

Spaceborne imaging spectroscopy for atmospheric sciences

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THEME: Science applications related to spaceborne imaging spectroscopy missions. The abstract has been invited by the session organisers Uta Heiden and Saskia Foerster.

KEY WORDS: EnMAP, aerosols, water vapour, clouds

ABSTRACT:

The spectral domain between 400 nm and 2400 nm, as covered by EnMAP, contains prominent features of atmospheric trace gases, particles and hydrosols. There are the O₂ A-and B-band at 760 and 690 nm, the $\text{rst-H}_2\text{O}$ absorption band between 900nm and 980 nm or the absorption due water and ice hydrosols between 1600 nm and 2300 nm. The combination of hyperspectral coverage and spatial high resolution of EnMAP is unique in monitoring features from space, which enables to observe small scale water vapour fields in highly structured terrain, aerosol plumes from distinct emission sources and boundary layer or cirrus clouds. Based on radiative transfer simulations and retrieved atmospheric water vapour and cloud properties from MERIS (on board ENVISAT), we discuss the potential of EnMAP for atmospheric research.