The MicroCarb CO2 mission: status and performances

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Oral
(Virtual Talk)

MicroCarb will be the first European mission dedicated to CO2 fluxes monitoring from space, with a target launch for mid 2025 on Vega-C. MicroCarb has been developed in a partnership led by CNES with major contributions from UKSA, EUMETSAT and EU through H2020 IOD-IOV program operated by ESA.
MicroCarb will make global measurements of the atmospheric CO2 column integrated concentrations at high accuracy (random error <1ppm, regional bias <0.2ppm) from an affordable micro satellite (Myriade series). The main objective of MicroCarb is the study of natural fluxes for a better understanding of their mechanisms. An imagery mode is also implemented as a demonstrator for local emission estimations. The MicroCarb instrument is a grating spectrometer measuring high-resolution radiance spectra in four spectral bands: CO2 at 1.61 and 2.03 µm, O2 at 0.76 and 1.27 µm. This latter band is specific to the MicroCarb mission to mitigate aerosol-related biases despite airglow emission. An imager is also embedded for geolocation and cloud detection.
We will present:
- A quick reminder of the mission: its objectives, technical characteristics and partnership organization.
- The current status of the program: space segment is ready to flight (both

instrument and satellite integrated and tested), ground segment is close to its final delivery, now waiting for launch.
- The status of the algorithms (from raw measurements to XCO2), of the L1 and L2 products performances (from simulated data, from ground TVAC measurements including solar viewing, from retrievals in real data OCO-2 and EM27/SUN), and of the cal/val planned activities.
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