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## Satellite monitoring of different vegetation types by differential optical absorption spectroscopy (DOAS) in the red spectral range

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**Abstract.** A new method for the satellite remote sensing of different types of vegetation and ocean colour is presented. In contrast to existing algorithms relying on the strong change of the reflectivity in the red and near infrared spectral region, our method analyses weak narrow-band (few nm) reflectance structures (i.e. "fingerprint" structures) of vegetation in the red spectral range. It is based on differential optical absorption spectroscopy (DOAS), which is usually applied for the analysis of atmospheric trace gas absorptions. Since the spectra of atmospheric absorption and vegetation reflectance are simultaneously included in the analysis, the effects of atmospheric absorptions are automatically corrected (in contrast to other algorithms). The inclusion of the vegetation spectra also significantly improves the results of the trace gas retrieval. The global maps of the results illustrate the seasonal cycles of different vegetation types. In addition to the vegetation distribution on land, they also show patterns of biological activity in the oceans. Our results indicate that improved sets of vegetation spectra might lead to more accurate and more specific identification of vegetation type in the future.

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