

Investigating the retrieval of IR land surface emissivity under optically thin clouds

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Hyperspectrally-resolved surface emissivities are derived with an algorithm utilizes a combined fast radiative transfer model (RTM) with a molecular RTM and a cloud RTM accounting for both atmospheric absorption and cloud absorption/scattering. Clouds are automatically detected and cloud microphysical parameters are retrieved; and emissivity is retrieved under clear and optically thin cloud conditions. The retrieval technique separates surface emissivity from skin temperature by representing the emissivity spectrum with eigenvectors derived from a laboratory measured emissivity database. Global land emissivities retrieved under the optically thin clouds are investigated by means of their accuracy in comparison with that under cloud-free conditions. Here we present the emissivity derived under optically thin clouds, their accuracy, and the inter-comparison with that under clear conditions.