



CEOS-WGCV and WGCV / ACSG Activities

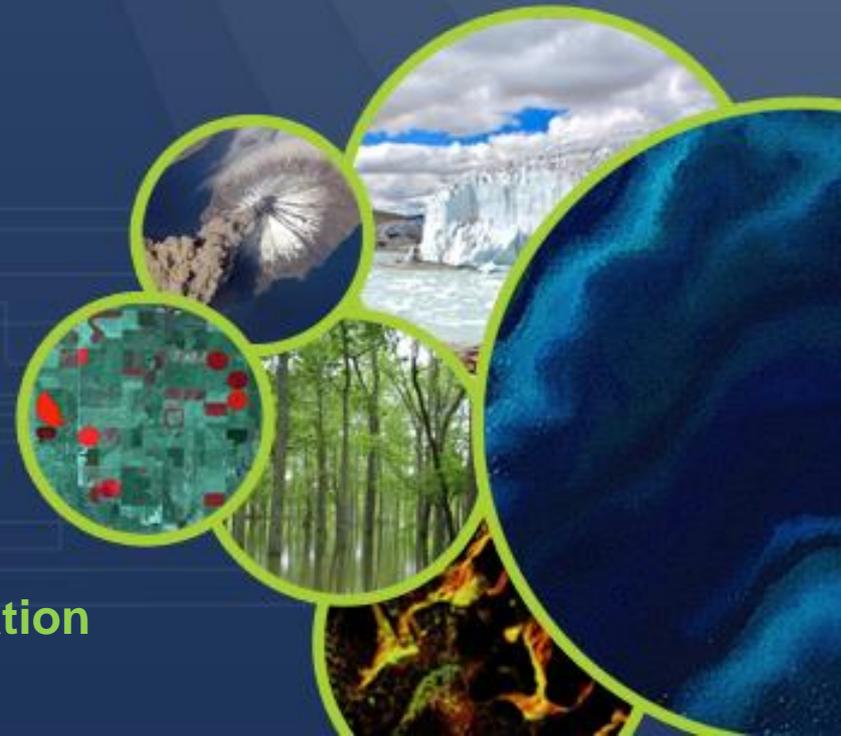
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CEOS WGCV-40

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**Working Group on Calibration and Validation
Atmospheric Composition Sub Group**



- The **CEOS Working Group on Calibration and Validation** (CEOS/WGCV) Mission is to ensure long-term confidence in the accuracy and quality of Earth Observation data and products and provide a forum for the exchange of information about calibration and validation, coordination, and cooperative activities.
- The **CEOS WGCV Atmospheric Composition Sub-Group** (CEOS/WGCV/ACSG) Mission is to ensure the accurate and traceable calibration of remotely-sensed atmospheric composition radiance data and validation of higher level products for application to atmospheric composition and *in conjunction to* climate research.

WGCV ACSG work has focused on three targeted small scale activities (no overlap with existing structures such as e.g. IWGGMS):

1. Support / develop Fiducial Reference Measurements (FRMs) for atmospheric composition: See presentation by A. Von Bargaen
 - Support the calibration, traceability and characterization of Brewers using the Izaña standard instrument (4 campaigns to date) – *in cooperation with WMO/GAW*
 - Support the inter-comparison of ground-based instruments (Brewer-Dobson), of ground-based NO₂ measurements, etc.
 - The development ground-based O₃ and NO₂ profiles from spectrometers – *in cooperation with NDACC*
 - The standardization of the mini-spectrometer retrievals and processing (Pandonia) and its consistency with other systems (see ad hoc talk)
 - Cooperate on merging ground-based measurements such as LIDAR, sun-photometers and spectrometers, to enhance aerosol classification databases



2. WGCV cross-cutting activities

- Organization of the February 2015 Radebeul workshop on the selection of the CEOS/WGCV cross-cutting activities
- Limited 2-year targeted studies – based on a clear defined procedure with defined deliverables
- Selected studies (to follow QA4EO principles) to support EO applications:
 - o Atmospheric Correction for land and ocean parameter retrievals: ACIX
 - o Harmonised cloud screening approach (and nomenclature): Cloud masking task team
 - o Digital Elevation Model (DEM) characterization

3. Atmospheric Composition / Chemistry instrument calibration (recent developments from the WGCV)

- CV-3 Organization CEOS pre-launch calibration & characterization workshop together with all WGCV sub-groups (targeted date: second half 2016)
- CV-5 GSICS Cooperation: Joint WGCV/ACSG and GSICS/UV-VIS working meeting at NOAA in October 2015
- Definition of QA4EO “best practices” for the consolidation of datasets and the calibration documentation



ACSG topics with Level-1 focus:

- Calibration issues impacting atmospheric composition data (outside of IVOS and MSSG areas of competence).
- Satellite validation best practices, such as inter-comparison methodologies and Fiducial Reference Measurements (SOP and requirements), in particular for air quality. Undertaken in cooperation with specialized groups such as NDACC WGs and WMO/GAW for trace gases measurements, ACTRIS-2 for aerosols, GEWEX for water vapour, etc.
- Atmospheric characterisation activities: methodologies, sensitivity analyses, radiative transfer...

As encouraged at SIT-30, WGCV/ACSG activities get on with cross-agencies/cross-domains harmonization of validation practices:

1. Transmission of WGCV experience (incl. QA4EO) to CDRs:
 - Pragmatic implementation in Envisat Phase F data evolution, EUMETSAT O3M-SAF (now ACM-SAF) trace gases validation, ESA CCI...
 - EU FP7 QA4ECV (ACSG, IVOS and TMSG joint venture): generic QA framework virtually applicable to all ECVs, guidance on tools and methods like traceability chains and maturity matrix, specific tools and methods, Atmospheric ECV Validation Server (AVS)...
 - Other FP7 and H2020 projects: GAIA-CLIM, FIDUCEO etc. See presentation of Thursday in ACM session.



2. Interaction with GSICS

Joint GSICS GRWG-UVSG / CEOS WGCV ACSG Workshop on Calibration in October 2015 at NOAA (College Park)

Possible areas of common interest:

- Solar spectrum: Work together to include the UV-Vis aspects/needs for the new CEOS WGCV solar spectrum recommendation (refresh of the 2005 recommendation, i.e. Thuillier paper).
- Calibration in the UV-Vis: Avoid duplication in Level-1 work and benefit from independent/standardised Level-2 product validation activities (i.e., develop best practices for the L2→L1 feedback for the calibration).
- Atmospheric characterisation: Work on methodologies (forward calculations), selection of “target areas”, integration of Fiducial Reference Measurements, radiative transfer intercomparisons, etc.

3. Contribution to exchanges of practices between (semi-)automated validation servers:

- ICARE (CNES/CNRS/NPDCRC/U. Lille)
- GECA (ESA, heritage)
- Multi-TASTE (BIRA-IASB/ESA)
- NORS (BIRA-IASB/CAMS)
- NPROVS (NOAA)
- Upcoming QA4ECV AVS
- Upcoming Sentinel-5p MPC/VDAF

4. Interaction with CEOS VC/ACC since WGCV-39:

- ACSG contributes validation support to cross-agencies harmonization efforts in 3 of ACC key topics:
 - Topic 1 - Total ozone ECV validation & harmonization
 - Topic 2 - Geostationary Air Quality constellation coordination
 - Topic 4 - Greenhouse gas (GHG) constellation (LEO + GEO)
- Participation of ACSG Chairs and members in VC/ACC-11 at ESRIN in April 2015 (reminder)
- Protocol discussed for harmonization of nadir ozone profile data validation
- Formulation of Geophysical Validation Needs for the future GEO-AQ Constellation
- VC/ACC-12 (2016) to be announced



Thank you!

WGCV ACSG points of contact:

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