Revaluation with Landsat 8 of red snow mapping in ice field

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The melting of glaciers has various effects on the environment such as sea level rise and glacial lake collapse. The global warming is commonly believed to cause the melting, while some scientists insist that the breeding of snow creatures on the glacier contributes mainly. The colorful phenomenon such as red snow, where microorganisms breed on the surface of the glaciers, makes the absorption of heat from sunlight increase, resulting in the faster melting rate of the glacier than usual. However, the actual amount of melting in the glacier is unknown. In order to elucidate it, the distribution of the coloring phenomenon on the glacier should be investigated. Therefore, we aimed at observing glaciers using remote sensing which can observe coloring phenomenon extensively and easily. Using remote sensing the red snow has been observed twice (2006, 2015). However, around 19 percent area in the ice field was not observed due to the saturation of the conventional 8-bit image sensor of the satellite. In this study Landsat 8 with the saturation-free 16-bit image sensors (band 2 and 4) is adopted and Harding ice field in June- August 2015 was selected for our observation with the information from previous studies. As shown in figure, we achieve to observe the whole area without the sensor saturating and the red snow appears in the larger area than before. The detail evaluation will be shown in the presentation.

Keywords: Landsat, Red snow, Ice field, Remote sensing