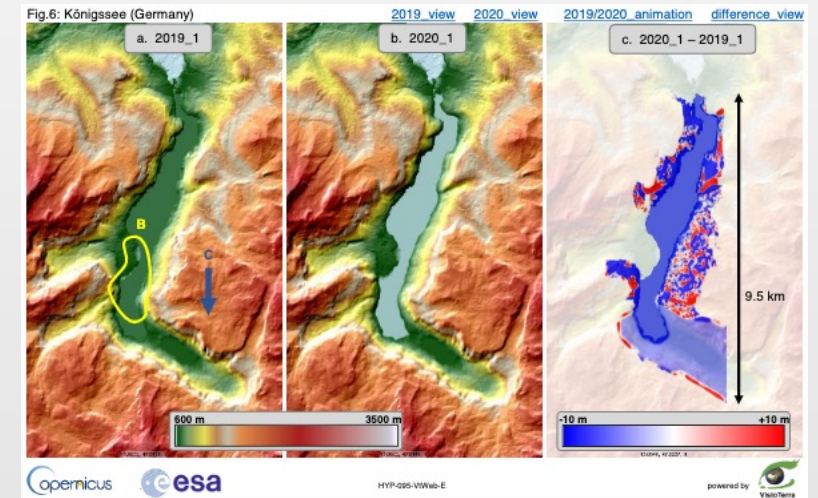
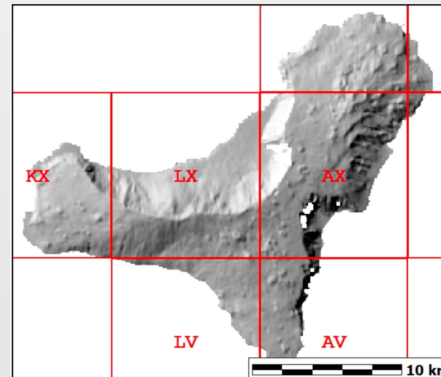
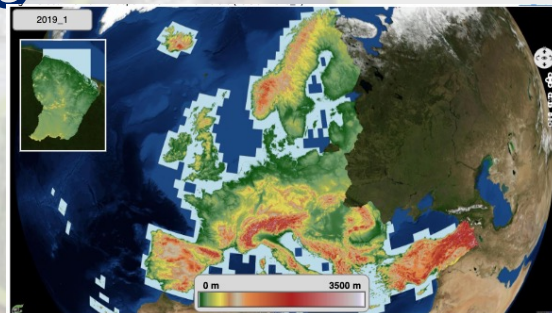






## Progress:

- Major support by ESA (through VtWeb)
- Discussions on cooperation with CEOS Earth Analytics Interoperability Lab (EAIL)
- Ensuring easy and consistent access to test data
- Preparations for roll out of tests to continental/global scale

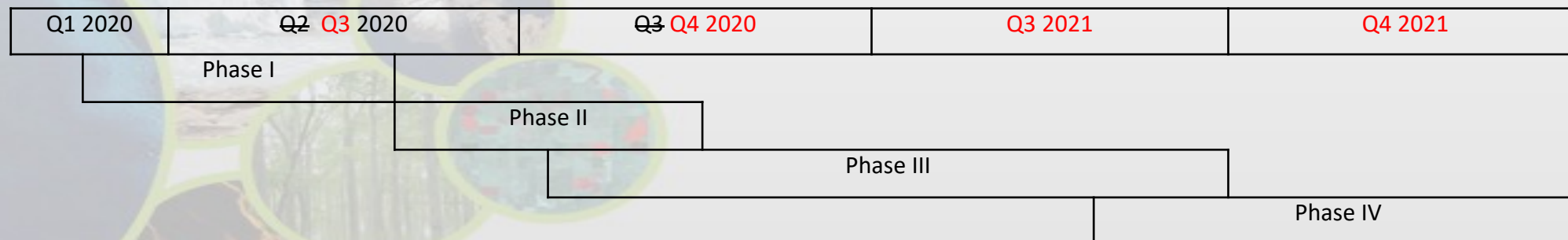




- DEMIX to be performed in 4 phases

- I. General agreement among main contributors (data owners) on approach & scope; Call for expression of interest to further partners (commercial tbd); circulation of JRC Workshop report (in preparation) & selection of base ( $\Delta x$ ,  $\Delta y$ ,  $\Delta z$ ) & extended (slope, aspect, morphology) testing methods and algorithms; Identification of suitable test areas (at least 1 per continent);
- II. Cross-comparison of all participating data sets on test areas and, if feasible, identification of a reference dataset (at DGED L1). If available and where applicable cross-comparison to suitable orthorectified (reference?) imagery (Sentinel-2?); Workshop to exchange experiences from the test areas and agree on details of an eventual global roll-out;
- III. Feasibility testing & potential global roll out of at least base tests & determination of suitable aggregation scale for reporting;
- IV. Calculation of agreed comparison metrics for all candidates and publication of results.

- Timeline





*Thank you for your attention!*  
*Any questions?*

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