

2.4: Surfaces - Single-scattering Albedo

We have already encountered a bare-boned, but nonetheless adequate, definition of single scattering albedo in Chapter 1. The loss of radiance from a beam of radiance L traversing a thickness ds of a medium is

$$dL = -\epsilon L ds = -(\alpha + \sigma)L ds \quad (2.4.1)$$

and the single scattering albedo is *that fraction of the loss which can be attributed to scattering alone. i.e.*

$$\varpi_0 = \frac{\sigma}{\alpha + \sigma} = \frac{\sigma}{\epsilon} \quad (2.4.2)$$

and the single scattering albedo is thus the ratio of the scattering coefficient to the extinction coefficient.

Single scattering albedo is the property of a *surface* or a *layer*, and may be regarded as the fundamental albedo, since all albedos that will be derived here from a given definition or reflectance rule will contain at least one instance of ϖ_0 .

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