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Methane Standards Mtg Organizing Committee [Daniel Varon (Harvard), Riley Duren (CarbonMapper), Dan Cusworth (CarbonMapper), Andrew Thorpe (JPL)]
Oral
The last decade has been a period of significant progress in remote sensing of carbon dioxide (CO2) and methane (CH4) and the decade ahead promises continued expansion of remote sensing measurements. Ground-based networks are also expanding, especially with the global use of EM-27 compact Fourier transform spectrometers. The science and policy communities seek unbiased, precise measurements of CO2 to assess changes in atmospheric fluxes of less than 1 Gt CO2. Methane emissions hotspot identification and quantification is a rapidly growing area of focus, as in the global methane budget and unanticipated changes to the global growth rate. To achieve these goals, each satellite dataset must be well documented and carefully validated against ground-based and in-situ measurements that are tied to internationally recognized reference standards. Well documented analysis and traceability to the standards is critical, including assessments of how each remote sensing dataset relates to the others. This task becomes more and more complex as the satellite and ground-based measurement networks expand. NIST has been starting up collaborative projects with the CO2 and CH4 measurement communities to facilitate the development of documentary standards and best practices for producing, documenting, and validating these products. Recently, new work has begun with an emphasis on CH4 and plume quantification. This work is being planned in collaboration with the UK metrology organization, NPL, measurement and data analysis groups, other federal agencies, and interested international organizations.

Three key aspects of methane plume data that will improve reliability and trust are:
1. Methodological consistency (observational strategies, data analysis and quality control).
2. Independent evaluation (controlled release testing and other ground-truthing).
3. Enhanced transparency (enabling further intercomparison and repeatability).

In this talk, I will discuss our plans and progress for a collaborative project that moves us towards the three goals above. The current activies are:
- Bring together key communities to discuss consensus standards, terms, and taxonomy, with a focus on remote sensing of methane super emitters. Terminology includes plumes, enhancement, plume origin, attribution, and 90% probability of detection.
- Begin documentation of these standards, including data level definitions and documentation needs to increase transparency
- Facilitate intercomparisons to complement controlled release experiments and comparison of flux estimates. Such intercomparisons may include plume delineation, analysis of concentration or matched filter results, and the details of transformation algorithms, to move us towards methodological consistency
- Explore collaboration with US GHG Center to host exemplar datasets, and to centralize documentation such as ATBDS and quality control protocols
Presentation file
Annmarie-Eldering.pdf
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