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Kedarnath flash-flood tragedy of 2013 : a testimony of climate change induced extreme events in the Himalaya?

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In mid-June of 2013, unprecedented rain generated flash floods which claimed many lives and much damage to property in the Indian hill state of Uttarakhand and neighbouring western Nepal. The severity of the floods and damage was maximum in the Kedarnath region, home of a very famous Hindu pilgrimage and amongst the near 10 000 lives lost were many pilgrims. Landslides triggered by the flooding contributed further to the destruction of buildings and infrastructures [1]. The extensive damage and large death toll expose the vulnerability of the mountainous region to such natural hazards and highlights the lack of coordinated relief and rescue operations.

Estimates of the rainfall responsible for the disaster are up to >335mm in 24 hours, and with no previous history of such magnitudes, the possible cause has lead to much debate among scholars. It has also been observed that the Himalayan regions are witnessing increased frequency of unusual climatic events in the last decade. This paper presents a scientific analysis of the Kedarnath Disaster, as a contribution to the debate concerning the relation between extreme climatic events in the Himalayan region and modern era climate change.

Figure 1: Destruction of the Kedarnath shrine by flash floods and landslides during the June 2013 event.

References:

[1] Sati, S. P., and Gahlaut, V. K. (2010) Geomatics, Natural Hazards and Risk 4(3): 193–201.