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As part of the Copernicus Programme, the European Commission (EC) and the European Space Agency (ESA) are expanding the Copernicus Space Component and implementing satellite remote measurements for supporting anthropogenic CO2 emission monitoring. In support of well-informed policy decisions and for assessing the effectiveness of strategies for CO2 (and methane, CH4) emission reduction, uncertainties associated with current anthropogenic emission estimates at national and regional scales need to be reduced. Satellite measurements of atmospheric CO2 and CH4, complemented by in-situ measurements and bottom-up inventories, will be elaborated in an advanced (inverse) modelling scheme to provide a transparent and consistent quantitative assessment of their emissions and their trends at the scale of megacities, regions, countries, and at global scale.

Operational monitoring of anthropogenic emissions requires high precision CO2 and CH4 observations with, on average, weekly effective coverage at mid-latitudes and relatively high spatial resolution (4 km2). The Copernicus Anthropogenic CO2 Monitoring (CO2M) Mission will provide these observations from NIR and SWIR radiance spectra at a spectral resolution of 0.12 nm and 0.35 nm, respectively. The measurements will be complemented by (1) aerosol observations, to minimise biases due to incorrect light path corrections, and (2) NO2 observations as tracer to emissions from high temperature combustion, and (3) cloud imaging to further facilitated the retrieval of CO2 and CH4 by identifying measurements contaminated by low clouds and high-altitude cirrus. In order to support the CO2M Mission implementation, currently two scientific support activities are running. One study focuses on directly supporting the project implementation and tackling any potential issues arising towards meeting the mission science requirements. The other study supports the Mission Operational Planning Concept by deriving an optimal sequencing of glint and nadir mode with focus on including good coverage over snow-covered regions and coastal areas. This presentation will provide selected results of these scientific studies. The presentation will further provide the status of the currently on-going implementation of the space segment of the Copernicus CO2M mission which will form a keystone in supporting future global stocktakes and is implemented in an international coordination framework.
Presentation file
Meijer-Yasjka-CO2M-Mission-WEB.pdf
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