

SPECTRAL ALBEDO AND TRANSMITTANCE OF SNOW  
CONTAINING IMPURITIES (ABSTRACT)

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Spectral albedo and transmittance of snow are investigated by field observation and a multiple scattering model. Observations were carried out on a snow field with enough snow depth (~7 m) at Murodo (36°34'30"N, 137°36'00"E, H=2440 m) in Northern Alps of Japan in April 1994. The spectral albedo was observed with a grating type spectrometer at wavelengths from 0.35 to 2.5  $\mu\text{m}$ . In this time, the snow surface was covered with an ice crust of 1-2 cm thickness containing impurities, and comparatively pure snow was below it. Spectral albedos for snow surfaces with ice crust and without it (removed artificially) agree with the results of a multiple scattering model for snow containing impurities with radius of 500  $\mu\text{m}$  and for pure snow with radius of 100  $\mu\text{m}$ , respectively. On the other hand, transmittance inside the snow was observed by an optical fiber probe with a spectrometer. The observed transmittances of both snow with surface ice crust and without it at the depth of 15-18 cm from the surface had a spectral distribution with peak in the wavelength region from 0.5 to 0.6  $\mu\text{m}$ . However, snow transmittance by a multiple scattering model for pure snow becomes a spectral distribution with peak in the wavelength region from 0.45 to 0.50  $\mu\text{m}$  as the snow depth increases. This suggests that only a small amount of impurity contained in snow without surface ice crust affects the transmittance inside the snow.

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