



Effect of reflectance model choice on earthshine-based terrestrial albedo determinations.

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Earthshine observations can be used to determine near-hemispheric average terrestrial albedos by careful observation of the relative strength of the earthshine-lit half of the Moon coupled with correct modelling of the reflectances of Earth and Moon, as well as lunar single-scattering albedo maps. Using our own observations of the earthshine, from Mauna Loa Observatory in 2011-12, we investigate the influence of the choice of bidirectional reflectance models for the Moon on derived terrestrial albedos. We find a considerable dependence on albedo results in this choice, and discuss ways to determine what the origin of the dependence is - e.g. is it in the joint choices of lunar and terrestrial BRDFs, or is the choice of terrestrial BRDF less important than the lunar one? We report on the results of modelling lunar reflectance and albedo in 6 ways and terrestrial reflectance in two ways, assuming a uniform single-scattering albedo on Earth.