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Supplement of

Brief Communication: Contending estimates of early 21st century glacier mass balance over the Pamir-Karakoram-Himalaya

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Supplement

The gauging stations used for the results shown in Fig. 2 are listed in Tab. S1. Reliable river runoff data are notoriously difficult to obtain over and around the Himalayas. Even if available, their use and distribution are sometimes restricted. As example catchments we select therefore only ones where discharge data stem from peer-reviewed studies, or where the data were used in peer-reviewed studies, and where the data cover significant time periods. It is outside the focus of the present brief communication to compile a geographically complete set of catchment discharge data. The uncertainty of the glacier imbalance contribution to river runoff (Fig. 2) is estimated in the same way as the uncertainty of glacier mass changes, but uncertainties in the river runoff data used are neglected.

Table S1. Gauging stations indicated in Fig. 2 and uncertainty of our percentage discharge contributions of glacier imbalance to river runoff at 1σ -level.

River	Gauging station	Annual discharge ($\text{m}^3 \text{s}^{-1}$)	Period of measurements	Source	Uncertainty of percentage discharge contributions
Vaksh	Garm	320	1933-1990	Global Runoff Data Centre (GRDC)	$\pm 5\%$
Gilgit	Gilgit	287	1980-2010	Mukhopadhyay and Khan (2014)	$\pm 2\%$
Hunza	Dainyor Bridge	332	1966-2010	"	$\pm 2\%$
Shigar	Shigar	203	1985-1998	"	$\pm 2\%$
Astore	Doyian	136	1974-2009	"	$\pm 2\%$
Upper Indus	Kharmong	452	1982-2010	"	$\pm 3\%$
Shyok	Yogo	362	1973-2010	"	$\pm 6\%$
Upper Indus	Besham Qila	2431	1969-2010	"	$\pm 2\%$
Chenab	Prem Nagar	626	1968-1986	Hofer (1993)	$\pm 3\%$
Beas	Thalout	190	1997-2001	Liu et al. (2013)	$\pm 2\%$
Karnali	Chisapani	1350	1962-1993	GRDC	$\pm 1\%$
Narayani	Narayangh	1590	1963-2006	Collins et al. (2013)	$\pm 1\%$
Sapt Koshi	Chatara	1537	1977-	GRDC	$\pm 1\%$
Brahmaputra	Pasighat	5870	1949-1962, 1976-1978	Sarma (2005)	$\pm 2\%$

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16 Collins, D. N., Davenport, J. L., & Stoffel, M. (2013). Climatic variation and runoff from
17 partially-glacierised Himalayan tributary basins of the Ganges. *Science of the Total*
18 *Environment*, 468, 48-59, 2013.

19 GRDC. Global Runoff Data Centre. Composite runoff fields v1.0.
20 <http://www.grdc.sr.unh.edu/index.html>.

21 Hofer, T. Himalayan deforestation, changing river discharge, and increasing floods: myth or
22 reality? *Mountain Research and Development*, 213-233, 1993.

23 Li Lu, Engelhardt M., Xu Chong-Yu., Jain S. K., Singh V. P. Comparison of satellite-based
24 and reanalyzed precipitation as input to glacio-hydrological modeling for Beas river
25 basin, Northern India. – *Cold and Mountain Region Hydrological Systems Under*
26 *Climate Change: Towards Improved Projections*, Proceedings of H02, IAHS-IAPSO-
27 IASPEI Assembly, July 2013, Gothenburg, Sweden), International Association of
28 Hydrological Sciences (IAHS) Publication number 360, 45-52, 2013.

29 Mukhopadhyay, B., and Khan, A.: A quantitative assessment of the genetic sources of the
30 hydrologic flow regimes in Upper Indus Basin and its significance in a changing
31 climate, *J Hydrol*, 509, 549-572, DOI 10.1016/j.jhydrol.2013.11.059, 2014.

32 Sarma, J. N. Fluvial process and morphology of the Brahmaputra River in Assam, India.
33 *Geomorphology*, 70(3), 226-256, DOI: 10.1016/j.geomorph.2005.02.007, 2005.

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