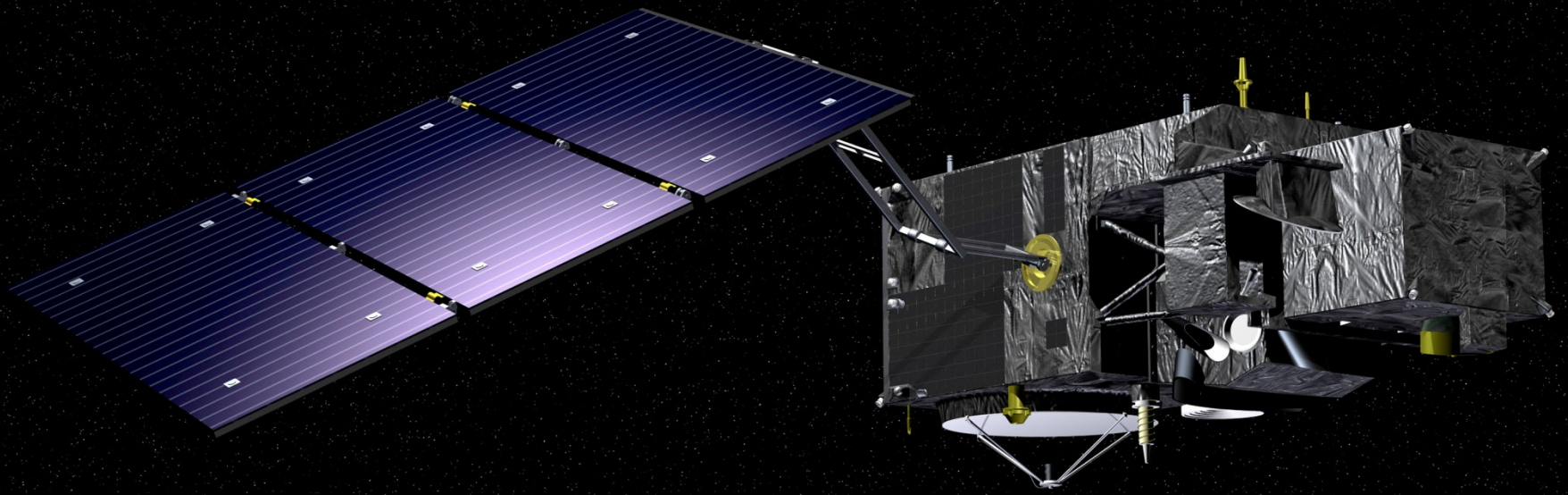
Introduction to the workshop



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Why LPVE?

The EO community at large is in a changing environment with new requirements, financial constraints (inside and outside of ESA), and the advent of new missions (Landsat-8, Proba-V, Sentinels)

ICT innovation is becoming affordable and accessible everyday business

At the same time, a mature and dynamic scientific community exists, 20 years of EO data are more readily accessible, with new missions preparations, and new developments with respect to climate (ESA/CCI), research/applications (ESA/STSE, ESA/DUE), services (GeoLand II, Eumetsat/SAFs)

How does one make sense of all this?

Product evolution and innovation?

Mission Feedback
- *Science community in*
- *Comparison with inde*
products
- *Evolution of protocols*

Improved Produ
- *Reprocessing resulting*
improved calibration an
algorithms
- *Interface to collaborati*
algorithms

Calibration Strategy
- *Pre-launch (Phase A-D)*
- *Satellite Commissioning*
(Phase E2)
ions (Phase F)

itu" Component
f data against well-
irements
ation of in-situ systems
tion following community
otocols (QA4EO)
e of Cal/Val information
rtals

Validation
- *Operational QC on products*
- *Match-up, long-loop evaluation, Sat-Sat*

Tools
ata-sets (DDS)
- *Cal/Val tools*
- *Algorithm breadboards*
- *Radiative Transfer Models*

but we have to consider…

1. Current product assessments

2. On-going calibration of level-1 data, and continuous validation/intercomparison of level-2 data

3. Product innovation and evolution

1. Current product assessment

Where do we stand with the current ESA products?

- *Do we need uncertainties per pixels? Do we have a methodologies to derive them? At Level 2 Can we accept a "simple" propagation of L1 (and auxiliary data) uncertainties through L2 algorithm? Do we need to have spatial and global validation results to derive uncertainties ?*
- *At what resolution do the vegetation products make sense, for example FAPAR at 10m? or 60m?*
- *What is the requirement on the radiometric calibration (level-1) of a sensor for vegetation applications (level-2 data)?*
- *How can we use high-resolution sensors (Sentinel-2, Landsat) to validate medium-resolution sensors (Sentinel-3, Proba-V)?*
- *What are the "future" methodologies for cloud detection? Bayesian approachs? Can we accept to have a binary approach (cloud/no cloud) or do we need a full geophysical retrieval?*
- *(and what about the future mission products under development?)*

2. Calibration, validation and intercomparison

Are (A)ATSR, MERIS, Vegetation, Proba-V, etc., level-1 mission records meeting the current needs of the algorithm communities in terms of accuracy, precision and stability?

- *Is there consensus on the calibration issues in the community and are they properly documented and/or addressed?*
- *Are future mission needs met? Are the tools/best practise in place for those missions?*

2. Calibration, validation and intercomparisons (ii)

Is the existing in-situ validation infrastructure addressing current (and future) needs?

- *Is the infrastructure well characterised? Both methodologies and measurement best practise?*
- *What about the validation/intercomparison of new species?*

Are we at risk of loosing infrastructure and know-how in the next years?

- *Are future mission objectives clearly addressed? Or are specific actions required by ESA and member states?*

2. Calibration, validation and intercomparisons (iii)

How do we compare products globally? To other satellite products? To models? To in-situ?

- *How mature are the methodologies/best practises for satellite/satellite, satellite/model, satellite/in-situ intercomparisons?*
- *How does one estimate uncertainties?*
- *Where do we stand? What is needed? Is this documented?*

3. Product innovation and evolution

Is the current product evolution "turn-around" fast enough?

- *Does the phasing between level-1 and level-2 releases (or lack thereof) need changing for the community to be able to react in a timely manner?*

Is the current set of products enough to meet mission objectives?

- *Do supporting products need to be derived (from the same sensor/platform) to better interpret/characterise the core operational products?*

3. Product innovation and evolution (ii)

Are there better more innovative products outside of the existing "operational" products/QWGs such as from ESA/CCI? ESA/DUE, ESA/STSE, National programmes, etc.?

If so, shall we include these innovations in the next reprocessings? Do we need a formal review process to decide this?

- *What is needed in the process with respect to review, documentation, IPRs, etc.?*
- *What about the involvement of the QWGs? Of external reviewers?*

The way forward…

From this LPVE workshop:

- *gathering concrete recommendations and actions for future algorithm improvements*
- *gathering Cal/Val requirements/activities*
- *identify the need for new products*
- *improve feedback to ESA and the instrument QWGs*
- *workshop report to be released in April/May*

Numerous (re)processings of ERS/Envisat land products will be undertaken in the next years:

- *related science and Cal/Val contracts will be placed in the next months and years, but these are in part pending on concrete recommendations/actions from this workshop*

The way forward… (ii)

To encourage “out-of-the-box" thinking on all levels:

- *using external product developments (CCI, National, etc.)*
- *using current ICT infrastructure of laboratories or new technologies or bread-boarding platforms*

To foster continued coordination between scientists, national space agencies, national research programmes and ESA with respect to algorithm innovation and evolution, and Cal/Val

ESA relies on your expertise and support, as well as your national involvement

Workshop highlights

We a very interesting agenda with 48 presentations

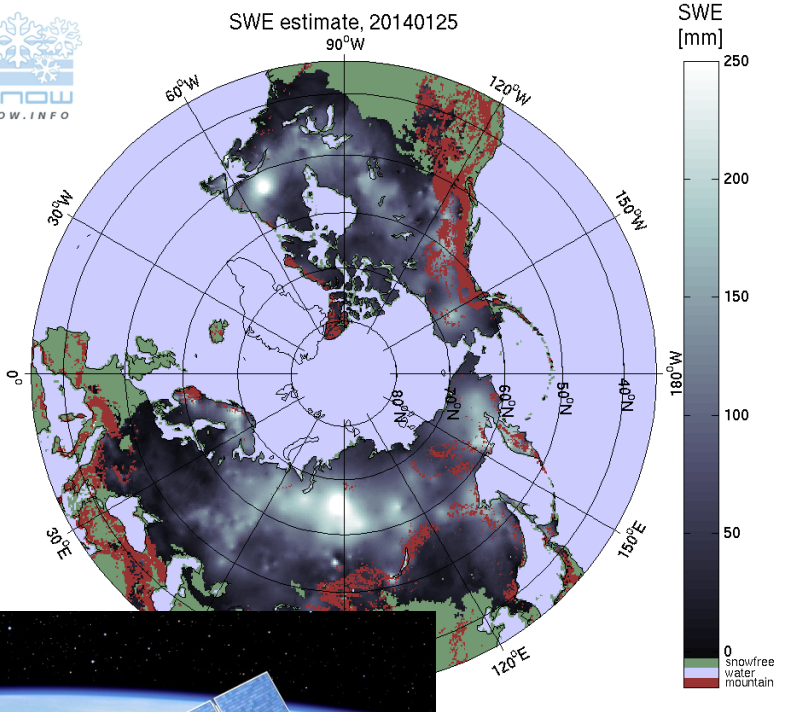
Keynotes from B. Ryan (GEO Sec.), B. Pinty (EC), P. Henry (CNES), G. Büttner (GeoLand II), and S. Mackin (SSTL)

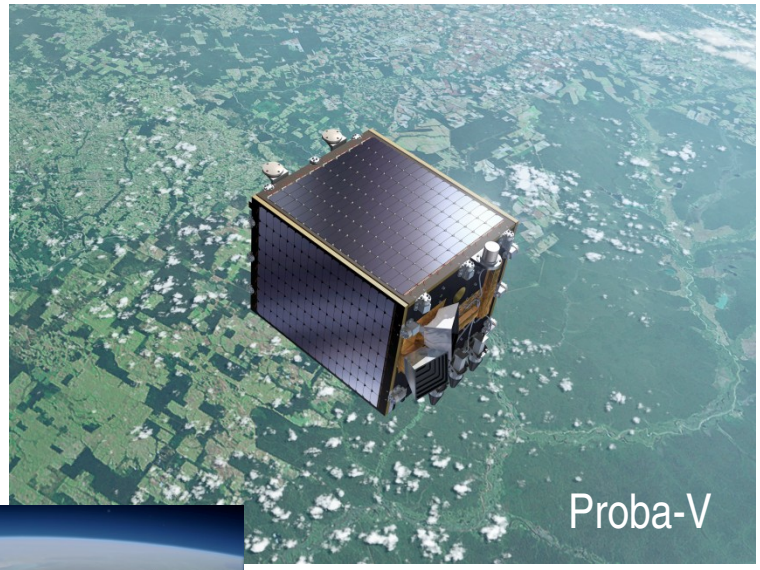
We have more than 120 participants over 3 days

Poster session during tonight's ice breaker

(CEOS/WGCV/LPV sub-group meeting to be held following this WS)

Welcome to the LPVE!





Questions?