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A pilot study of shortwave spectral fingerprints of smoke aerosols above liquid clouds

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Highlights

- Capability of hyperspectral measurements for retrieving properties of aerosols above water cloud is analyzed.
- Analytical calculation of measured radiance with respect to the principal components of smoke particle index of refraction is developed.
- Comparing with MODIS, hyperspectral data doubles the information for retrieving 5 additional variables
- Hyperspectral data provides strong constraints for qualifying radiative heating of aerosols above cloud

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