

Feasibility study on UV/visible imaging spectrograph (Geo-OPUS) for GOAL satellite proposal

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Geo-OPUS (geostationary ozone and air pollution monitoring UV/visible spectrometer) is a core instrument of GOAL (geostationary observation of atmospheric chemistry and lightning) satellite proposal. Geo-OPUS is an imaging spectrograph to scan earth disk (20km x 20 km nadir pixel, 512 north-south pixels IFOV, and whole disk FOV within 1 hour observation cycle), which observes 270-450 nm with 0.3 nm spectral sampling. Onboard spectral calibration (0.01 nm accuracy) is carried out using Hg lamp and solar lines. Radio. Diffuser plates are used for radiometric calibration. Primary observation targets are total column of NO₂, SO₂, O₃ (also stratospheric profile), HCHO, and aerosols. It also measures stratospheric species, OClO, BrO, etc. High SNR and spectral calibration/stability are required to derive species such as tropospheric O₃ column in 10-20% (accuracy required by IGOS-P/IGACO).