



CEOS ACVC Meeting:

CEOS support of UNEP IMEO Objectives

Cynthia Randles

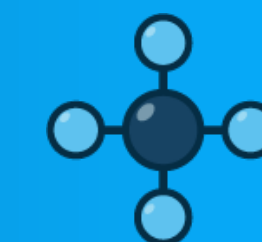
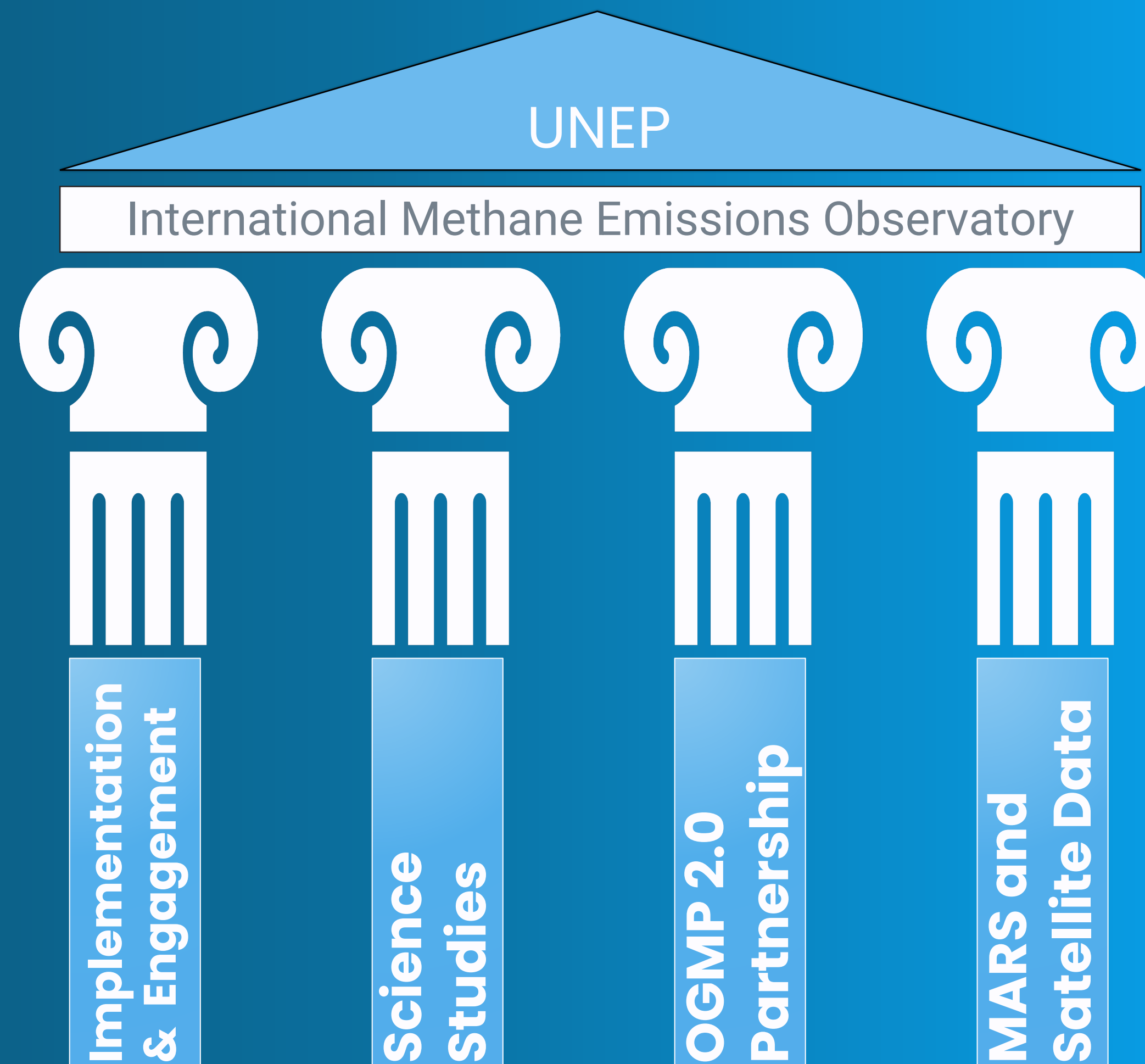
UNEP International Methane Emissions Observatory

MARS Programme Manager



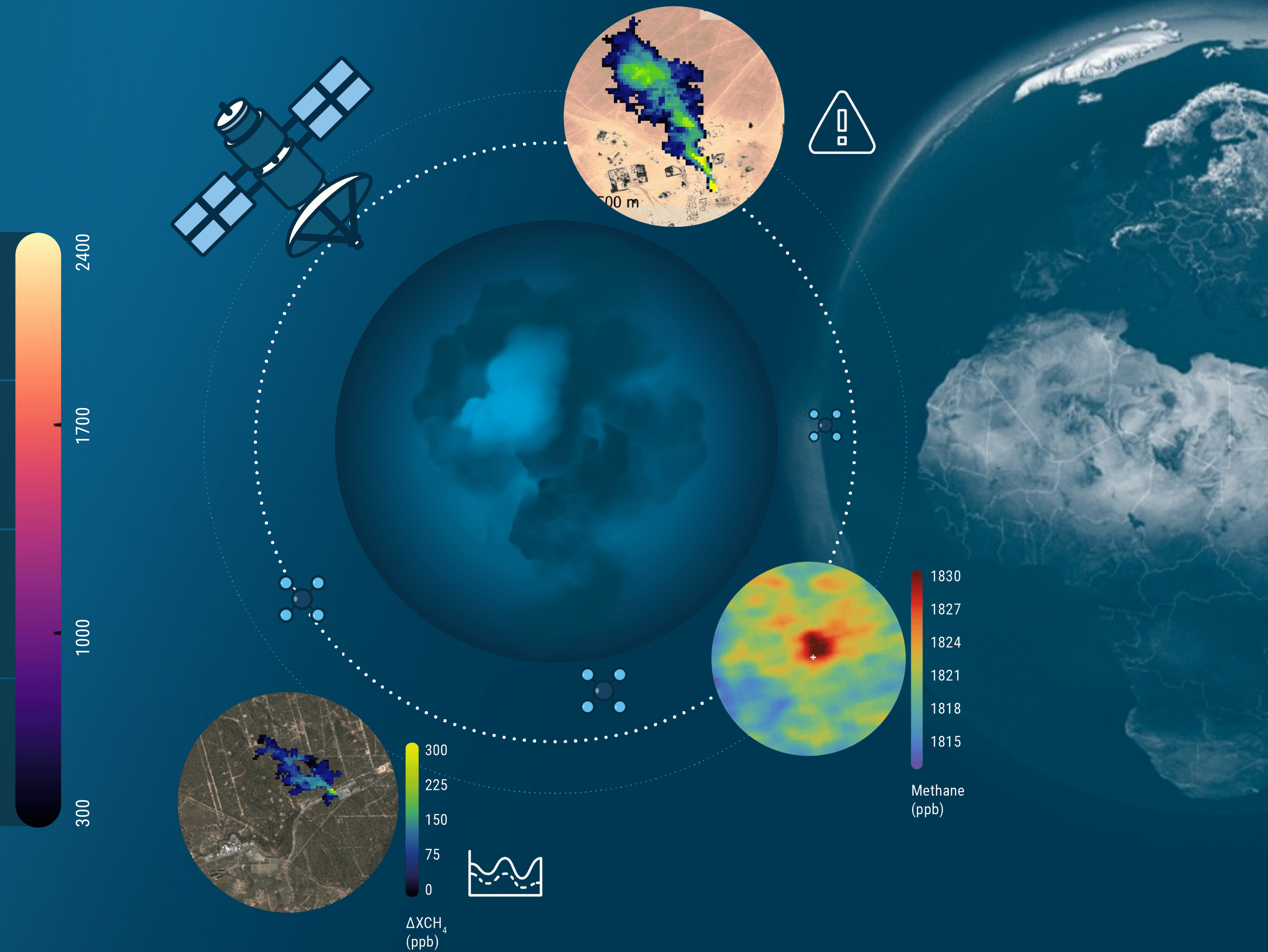
IMEO is a program of the United Nations Environment Programme (UNEP) and consists of four sub-activities

- **The International Methane Emissions Observatory (IMEO) exists to provide open, reliable, and actionable data to those that can act to reduce methane emissions**
- **UNEP IMEO catalyzes the collection, reconciliation and integration of empirically-based methane emissions data, to provide unprecedented climate transparency and the information required for action**



→ **UNEP IMEO's MARS** uses existing satellites to provide *open, reliable and actionable data* to stakeholders

- Component 1** → Detect and Attribute
- Component 2** → Notify and Engage Stakeholders
- Component 3** → Stakeholders Take Action
- Component 4** → Track, Learn, Collaborate, Improve



MARS is designed to be highly collaborative between *UNEP, governments, and companies*

→ Joint UNEP IMEO-CEOS Meeting on International Coordination Workshop on Detection of Anthropogenic Methane Emissions from High-resolution Satellites

The meeting objective was to produce a vision guiding our collaboration to deliver critically needed methane emissions datasets and understanding of methane emissions and trends to diverse end users.

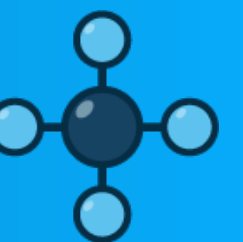
1. Observability WG – define the coverage – in space and time – of satellite observations for each methane-detecting satellites individually and collectively, given each satellites observing capabilities for given locations and environmental factors (e.g., cloudiness, emission levels and patterns)

2. Use Case WG – focused on defining key use cases (e.g., emissions accounting, alerting, differences in these for different emitting sectors) and defining, with eventually end user input, data products and detailed product definitions.

3. Data Integration WG – collaborate to design, for example, common data formats to assist in integration of data across satellites, and end products and formats more useful for various stakeholders.

4. Cal/Val/Testing WG – defining testing methodologies and metrics for different patterns of emissions and scales with the intent of providing *understanding* of data product quality and uncertainties.

5. Roadmap WG – overarching WG that will produce a short-term (18-month) vision for the methane emissions observing landscape and data products relevant for near-term *action* by stakeholders.



→ CEOS-support for UNEP IMEO: Possibilities

1. Cal/Val: Controlled Release Studies for point-source detection

- Next round will focus on release rates < 30 kg CH₄/hr – not suitable for satellite
- Future studies in design process; welcome CEOS input on study design and coordination during study

2. Data Integration:

- Data standards (quality flags (range, not just binary), ATBDs/documentation of methods, uncertainty quantification)
- Transparency matrices – applicable to New Space technologies; how to build trust in private data

3. Observability

- Operational generation, validation and distribution of methane data products for those missions which were not originally developed for methane mapping (e.g., EnMAP, PRISMA, Sentinel-2, SLSTR or the geostationary instruments).
- Develop mission-specific “observability metrics” (depending on, e.g., cloudiness and surface type and instrument characteristics like MDL) - important for data users and stakeholders to understand the potential limitations of each mission for different observation conditions.

4. Use Case

- ‘Quick-look’ plume alerting product (lower quality flag) + ‘policy-quality’ quantification products (highest quality flag)
- Mechanisms for community to collaborate when discrepancies arise (avoid stakeholder confusion)



Thank you !

Cynthia Randles

Cynthia.Randles@unep.org

