



Committee on Earth Observation Satellites

Working Group Calibration & Validation

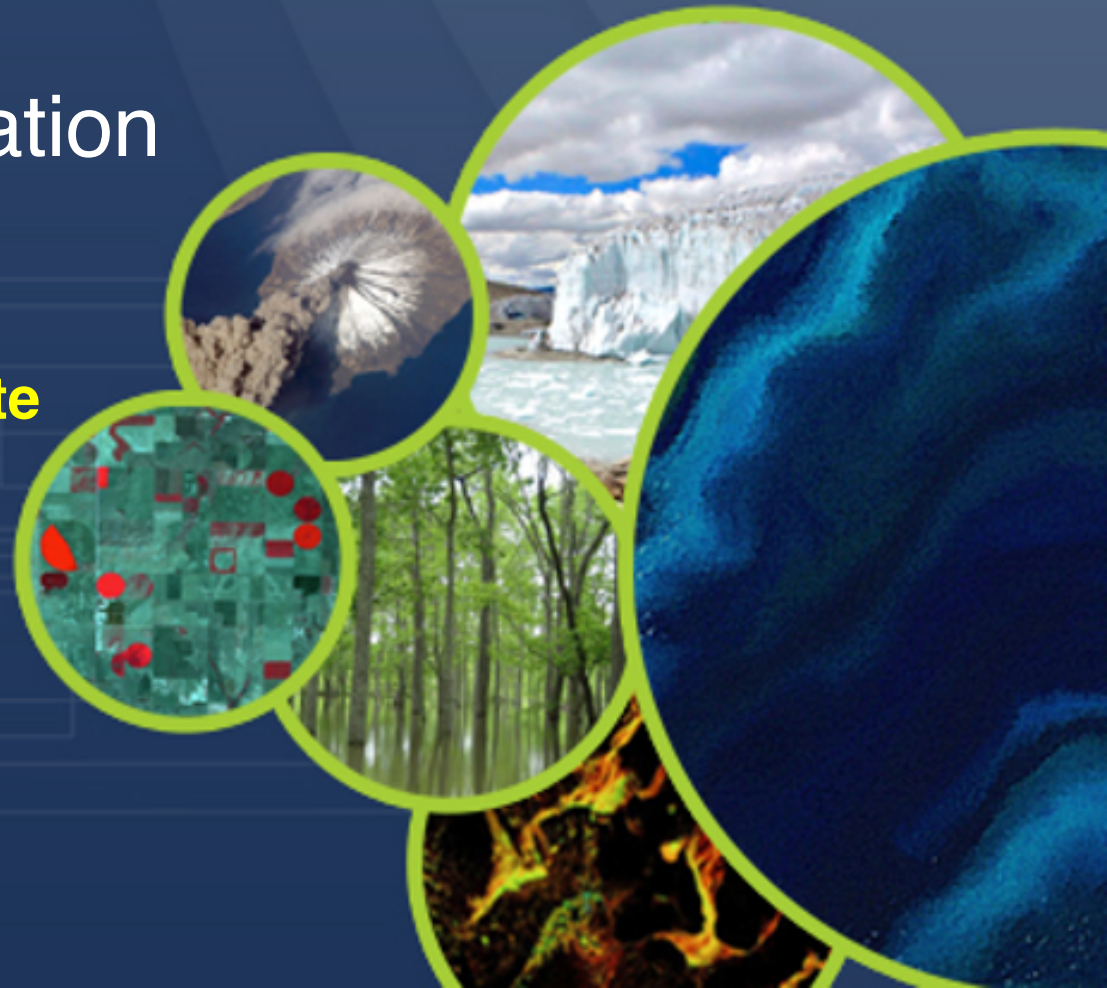
Terrain Mapping SubGroup and DEMIX Update

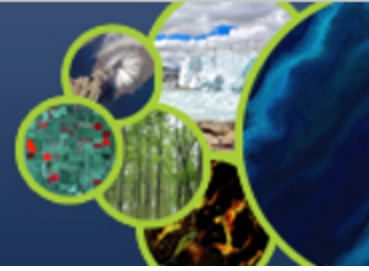
Peter Strobl, EC-JRC, WGCV

CEOS WGCV #48, Virtual MeetingSession

Hosted by Webex

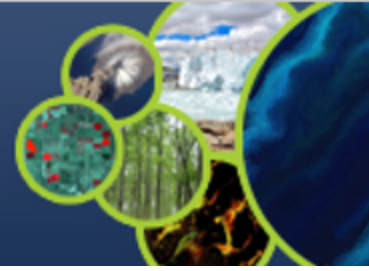
28 October 2020





- Proceedings of the Terrain Mapping SubGroup (TMSG)
 - Revival plans started second half 2019
 - Invitation email sent to last available participant list in January 2020
 - as of Oct 26th 2020:
 - 57(50) subscriptions
 - 13(13) countries
 - ~50% with CEOS background
 - ~30% Geomorphometry.org
 - 35(30) expressed interest in the intercomparison exercise DEMIX
 - First plenary meeting is envisaged for early December 2020 (virtual)

Subscription page: https://ec.europa.eu/eusurvey/runner/WGCV-TMSG_membership

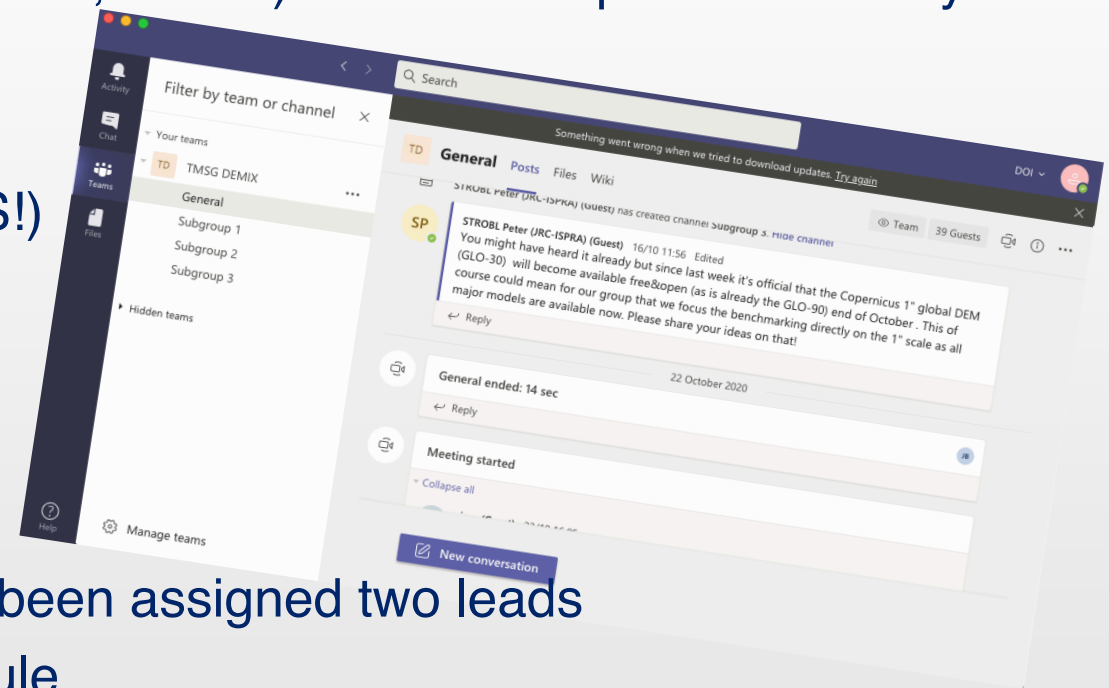


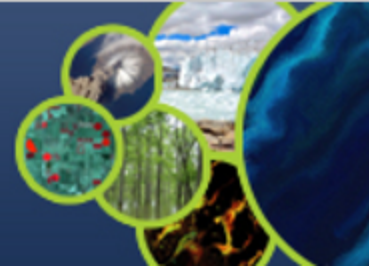
Development:

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

Intermediate results:

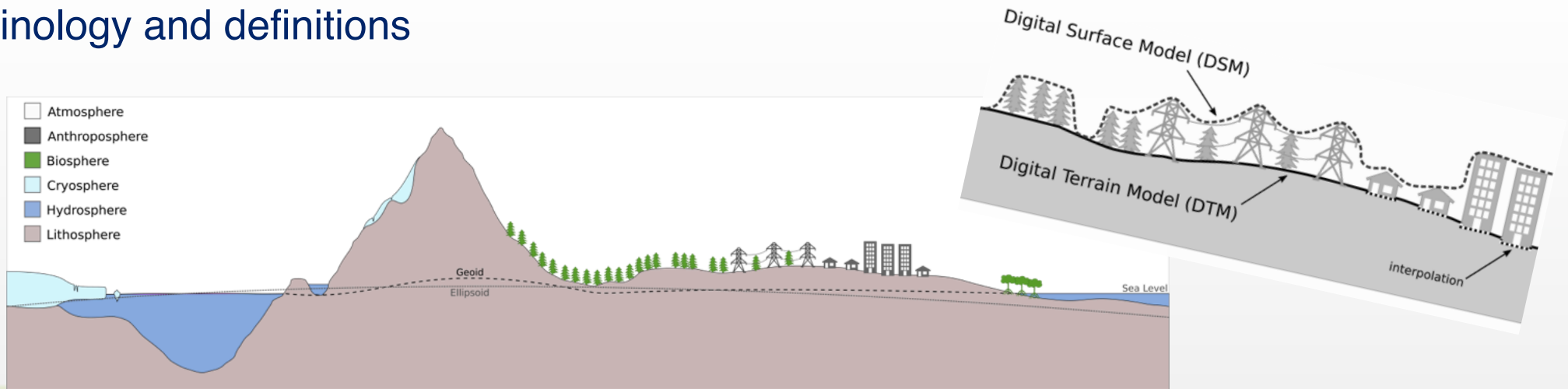
- A TEAMS channel under DOI auspices (thanks USGS!)
- Three sub-groups are set-up:
 - 1) terminology and analytical basis
 - 2) algorithms and software – open source tool box
 - 3) platforms and processing
- Each group received at least 7 contributors and has been assigned two leads
- Sub-groups 1 & 2 are meeting on a bi-weekly schedule



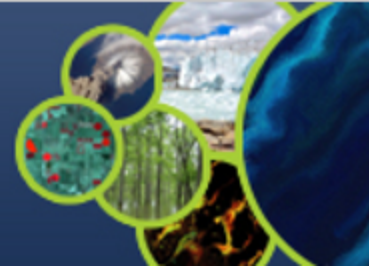


First results:

- Revised terminology and definitions
- Examples:

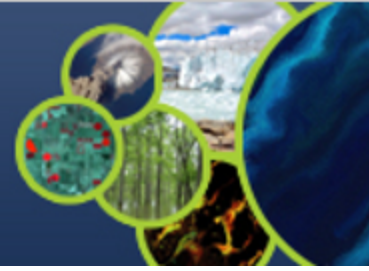


- DEM (digital elevation model): general term for a digital representation of a **topographic surface** in form of a **georectified area-based grid**, composed of elevations on the Earth. DEMs use **raster** file storage formats. Alternative structures for digital topography, like triangulated irregular networks (**TINs**), contours, and point clouds are not DEMs because they are not grids.
- DSM (digital surface model): a **DEM** that records the lower boundary of the **atmosphere** (and either the **lithosphere**, **hydrosphere**, **cryosphere** or **anthroposphere**)
- DTM (digital terrain model): a **DEM** that records the boundary between the **lithosphere** and the **atmosphere**, without biosphere and anthroposphere. The treatment of **hydrosphere**, **cryosphere**, and voids (e.g. excluded buildings, water and trees) must be specified and clearly localised e.g. by respective masks.



Challenges:

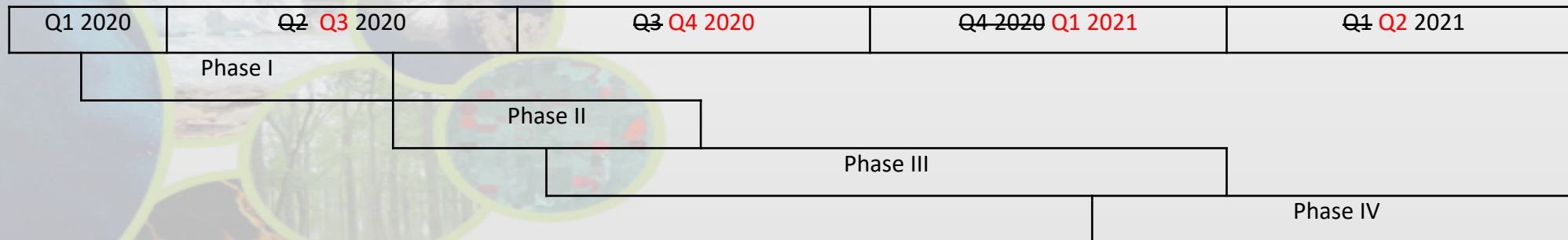
- Keeping group together and maintaining impetus
- (Enhancing visibility)
- New data: the **Copernicus 1" global DEM (GLO-30) will become available free&open soon!**
- Re-focussing of the benchmarking directly on the 1" scale
-> order of magnitude increase in data and processing
- Search for suitable test areas and reference data
- Allocation of platform resources (ESA-Visioterra, CEOS-EAIL, other?)

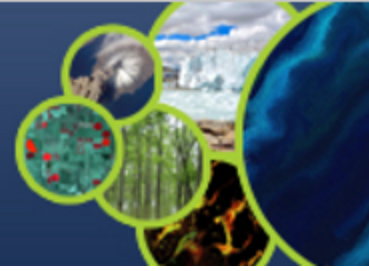


- DEMIX to be performed in 4 phases

- 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 (Δx , Δy , Δz) & 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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