

The expansion of Himalayan supraglacial lakes by the global warming

Kazuhisa Chikita[1]

[1] Earth and Planetary Sci., Hokkaido Univ.

Himalayan supraglacial lakes at about 4500 m asl started to expand in the 1960s, corresponding to the glacial retreat after the Little Ice Age. At present, supraglacial lakes at above 500 m asl have been expanding increasingly by the global warming. By field observations in two supraglacial lakes, Chikita et al. (1999) revealed that hydrodynamics in supraglacial lakes forces the basin expansion by inducing calving at the glacier front. In order to reproduce a wind system and lake hydrodynamics observed in situ, 2D and 3D numerical simulations were tested. It was found out that the topography of end moraine and the lake-surface length affect a spatial distribution of wind over the lake surface. I am now trying to build 2D and 3D physical models, in order to know how an open water on ice expands under Himalayan weather conditions and lake hydrodynamics.