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ALTIUS: a forthcoming stratospheric ozone profiler

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Belgium is proposing the ALTIUS (Atmospheric Limb Tracker for the Investigation of the Upcoming Stratosphere) mission as a forthcoming stratospheric ozone profiler. It will be operated from a micro-satellite of the PROBA class orbiting in a 700 km heliosynchronous orbit. The instrument will combine three 2D spectral imagers observing the Earth's atmospheric bright limb from the ultraviolet to the NIR spectral range at moderate resolution (1-10 nm). The platform agility will allow for multi-mode observations by performing solar and stellar occultation observations, across the terminator and in the eclipse.

The spectrometer principle is based on Acousto-Optic Tunable Filters (AOTF) and Fabry-Pérot interferometers. The imaging capacity is an essential method to solve the major difficulty associated with the accurate determination of the tangent altitude of the sensed atmospheric region.

ALTIUS has presently completed its Phase B1, with a successful intermediate design review for the payload and a preliminary design review for the platform. It is also partially compliant with requirements for an operational ozone monitoring (with global stratospheric ozone monitoring as a target) and scientific objectives with expected retrievals of NO₂, H₂O, CH₄ concentration profiles, aerosol extinction profiles and PSC/PMC detection.