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## Impact of the Chamoli disaster on flood Plain and water quality along the Himalayan rivers

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The Himalayan rivers are glacier-fed and are vulnerable to devastating flash floods caused by damming of landslides and outbreak of glacial lakes. On 7 February 2021, around 10:30 am IST, a huge block of glacier mass broke from the Nanda Ghunti glacier. It is evident from the multi-temporal satellite imageries from Planet Scope that snow dust deposited in the affected area. During the course of the event, a huge amount of debris along with broken glacial fragments flooded the Rishi Ganga river and washed away the Hydropower plants; Rishi Ganga and Tapovan, more than 71 people were killed, and about 100 people are still missing. Detailed analysis of optical and radar data has been carried out to show the impact of the rockslide, changes in the surface characteristics of the source region, flood plains of the river and water quality of the Himalayan rivers (Alaknanda and Ganga). We have used five different indices Modified Normalized difference water index (MNDWI), Normalized difference vegetation index (NDVI), Enhanced vegetation index (EVI), Normalized difference turbidity Index (NDTI), and Normalized difference chlorophyll index (NDCI), that show pronounced changes in water quality and flood plain at the four different sections of the river. The spectral reflectance and backscattering coefficients derived from high-resolution Planet scope and Sentinel 1 SAR data show characteristics behaviour of the flood plain and water quality. Further, we have also found changes in the water quality of several canals after the Chamoli disaster event as the flood gates were closed to stop the deposit of sediments in the canal.