International methane product standards

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Policy & commercial response to enable climate change action

- New and refined regulatory drivers form the basis of a business model
- Rapidly growing private satellite/product sector provide urgency for independent quality assurance
Methane standards suitable for all scales

- Need to have standards across the spatial scales that allow synthesis and interoperability between sensors and applications

DOI: 10.1038/s41598-020-57678-4
Transparency & traceability from sensor counts to reported emissions

Level 1 spectra / bands

Level 2 concentrations

Coppernicus Sentinel-5P/PROPOMI Methane Product (March 6, 2019 Orbit#7227)

Level 4 flux & emission rates

Image credit: JAXA

Image credit: disc.gsfc.nasa.gov

Documentation

Metrology (calibration, characterization & uncertainties)

Algorithms & Processing

Calibration

Validation

Image credit: 10.5194/essd-11-1-2019
Adopting established quality assured principles & frameworks

QA4EO Principle

“It is critical that data and derived products are easily accessible in an open manner and have associated with them an indicator of their quality, traceable to reference standards (preferably SI), to enable users to assess the suitability for their application (i.e. its fitness for purpose).”
Framework structure

- Partnership between scheme originator and professional body to enable an independent certified practitioner
- Produce assessed against a customer need/requirement – not a static standard
- Contract between product producer and customer/user
- Producer provides product, algorithm and metadata
- Customer provides requirements and need metrics
- Product rating made public
Summary

- The need for methane emission data is prescribed to response to government policy enacted to address the climate emergency.
- Space Agency and Commercial satellite-derived products are part of the answer - but data confidence is key.
- Confidence in trusted and reliable data is achieved through objective and independent assessment of products, from on-orbit measurement to fluxes/emissions to whether they are ‘fit-for-purpose’.
- Underpinned by:
  - transparency
  - traceability
  - independence
  - Evidenced QA
Next steps

- Develop consensus on the need for international methane standards
- Engagement with the community (CEOS is a key partner)
- COP28 Space Summit Statement - Space Agencies Leaders Summit Pledge
- UK-hosted methane standards workshop in Q1 2024 with recommendations brought to April 2024 CEOS SIT meeting
- Implementation developed in 2024-25
- International agreement for CEOS Plenary / COP30 in Q3 2025.

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