



## **Identifying aerosol parameters for trace gas retrievals from near infrared satellite measurements**

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One of the major sources of uncertainty in the retrieval of tropospheric trace gas abundances from space-borne measurements is the type, amount and vertical distribution of aerosols in the atmosphere. Optical properties were derived for the broad classification of aerosol types considered by Kahn et al. (2001), taking polarization into account. Weighting functions were then calculated for each of these types, resulting in a grouping of aerosol types that was entirely consistent with that expected from single scattering albedo and extinction behavior. Linear sensitivity studies were performed for scenes representative of global climatology, to evaluate errors in the retrieval of trace gas abundances due to incorrect assumption of aerosol type within a retrieval group. Information content analysis is used to provide insight into the kind of aerosol parameters that could be used to reduce biases in trace gas retrievals and achieve precisions necessary to quantify their sources and sinks on regional scales. It should be noted that although the study was performed for the Orbiting Carbon Observatory (OCO), the basic principles are equally valid for other instruments such as those on SCIAMACHY and GOME.