



CCVS



H2020 Copernicus Cal/Val Solution CCVS



CEOS WGCV-49

29 June - 2 July 2021



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Scope of the CCVS project

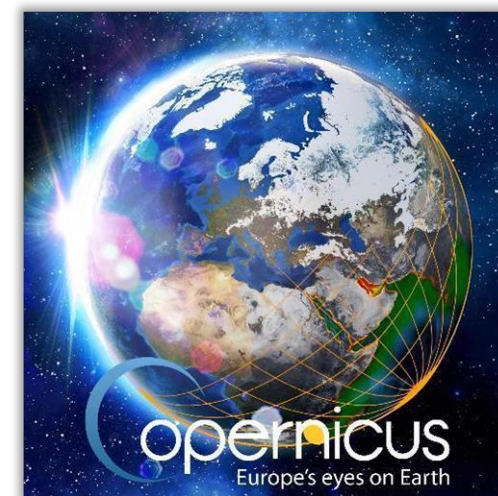
❖ Objective:

To define a holistic solution for all Copernicus Sentinel missions (either operational or planned) to overcome current limitations of Calibration and Validation (Cal/Val) activities.

❖ Project duration: Dec. 2020 to Nov. 2022

❖ Project website: <https://ccvs.eu>

❖ Contact us: contact@ccvs.eu





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Partners

Project Lead:



14 Partners



DLR



Koninklijk Nederlands
Meteorologisch Instituut
Ministerie van Infrastructuur en Waterstaat



UNIVERSITY OF TARTU
Tartu Observatory



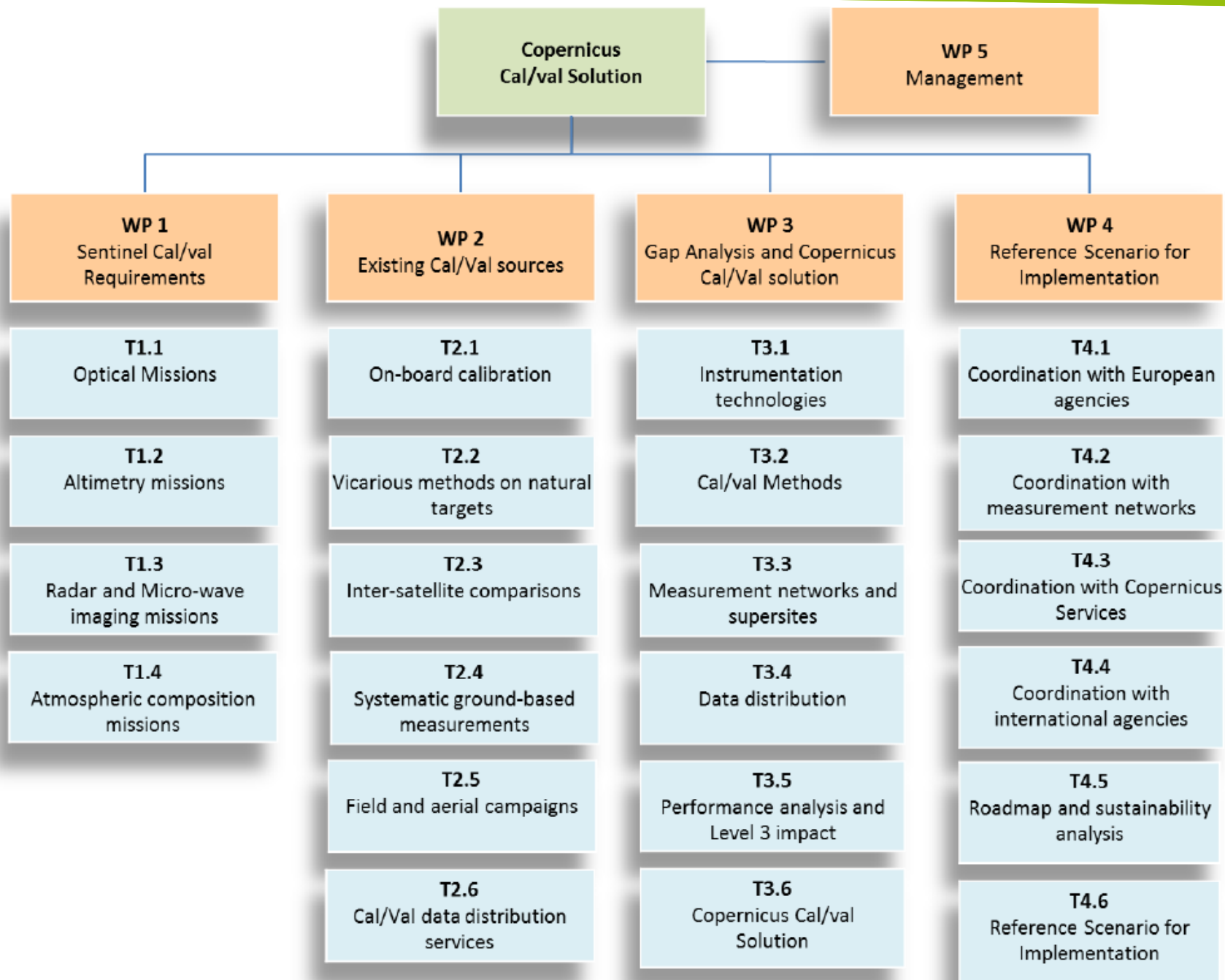
Universiteit
Antwerpen

Advisory Board



European
Environment
Agency







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WP 1

Sentinel Cal/val
Requirements

T1.1

Optical Missions

T1.2

Altimetry missions

T1.3

Radar and Micro-wave
imaging missions

T1.4

Atmospheric composition
missions

Sentinel Cal/Val Requirements

Listing all Sentinel L1 and L2 products (current and foreseen)



✓ [Series of reports available](#) via project website

Existing Cal/Val Sources

WP 2

Existing Cal/Val sources

T2.1

On-board calibration

T2.2

Vicarious methods on natural targets

T2.3

Inter-satellite comparisons

T2.4

Systematic ground-based measurements

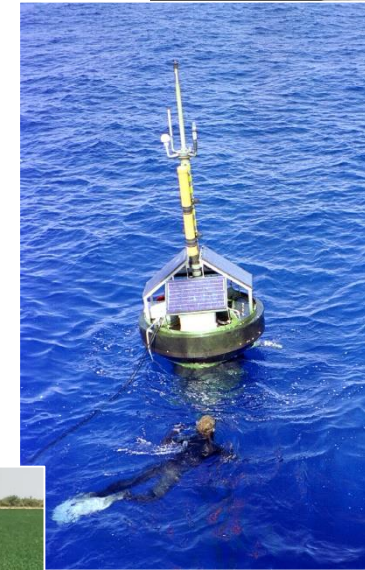
T2.5

Field and aerial campaigns

T2.6

Cal/Val data distribution services

- ❖ Identify currently available Calibration and Validation sources
 - ❖ Establish constraints and limitations affecting these sources (technical and operational)
 - ❖ Identify perspectives on methods and emerging technologies
- ✓ Series of reports available via project website





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erables

CCVS deliverables

<https://ccvs.eu>

Ref.	Deliverable	Due Date	Description
D1.1	Optical Missions Cal/Val Requirements	June 2021	Collection of Cal/Val requirements for the operational optical sensors (Sentinel-3 OLCI/SLSTR/SYNERGY, Sentinel-2) and the future optical missions (CHIME, LSTM)
D1.2	Altimetry Missions Cal/Val Requirements	June 2021	Collection of Cal/Val requirements for the operational altimetry sensors (Sentinel-3 SRAL, Sentinel-6) and the future altimetry mission (CRISTAL)
D1.3	Radar and passive Microwave Missions Cal/Val Requirements	June 2021	Collection of Cal/Val requirements for the operational radar missions (Sentinel-1) and the future radar and passive microwave missions (ROSE-L, CIMR)
D1.4	Atmospheric Composition Missions Cal/Val Requirements	June 2021	Collection of Cal/Val requirements for the operational atmospheric composition missions (Sentinel-4, Sentinel-5) and the future atmospheric composition mission (CO2M)
D2.1	On-Board Calibration Sources	June 2021	List of existing on-board calibration devices used for Sentinel missions and foreseen for future High Priority Copernicus Missions
D2.2	Vicarious Methods on Natural Targets	June 2021	List calibration methods based on observation of natural sites/targets (including Moon, Sun and stars)
D2.3	Inter-Satellite Comparison Methods	June 2021	Identify inter-satellite comparison methods (including SNO, tandem) and their current used for Sentinel missions. Identification of emerging methods and approaches
D2.4	Systematic Ground-Based Measurement Sites and Networks	June 2021	Survey of instrumented sites and networks (including drifters) acquiring measurements in a systematic manner, in Europe and worldwide
D2.5	Field and Aerial Campaigns	June 2021	Survey of field and airborne campaigns, in Europe and worldwide
D2.6	Cal/Val Data Distribution Services	June 2021	Survey existing Cal/Val data distribution services and portals and their current use and perspective for the Copernicus program
D3.1	Recommendations for R&D activities on instrumentation technologies	September 2022	
D3.2	Recommendations for R&D activities on Cal/Val methods	September 2022	



Gap Analysis & CCVS

WP 3
Gap Analysis and Copernicus
Cal/Val solution

T3.1
Instrumentation
technologies

T3.2
Cal/val Methods

T3.3
Measurement networks and
supersites

T3.4
Data distribution

T3.5
Performance analysis and
Level 3 impact

T3.6
Copernicus Cal/val
Solution

- ❖ Identify gaps in the current Cal/Val of Sentinel missions
- ❖ Identify synergies and cross-Sentinel harmonisation needs
- ❖ Define a network of core operational sites for the Sentinel missions
- ❖ Define an operational organization and procedures for the cal/val activities of the Sentinel missions (data curation and distribution)
- ❖ Analyse expected impact on uncertainty of Sentinel products and downstream products (including Level-3)



fiducial reference
measurements for
satellite ocean colour



fiducial reference
measurements
for vegetation



EUMETSAT
CO2M FRM Study

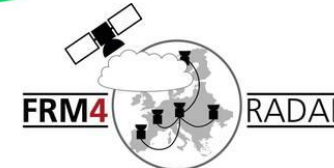
FRM4DOAS



FRM4STS



FIDUCIAL
REFERENCE
MEASUREMENTS
FOR ALTIMETRY



pandonia
Fiducial Reference Measurements
for Atmospheric Composition



+ making existing monitoring networks “FRM compliant”

Reference Scenario for Implementation

WP 4

Reference Scenario for Implementation

T4.1

Coordination with European agencies

T4.2

Coordination with measurement networks

T4.3

Coordination with Copernicus Services

T4.4

Coordination with international agencies

T4.5

Roadmap and sustainability analysis

T4.6

Reference Scenario for Implementation

- ❖ Define a way forward for the implementation of the Copernicus Cal/Val solution
- ❖ Establish roles and responsibilities among Copernicus stakeholders
- ❖ Analyse sustainability and identify funding gaps
- ❖ Define implementation schedule





Implementation Summary

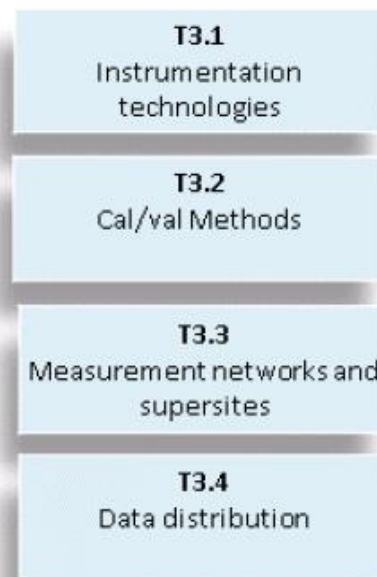
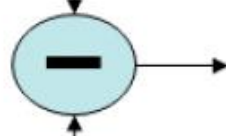
Synthesis

Analysis

Gap Analysis

WP1
Sentinel Cal/val
Requirements

WP2
Existing Cal/Val sources



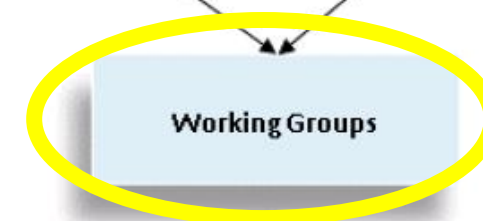
T3.5
Performance analysis and
Level 3 impact

T3.6
Copernicus Cal/val
Solution

Implementation

T4.5
Roadmap and sustainability
analysis

T4.6
Reference Scenario for
Implementation



- **WG1 – Agencies** (coordinated by ACRI-ST)
- **WG2 - Measurement Networks** (coordinated by University of TARTU)
- **WG3 - Copernicus Services** (coordinated by ACRI-ST)
- **WG4 - International** (coordinated by ACRI-ST)



Announcement: CCVS Workshop

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- ❖ 13-15 October 2021 (online, 14:00-18:00 CET)
- ❖ Invited + contributed talks
- ❖ Objectives
 - ❖ Extend awareness of the project to the community
 - ❖ Present and discuss results from Phase 1
 - ❖ Collect feedback from the community and prepare Phase 2
- ❖ Agenda:
 - ❖ Cal/Val for Copernicus missions: State-of-the-art, requirements, perspectives
 - ❖ Gaining FRM from in-situ measurements
 - ❖ Breakout sessions: optical, altimetry, radar/MW, atmosphere
 - ❖ Future of in-situ measurements
- ❖ Registration and abstract submission soon on <https://ccvs.eu>



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Where/How can CEOS WGCV assist?

❖ Be aware that this project is happening



❖ Know where to look at for information:

<https://ccvs.eu>

contact@ccvs.eu



❖ Get involved!

Join a working group / comment a document / attend a workshop



❖ Keep an eye out for follow-on funding programme to implement the CCVS





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