COMBINED STOCHASTIC AND TRANSFER MODEL FOR ATMOSPHERIC RADIATION

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ABSTRACT. A model for incident solar radiation is developed. The sky is treated as if it were composed of two semi-grey layers, an upper passively-attenuating medium, and a lower participating isotropically-scattering medium. The equation of transfer is solved for the lower medium using an exponential kernel approximation. This solution is combined with a gamma distribution for the creation of cloud particles to obtain a probability distribution for optical thickness. The combined solution is fitted and compared to generalised radiation curves.