

EGU21-16587

<https://doi.org/10.5194/egusphere-egu21-16587>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Extreme mass wasting during 2021 Dhauli Ganga event in the Higher Himalaya: insight from the landscape

Anand Kumar Pandey¹, Kotluri Sravan Kumar¹, Virendra Mani Tiwari¹, Puranchand Rao¹, Kirsten Cook², Christoff Andermann², Michael Dietze², Marco Pilz², and Niels Hovius²

¹CSIR- National Geophysical Research Institute, Uppal Road, Hyderabad, India

²Helmholtz Center Potsdam GFZ German Research Center for Geosciences, Telegrafenberg, 14476 Potsdam, Germany

The slope instability and associated mass wasting are among the most efficient surface gradation processes in the bedrock terrain that produce dramatic landscape change and associated hazards. The wedge failure in periglacial Higher Himalaya terrain on 7th February in Chamoli, Uttarakhand (India) produced >1.5 km high rock avalanche, which amalgamated with the glacial debris on the frozen river bed produced massive debris flow along the high gradient Rishi Ganga catchment. The high-velocity debris flow and a surge of high flood led to extensive loss of life and infrastructures and issuing the extreme event flood warning along the Alakananda-Ganga river, despite there was no immediate extreme climatic event. The affected region is the locus of extreme mass wasting events associated with Glacial Lake Outburst Flood (GLOF) and Landslide Lake Outburst Flood (LLOF) in the recent past. We analyzed the landscape to understand its control on the 7th February 2021 Rishi Ganga event and briefly discuss other significant events in the adjoining region e.g. 1893/1970 Gohna Tal/Lake LLOF and 2013-Uttarakhand events in Chamoli, which have significance in understanding the surface processes in Higher Himalayan terrain.