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Simulation Procedure for Optical Wave Propagation through Atmospheric Aerosols MAZEN NAIRAT, DAVID VOELZ, New Mexico State University — The effects of atmospheric aerosols on optical propagation have been studied primarily for a homogeneous medium and in a time-averaged sense. We describe an approach for including the effects of aerosol scatter in the wave optics simulation format. The aerosol medium is modeled using a series of phase screens placed along the propagation path in such a way that their distribution depends on the aerosol's density. The aerosol scattering point spread function is translated into a collection of phase screen realizations. The results obtained emphasize that the simulation procedure is applicable in non homogenous medium with varying scatter phase functions. Indeed, the procedure can be combined with other wave optics simulation procedures such as the propagation through turbulence.

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