



Retrieval of cloud properties using simple approximations: the SLALOM retrieval

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A new technique for the retrieval of cloud parameters from optical satellite data during daytime is introduced. The technique is based on simple yet highly accurate approximations of the asymptotic solutions of the radiative transfer theory which have recently been implemented in the forward radiative transfer model CLOUD. These approximations enable a solution of the equations of the corresponding backward model, the SimpLe Approximations for cLOudy Media (SLALOM) retrieval, during runtime leading to a very fast computation speed. At the same time, SLALOM is not restricted to the case where the probability of absorption is close to zero since the approximated equations for the escape function, the plane albedo, and the reflection function of a semi-infinite layer are substituted by pre-computed tabulated values of these functions. SLALOM is capable to retrieve the cloud optical thickness, the effective cloud droplet radius, the liquid and ice water paths as well as the particle absorption length. A Fortran implementation of SLALOM is available on request.