

Glacier changes between 1976-2015 in the source area of the Ayeyarwady River and implications to water availability in Myanmar

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The Ayeyarwady River in Myanmar is one of the largest rivers in Asia, but it is at the same time the least known river in that region. The mighty river with a length of about 2.170 km, serves for transportation, domestic and industrial water supply, irrigation, a high biodiversity and fishing. The headwaters of the Ayeyarwady River are fed by glacial meltwater from the Himalayan Mountains (China and Myanmar) and it has not been studied yet, whether these glaciers have been changed in size and volume during the last decades. We here present a first assessment of glacier changes in the river source area for the period between 1976-2015 by using and analyzing Landsat (1-3, 4-5, 7, 8) images. 130 glaciers were identified for the years 1976, 1990, 2002 and 2015 and the results indicate that the average volume of these glaciers show a very dramatic loss up to -68% since 1976. Thereby, the highest volume loss could be detected in the period 2002-2015. If the present declining trend will continue, the glaciers will be disappeared completely by around 2050. Although glacial meltwater input is only the second relevant contribution to the river discharge after monsoon precipitation, the glacial input is still visible in the hydrographs of the Ayeyarwady. Already now, the people in Myanmar are affected by climate (monsoon rain) variability and the decreasing glacier volumes imply additional modifications in water availability and supply to which they have to adapt their water management and agricultural land use.