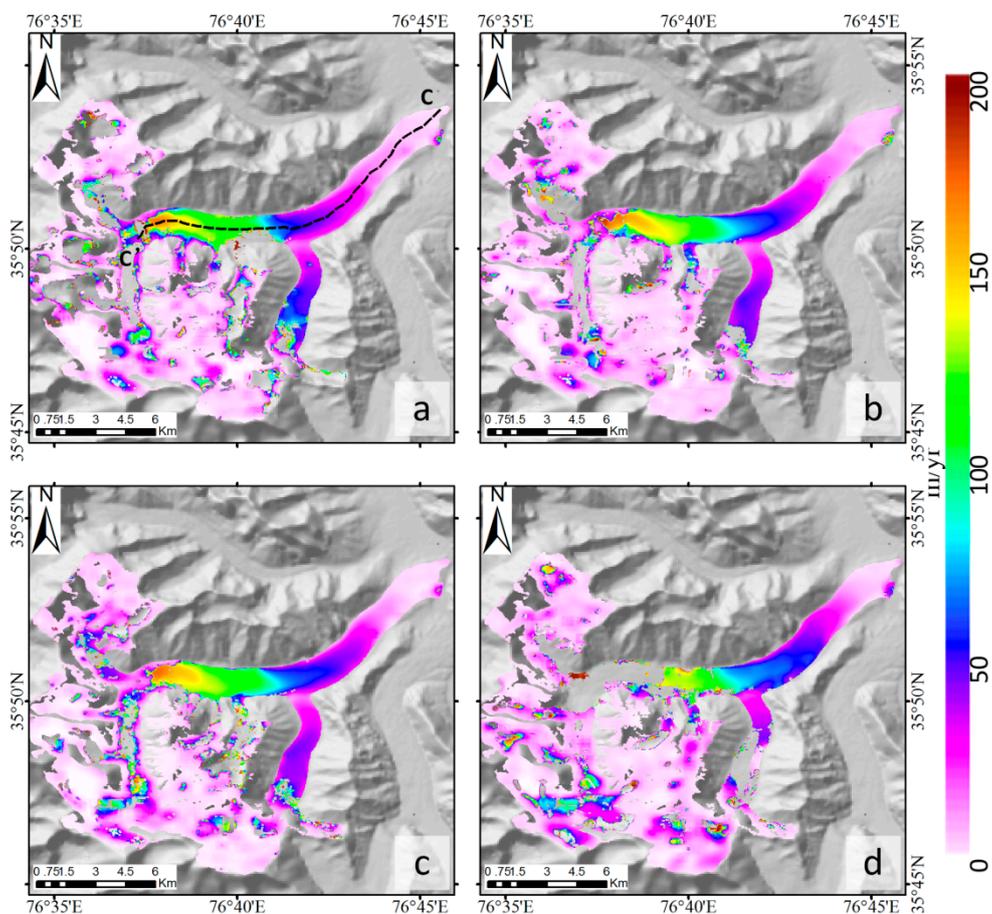
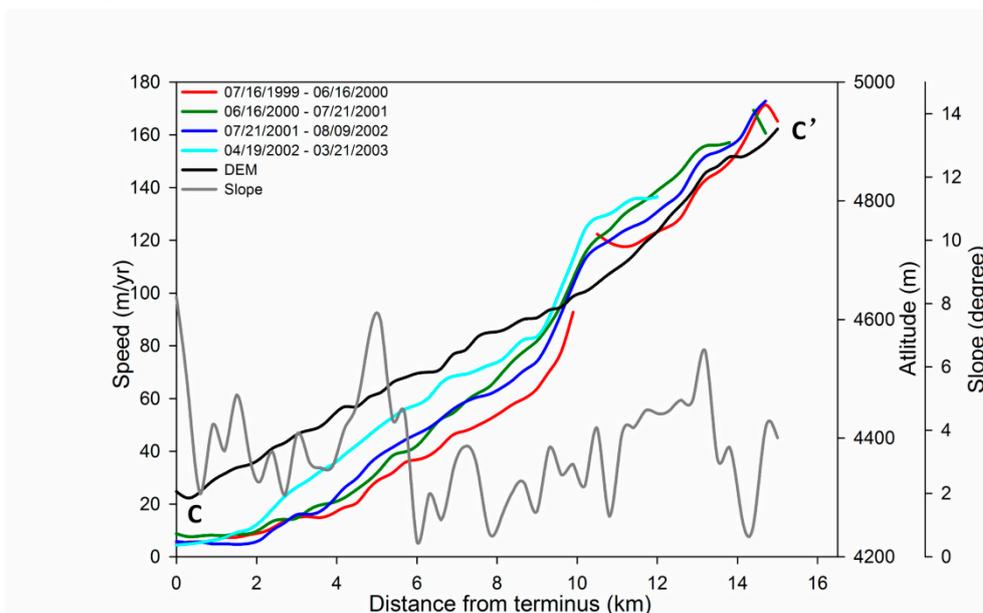


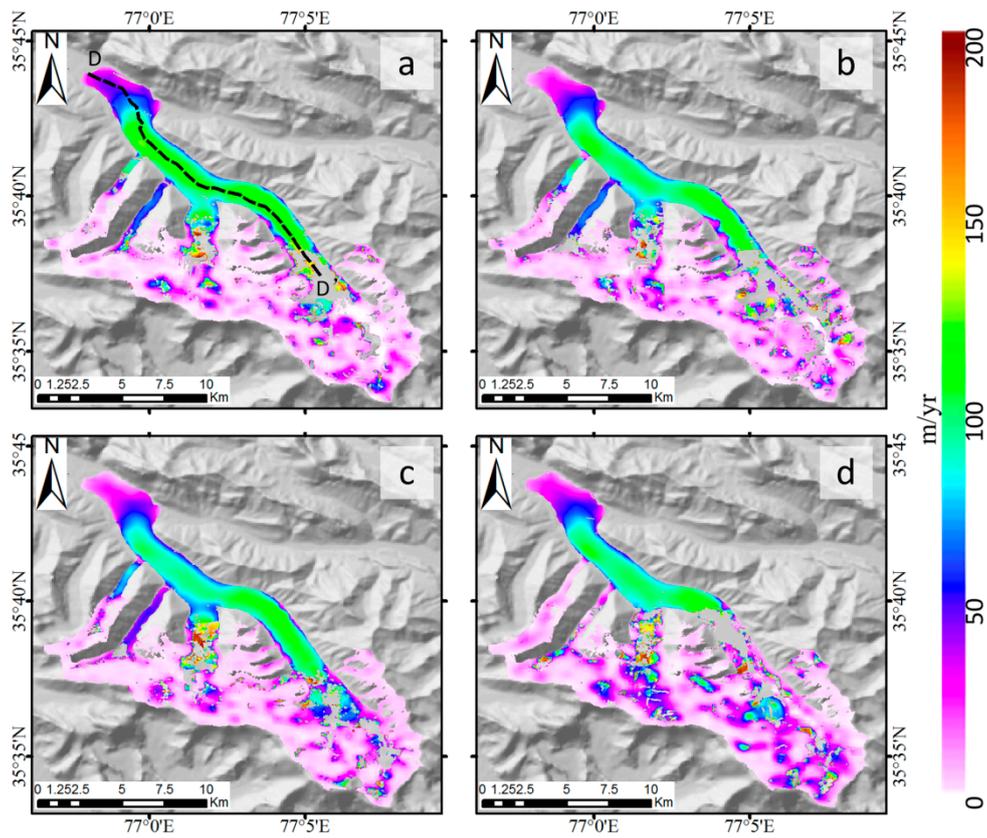
**Figure S1.** Four annual velocity fields over the central Karakoram from 1999 to 2003. a:1999-2000; b:2000-2001; c: 2001-2002; d: 2002-2003. The blue dashed line marks the boundary between the southern and northern slopes glaciers. Abbreviations denote: Br = Braldu Glacier, Sk = Skamri Glacier, SL = Sarpo Lago Glacier, NG = North Gasherbrum Glacier, Ur = Urbak Glacier, Sh = Singkhu Glacier, Ky = Kyagar Glacier, Si = Siachen Glacier, Ka = Kaberi Glacier, Pa = Panmah Glacier, Bi = Biafo Glacier.



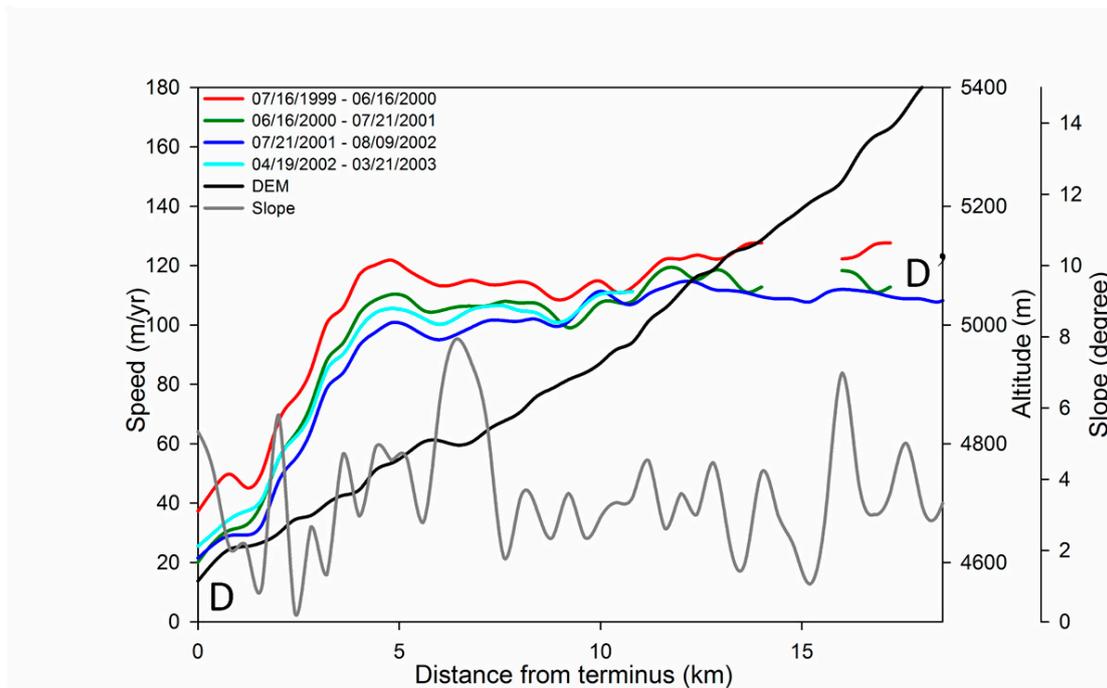
**Figure S2.** Four annual velocity fields of the North Gasherbrum Glacier from 1999–2003. (a) 1999–2000; (b) 2000–2001; (c) 2001–2002; and (d) 2002–2003. The background is the hillshade image of SRTM DEM. CC' is the centerline of the glacier.



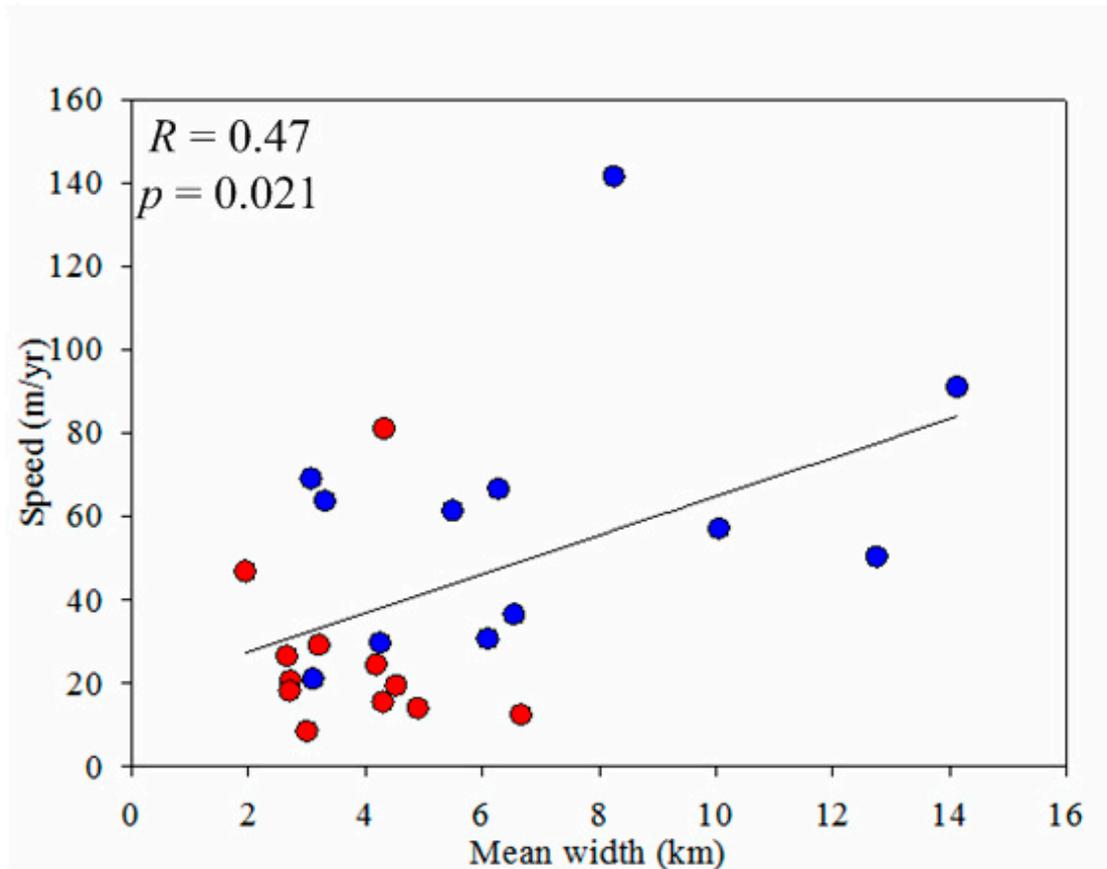
**Figure S3.** Annual speed profiles along the centerline (CC') of the North Gasherbrum Glacier. The centerline location is indicated by the dashed line in Figure S2 a.



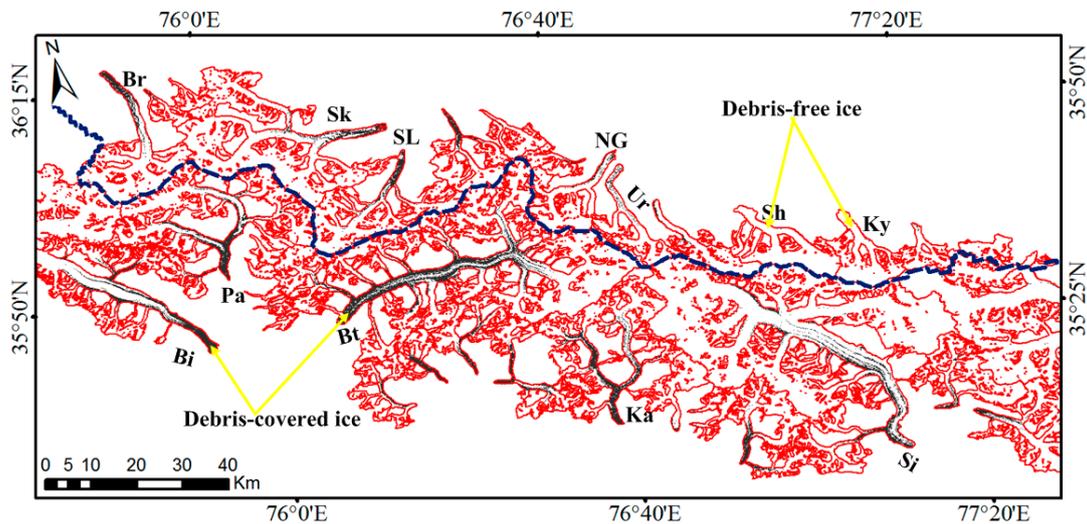
**Figure S4.** Four annual velocity fields of the Singkhu Glacier from 1999–2003. (a) 1999–2000; (b) 2000–2001; (c) 2001–2002; and (d) 2002–2003. The background is the hillshade image of SRTM DEM. DD' is the centerline of the glacier.



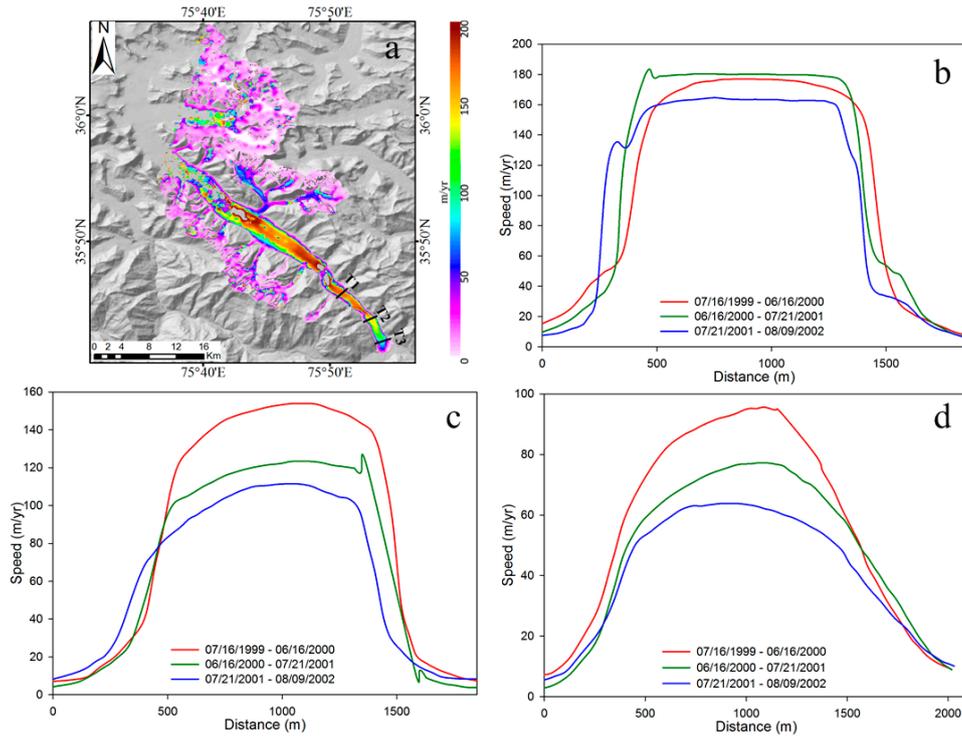
**Figure S5.** Annual speed profiles along the centerline (DD') of the Singkhu Glacier. The centerline location is indicated by the dashed line in Figure S4 a.



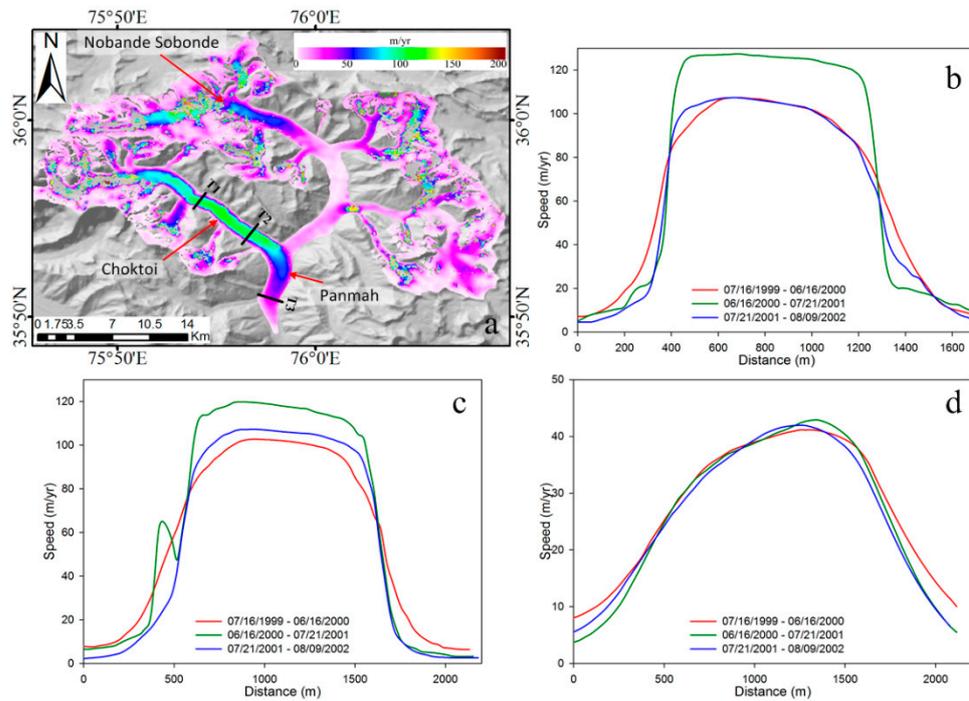
**Figure S6.** Correlation between the glacier speed and the mean width.  $R$  is the linear correlation coefficient and  $p$  is the significance level of the respective relation.



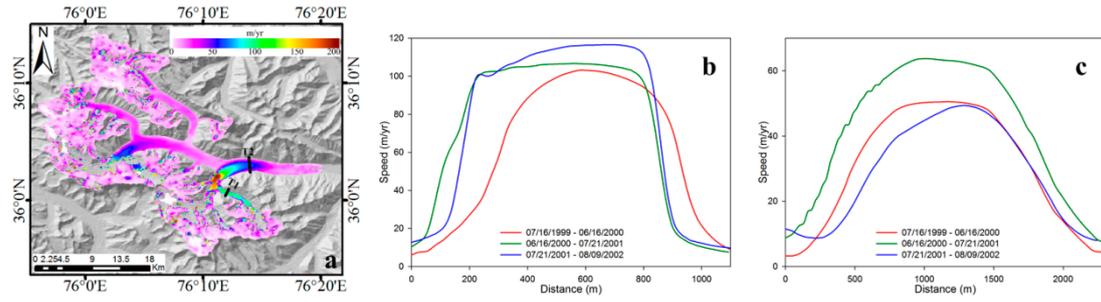
**Figure S7.** Distribution of debris cover derived from Landsat ETM+ band 4/band5-ratio images. The blue dashed line marks the boundary between the southern and northern slopes glaciers. Abbreviations: Br = Braldu Glacier, Sk = Skamri Glacier, SL = Sarpo Lago Glacier, NG = North Gasherbrum Glacier, Ur = Urbak Glacier, Sh = Singkhu Glacier, Ky = Kyagar Glacier, Si = Siachen Glacier, Ka = Kaberi Glacier, Bt = Baltoro Glacier, Pa = Panmah Glacier, Bi = Biafo Glacier.



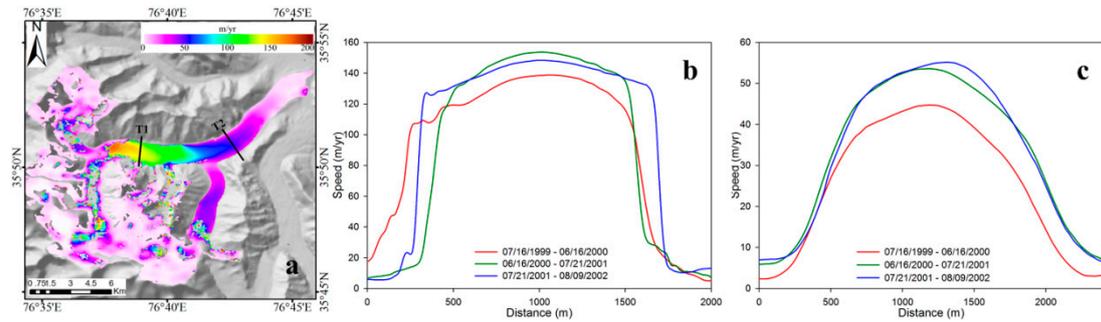
**Figure S8.** (a) Surface velocity over the Biafo Glacier (1999–2000); (b–d) Comparison of annual surface speed change along transverse profiles T1, T2 and T3. Profile locations are depicted in (a). Date format is month/day/year.



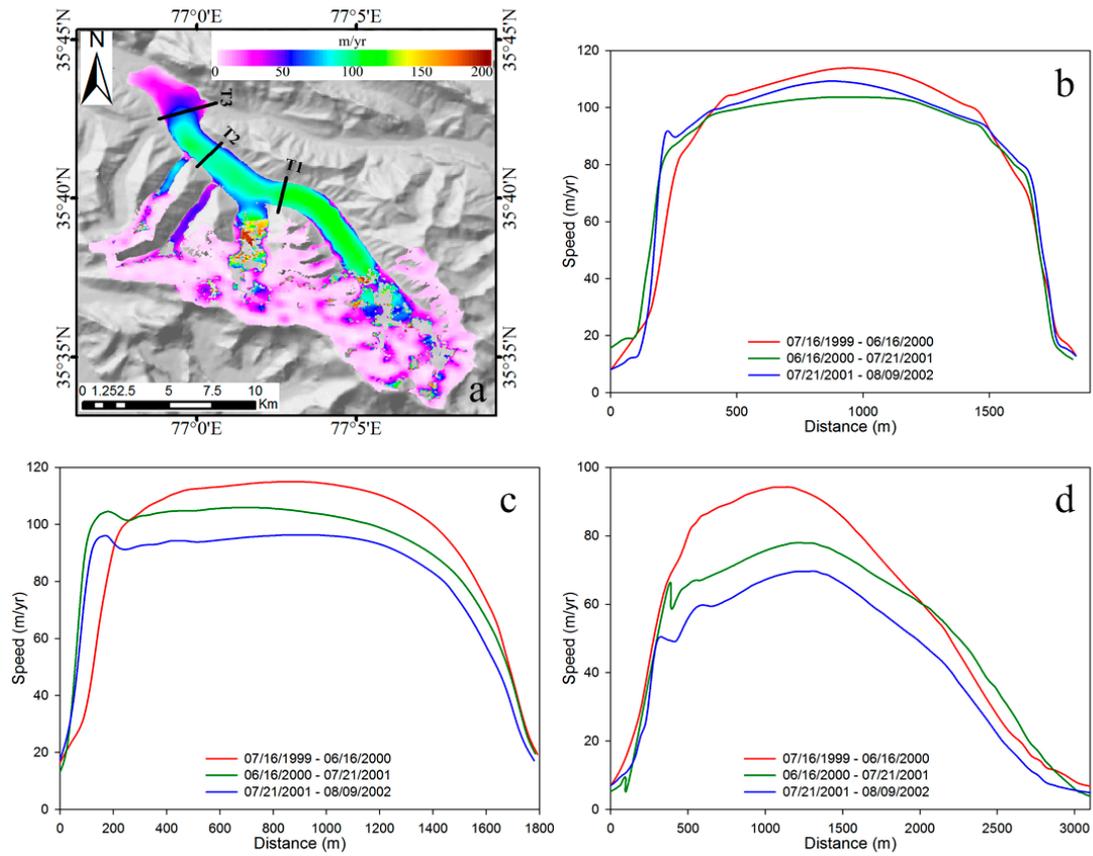
**Figure S9.** (a) Surface velocity over the Panmah Glacier (2001–2002) which includes two tributary glaciers of Choktoi and Nobande Sobonde; (b–d) Comparison of annual surface speed change along transverse profiles T1, T2 and T3. Profile locations are depicted in (a). Date format is month/day/year.



**Figure S10. (a)** Surface velocity over the Skamri Glacier (2000–2001); **(b-c)** Comparison of annual surface speed change along transverse profiles T1 and T2. Profile locations are depicted in **(a)**. Date format is month/day/year.



**Figure S11. (a)** Surface velocity over the North Gasherbrum Glacier (2001–2002); **(b-c)** Comparison of annual surface speed change along transverse profiles T1 and T2. Profile locations are depicted in **(a)**. Date format is month/day/year.



**Figure S12.** (a) Surface velocity over the Singkhu Glacier (2001–2002); (b–d) Comparison of annual surface speed change along transverse profiles T1, T2 and T3. Profile locations are depicted in (a). Date format is month/day/year.