



## **Recent evolution of glacial lakes in the Eastern Himalayas: the case-study of Mt. Everest (Nepal)**

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In this contribution we analyze the glacier and lakes surface variations since the end of the 1950s until 2008 (around 50 years) through historical maps and remote sensing images. The Sagarmatha National Park (SNP), Eastern Himalayan range (Nepal) covers an area of 1141 km<sup>2</sup>, ranging from 2845 m to 8848 m (Mt Everest). Nearly all (28 out of a total of 29 in SNP) are 'black glaciers', known also as D-type or debris-covered. Overall, SNP experienced a small net reduction in glacier cover of 19.6 km<sup>2</sup> (4.9%) from 403.9 km<sup>2</sup> at the end of the '50s to 384.6 km<sup>2</sup> at the start of the '90s. As regards lakes surface variations, SNP experienced a very large net increasing in lake surface cover of 1.6 km<sup>2</sup> (26%) from 6.0 km<sup>2</sup> at the end of the '50s to 7.6 km<sup>2</sup> in 2008. Moreover the number of lakes is enormously increased (by 36%, from 124 to 169). The new lakes have appeared at higher elevations (42 m higher than the lakes of 50's) probably following the glaciers retreat. As previously documented in bibliography, the Proglacial lakes (Moraine-dammed and in contact with the glacier front) is the typology of glacial lakes more effected by the climate change. These lakes are susceptible to Glacial Lake Outburst Floods (GLOFs) with the potential of releasing million cubic meters of water in a few hours causing catastrophic flooding up. We conclude this contribution pointing out the emerged scientific questions to address future research activities.