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DOAS monitoring of tropospheric NO_2 from an UAV

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We present the concept of a system which includes an Unmanned Aerial Vehicle (UAV) and a compact UV-VIS spectrometer for Differential Optical Absorption Spectroscopy (DOAS) observations. The system uses a whiskbroom scanning geometry to map the surface NO_2 field. We present the technical aspects of the payload, the inversion strategy, and simulated NO_2 maps which are expected to be obtained from the system given instrument noise, aircraft altitude and speed.
The aim of this experiment is to achieve a spatial resolution of a few hundred meters for a typical flight of 1 hour, covering 20x20 km2. Such measurements would be useful for satellite validation and air quality models