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White spot phenomenon in wet snow on the road

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On the morning of 1 November 2009, many curious white spots of 2 to 8 cm in diameter were found on asphalt roads and asphalt car parks in Kitami city and Oketo town, Hokkaido, Japan. At a first glance, the white spots were made of spherically-gathered snow; however, these spots were formed by scattering of sun light. When one of the authors (T. K.) observed the white spots carefully, he found that two layers existed on the pavement; the ice-water mixture layer of 2 to 3 mm in thickness and a thin water layer of 3 to 5 mm in thickness. Circular air bubbles of 2 to 8 cm in diameter were sporadically distributed between the two layers. Sun light was diffused at the interface between the two layers, and formed the white spots. Although similar spots on the wet snow have observed in Japan^{1, 2}, the formation process of the spots has never been investigated. We will propose a possible formation mechanism in this presentation.

Keywords: white spot phenomenon, wet snow, snow deposition