
The MicroCarb space mission for the monitoring of the natural carbon cycle

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Résumé

MicroCarb is a space mission design for the monitoring of the Carbon Cycle. The instrument is based on an innovative optic design which makes it possible to acquire simultaneously several bands of the solar spectrum. The selected bands have been optimized to sample the absorption bands of oxygen and CO₂. In addition to the bands at 0.76, 1.6 and 2.0 μm that were selected for the GOSAT and OCO instrument, MicroCarb will sample the oxygen absorption band at 1.27 μm . It is expected that the spectral proximity to the CO₂ absorption band will reduce the uncertainties linked to the use of the 0.76 μm band for the correction of surface pressure and aerosol scattering effects.

The spectra measured by the instrument shall be used to estimate the atmospheric CO₂ column with an accuracy better than 1 ppm over all sunlit areas of the Earth. These estimates shall provide additional constraints for a better understanding of the global Carbon cycle.

The presentation will discuss

- the MicroCarb Science objectives and the rationale for a focus on the natural carbon cycle,
- the innovation on the instrument design that leads to a compact instrument for launch onboard a Microsatellite platform, and
- the rationale for an additional band at 1.27 μm for a better correction of the aerosol perturbations on the CO₂ estimates.

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