



Towards evaluation of new Copernicus Contributing Missions (CCMs) dedicated for measuring methane emissions with very high spatial resolution

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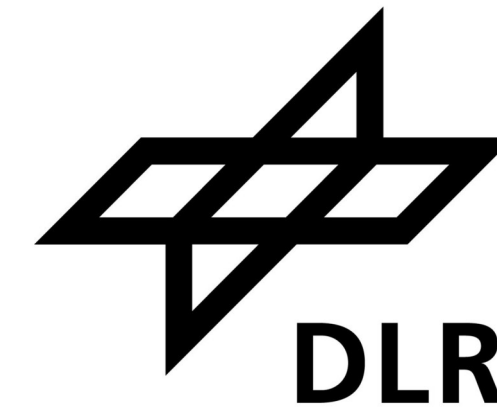
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Objectives



- ◆ The Copernicus Contributing Missions (CCMs) provide commercial Earth Observation data that are complementary to the Sentinel missions.
- ◆ CCMs are composed of established and emerging data suppliers that collectively have the potential to respond to existing and future user needs in terms of improved resolution, timeliness and relatively new domains for New Space companies.
- ◆ The data quality aspects of the atmospheric CCMs will be evaluated using the expertise of the atmospheric mission performance centre (ATM-MPC).
- ◆ The ATM-MPC CCM activities will include (a) providing guidance to the CCMs based on the available expertise and (b) perform initial and evolving assessment of data quality depending on the maturity and traceability of the CCM documentation and sample datasets.
- ◆ Current activities include assessment of CCM level 1B and level 2 data quality but exclude level 3 and higher level data products.
- ◆ Assessment of higher level data products—emissions and fluxes, commercial targets, targets relevance to CAMS services is envisioned as necessary future activity.
- ◆ The ATM CCMs target primarily methane observations at high-spatial resolution.

Atmospheric CCMs



- ◆ The current ATM-MPC CCM activities are focused on activities performed by two companies:
- ◆ (1) SATLANTIS (<https://satlantis.com>) is a private Spanish “Space Technology for Earth Observation and Universe Exploration Company”.
- ◆ It launched their first small satellite GEISAT Precursor (16U CubeSat of 17.4 kg mass) on 12th June 2023 with a design life of four years dedicated to high-spatial resolution methane point source studies. It works in the Visible and Near Infrared (VNIR) and Short Wave Infrared (SWIR) spectral regions. It is placed in a Sun-synchronous orbit with an altitude of 520 km.
- ◆ (2) ABSOLUT SENSING (<https://absolut-sensing.com>) is a private French company developing space observation technologies to monitor, understand and predict planetary changes.
- ◆ They are preparing to launch their first methane emission monitoring small satellite (GESat—16U CubeSat) in late 2024. The cryogenic sensor used in the satellite would test the detection of local releases of methane at a threshold of about 50 kg per hour.

Role of ATM-MPC for CCMs

- ◆ Get acquainted with the CCMs and develop methodology to perform quality assessment.
- ◆ Review of the end-to-end documentation from the CCMs regarding data format, algorithms, uncertainties and performances.
- ◆ Develop quality assessment approach for each CCM and the supporting tools.
- ◆ Perform yearly assessment of the CCM data quality based on the approach, tools and IT infrastructure developed in the above two tasks and report them at meetings and workshops.
- ◆ Provide support and guidance to the CCMs based on the expertise available in the ATM-MPC. This includes the review of CAL/VAL plans, algorithm and data format specifications, provide information on community standards and best practices, setup of CAL/VAL activities, consistency and clarity in error budgets, etc. .