Seasonal variations of supraglacial ponds on debris-covered glacier in the eastern Himalaya

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In the eastern Himalayas, single large proglacial ponds have often developed gradually by connecting small and growing supraglacial ponds at the terminal parts of glaciers (Ageta et al., 2000) .While, the Tshojo Glacier flood of 2009 in Bhutan occurred in a case in which a debris-covered glacier has a fragmented or gently sloped moraine without proglacial lakes (Komori et al., 2004). Glacial lakes are those that connect with each other and develop into huge glacial lakes and others that cause seasonal fluctuations to cause large-scale floods like the Chozo glacier. Regarding fluctuations of glacial lakes, there are reports showing seasonal variations from data of different years (Benn et al., 2017) that the area changes drastically over 3 years (Watson et al., 2015). The seasonal fluctuation of the season is not clear. The characteristics of sudden large drainage from debris-covered glaciers are the lack of a proglacial lake in front of them, disappearance of one or several supraglacial lakes during flooding, and drainage through englacial/subglacial channels. To clarify the seasonal variations of supraglacial ponds, we investigated the area changes of supraglacial ponds on debris-covered glaciers in the eastern Himalayas using Landsat8 OLI and ALOS-2 PALSAR-2 data.

Keywords: ALOS-2/PALSAR-2, Supraglacial pond, debris-covered glacier

