

Fanny Brun

High Asia glaciologist

IGE - 54 rue Molière
38 402 Saint-Martin d'Hères
☎ +33 (0) 6 33 84 85 07
✉ fanny.brun@univ-grenoble-alpes.fr
📄 fanny.lecairn.org

EDUCATION

- 2015–2018 **PhD**, *Université Grenoble Alpes*, IGE/LEGOS, Advisers: Patrick WAGNON and Etienne BERTHIER.
- 2014–2015 **M.S. (M2)**, *Université Joseph Fourier*, Grenoble, Earth and Environment Science.
- 2012–2013 **M.S. (M1)**, *École Normale Supérieure*, Paris, Geosciences.
- 2011–2012 **B.S. (L3)**, *École Normale Supérieure*, Paris, Geosciences.
- 2009–2011 **Classe préparatoire aux grandes écoles**, *Lycée du Parc*, Lyon, Competitive exam results: *École Normale Supérieure* (rank 6) and concours d'entrée aux écoles d'agronomie A-BIO (rank 2).

RESEARCH EXPERIENCE

- September 2015 - 2018 **PhD candidate**, *Institut des géosciences de l'environnement (IGE)*, Grenoble, Advisers: Etienne BERTHIER and Patrick WAGNON.
Influence of debris on the mass balance of High Mountain Asia glaciers: a multiscale approach
- February - July 2015 **Master thesis**, *Eidgenössische Technische Hochschule (ETH)*, Zürich, Advisers: Francesca PELLICCIOTTI and Patrick WAGNON.
Quantifying volume loss from ice cliffs on debris-covered glaciers using high resolution terrestrial and aerial photogrammetry
- June - July 2014 **Research associate**, *Université de Lausanne (UNIL)*, Lausanne, Advisers: Pierre VALLA, Georgina KING and Frédéric HERMAN.
Constraining paleo-glacier dynamics using Optically Stimulated Luminescence (OSL) bedrock exposure dating
- October 2013 - May 2014 **Research associate**, *Laboratoire d'étude des Transferts en Hydrologie et Environnement (LTHE) & International Center for Integrated Mountain Development (ICIMOD)*, Grenoble & Katmandou, Advisers: Marie DUMONT and Patrick WAGNON.
Seasonal changes in surface albedo of Himalayan glaciers from MODIS data and links with the annual mass balance
- March 2013 - July 2013 **Internship - M1**, *California Institute of Technology*, Pasadena, Adviser: Micheal LAMB.
Experimental study of sediment transport in steep bedrock rivers
- June - July 2012 **Internship - L3**, *Laboratoire de Glaciologie et de Géophysique de l'environnement (LGGE)*, Grenoble, Adviser: Delphine SIX.
Field work and glaciological data processing

FIELD CAMPAIGNS

2014, 2015, **Khumbu, Nepal**, *Glaciological and meteorological data collection on Mera and Changri Nup glaciers*, 1 month each time.

June 2012 - **French Alps**, *Glaciological data collection*.
now

LANGUAGES

French **Mother tongue**

English **Fluent**

German **Basic knowledge**

AWARDS

2018 L'Oréal UNSECO - For women in science; 15 k€

2018 Outstanding Student Poster and PICO (OSPP) award; EGU 2018

PUBLICATIONS

In review

19. **Brun, F.**, P. Wagnon, E. Berthier, V. Jomelli, S.B Maharjan, F. Shrestha, and P. D. A. Kraaijenbrink, Non ubiquitous influence of debris cover and proglacial lakes on the High Mountain Asia glacier mass balance variability, *JGR-Earth Surface*, *in review*.
18. Miles, E. S., C. S. Watson, **F. Brun**, E. Berthier, M. Esteves, D. J. Quincey, K. E. Miles, and P. Wagnon (2018), Ablative and geomorphic effects of a supraglacial lake drainage and outburst event, Nepal Himalaya, *The Cryosphere Discussions*, 2018, 1–25, 10.5194/tc-2018-152.
17. Mimeau, L., M. Esteves, I. Zin, H.-W. Jacobi, **F. Brun**, P. Wagnon, D. Koirala, and Y. Arnaud (2018), Quantification of different flow components in a high-altitude glacierized catchment (Dudh Koshi, Nepalese Himalaya), *Hydrology and Earth System Sciences Discussions*, 2018, 1–35, 10.5194/hess-2018-34.

2018 and in press.

16. **Brun, F.**, P. Wagnon, E. Berthier, J. M. Shea, W. W. Immerzeel, P. D. A. Kraaijenbrink, C. Vincent, C. Reverchon, D. Shrestha, and Y. Arnaud (2018), Can ice-cliffs explain the “debris-cover anomaly”? New insights from Changri Nup Glacier, Nepal, Central Himalaya, *The Cryosphere*, *accepted*, 2018, 1–32, 10.5194/tc-2018-38.
15. Dehecq, A., N. Gourmelen, A. S. Gardner, **F. Brun**, D. Goldberg, P. Nienow, E. Berthier, C. Vincent, P. Wagnon, and E. Trouvé, Twenty-first century glacier slowdown driven by mass loss in High Mountain Asia, *Nature Geoscience*, *accepted*.
14. Wang, J., C. Song, J. T. Reager, F. Yao, J. Famiglietti, Y. Sheng, G. MacDonald, **F. Brun**, H. Müller Schmied, R. Marston, and Y. Wada, Recent Global Decline in Endorheic Basin Water Storage and Its Impact on Sea Level Budget, *Nature Geoscience*, *accepted*.
13. Dussailant, I., E. Berthier, and **F. Brun** (2018), Geodetic Mass Balance of the Northern Patagonian Icefield from 2000 to 2012 Using Two Independent Methods, *Frontiers in Earth*

Science, 6, 8, 10.3389/feart.2018.00008.

12. Kääh, A., S. Leinss, A. Gilbert, Y. Bühler, S. Gascoin, S. G. Evans, P. Bartelt, E. Berthier, **F. Brun**, W.-A. Chao, D. Farinotti, F. Gimbert, W. Guo, C. Huggel, J. S. Kargel, G. J. Leonard, L. Tian, D. Treichler, and T. Yao (2018), Massive collapse of two glaciers in western Tibet in 2016 after surge-like instability, *Nature Geoscience*, 11(2), 114–120, 10.1038/s41561-017-0039-7.
11. Vincent, C., M. Dumont, D. Six, **F. Brun**, G. Picard, and L. Arnaud (2018), Why do the dark and light ogives of Forbes bands have similar surface mass balances?, *Journal of Glaciology, FirstView*, 10.1017/jog.2018.12.

2017

10. **Brun, F.**, E. Berthier, P. Wagnon, A. Kääh, and D. Treichler (2017), A spatially resolved estimate of High Mountain Asia glacier mass balances from 2000 to 2016, *Nature Geoscience*, 10, 668–673, 10.1038/ngeo2999.
9. Lamb, M. P., **F. Brun**, and B. M. Fuller, Direct measurements of lift and drag on shallowly submerged cobbles in steep streams: Implications for flow resistance and sediment transport, *Water Resources Research*, 53(9), 7607–7629, 10.1002/2017WR020883.
8. Lamb, M. P., **F. Brun**, and B. M. Fuller (2017), Hydrodynamics of steep streams with planar coarse-grained beds: Turbulence, flow resistance, and implications for sediment transport, *Water Resources Research*, 53(3), 2240–2263, 10.1002/2016WR019579.
7. Miles, E. S., J. F. Steiner, and **F. Brun**, Highly variable aerodynamic roughness length (z_0) for a hummocky debris-covered glacier, *Journal of Geophysical Research: Atmospheres*, 122(16), 8447–8466, 10.1002/2017JD026510.
6. Sherpa, S. F., P. Wagnon, **F. Brun**, E. Berthier, C. Vincent, Y. Lejeune, Y. Arnaud, R. B. Kayastha, and A. Sinisalo (2017), Contrasted surface mass balances of debris-free glaciers observed between the southern and the inner parts of the everest region (2007–15), *Journal of Glaciology*, 63(240), 637–651, 10.1017/jog.2017.30.

2016

5. **Brun, F.**, P. Buri, E. S. Miles, P. Wagnon, J. Steiner, E. Berthier, S. Ragetti, P. Kraaijenbrink, W. W. Immerzeel, and F. Pellicciotti (2016), Quantifying volume loss from ice cliffs on debris-covered glaciers using high-resolution terrestrial and aerial photogrammetry, *Journal of Glaciology*, 62, 684–695, 10.1017/jog.2016.54.
4. Vincent, C., P. Wagnon, J. M. Shea, W. W. Immerzeel, P. Kraaijenbrink, D. Shrestha, A. Soruco, Y. Arnaud, **F. Brun**, E. Berthier, and S. F. Sherpa (2016), Reduced melt on debris-covered glaciers: investigations from Changri Nup Glacier, Nepal, *The Cryosphere*, 10, 1845–1858, 10.5194/tc-10-1845-2016.

2015

3. **Brun, F.**, M. Dumont, P. Wagnon, E. Berthier, M. F. Azam, J. M. Shea, P. Sirguey, A. Rabatel, and A. Ramanathan (2015), Seasonal changes in surface albedo of Himalayan glaciers from MODIS data and links with the annual mass balance, *The Cryosphere*, 9(1), 341–355, 10.5194/tc-9-341-2015.

2. Shea, J., P. Wagnon, W. Immerzeel, R. Biron, **F. Brun**, and F. Pellicciotti (2015), A comparative high-altitude meteorological analysis from three catchments in the Nepalese Himalaya, *International Journal of Water Resources Development*, 31(2), 174–200, 10.1080/07900627.2015.1020417.

2014

1. Scheingross, J. S., **F. Brun**, D. Y. Lo, K. Omerdin, and M. P. Lamb (2014), Experimental evidence for fluvial bedrock incision by suspended and bedload sediment, *Geology*, 42, 523–526, 10.1130/G35432.1.

FIRST AUTHOR PRESENTATIONS IN INTERNATIONAL CONFERENCES

8. **Brun, F.**, E. Berthier, P. Wagnon, A. Kääh, and D. Treichler (2017), A spatially resolved estimate of High Mountain Asia glacier mass balances from 2000 to 2016, *EGU 2018, Vienna*, **Invited Oral**.
7. **Brun, F.**, P. Wagnon, E. Berthier, J. M. Shea, W. W. Immerzeel, P. D. A. Kraaijenbrink, C. Vincent, C. Reverchon, D. Shresta, and Y. Arnaud (2018), Can ice-cliffs explain the “debris-cover anomaly”? New insights from Changri Nup Glacier, Nepal, Central Himalaya, *EGU 2018, Vienna*, **Poster**.
6. **Brun, F.**, E. Berthier, P. Wagnon, A. Kääh, and D. Treichler (2017), A spatially resolved estimate of High Mountain Asia glacier mass balances, 2000-2016, *EGU 2017, Vienna*, **Oral**.
5. **Brun, F.**, E. Berthier, P. Wagnon (2017), Quasi exhaustive High Mountain Asia glacier mass balance (2000-2016), *Alpine Glaciology Meeting, Zurich 2017*, **Oral**.
4. **Brun, F.**, P. Wagnon, E. Berthier, C. Vincent, J. Shea, P. Kraaijenbrink, W. W. Immerzeel, and C. Reverchon (2016), Is it worth going up there?, *2nd Virtual Geoscience Conference, Bergen 2016*, **Oral**.
3. **Brun, F.**, P. Buri, P. Wagnon, E. Miles, J. Steiner, E. Berthier, S. Ragetti, P. Kraaijenbrink, W. Immerzeel and F. Pellicciotti (2015), Quantifying volume loss from ice cliffs on debris-covered glaciers using high resolution terrestrial and aerial photogrammetry, *IGS-BB Durham 2015*, **Poster**.
2. **Brun, F.**, M. Dumont, P. Wagnon, E. Berthier, M. F. Azam, J. M. Shea, P. Sirguey, A. Rabatel, and A. Ramanathan (2015), Seasonal changes in surface albedo of Himalayan glaciers from MODIS data and links with the annual mass balance, *IGS Kathmandu 2015*, **Poster**.
1. **Brun, F.**, P. Valla, G. King, and F. Herman (2014), Constraining Paleo-Glacier Dynamics Using Optically Stimulated Luminescence (OSL) Bedrock Exposure Dating, *AGU Fall meeting 2014*, **Poster**.

OTHER

- Reviewer for *The Cryosphere*, *Journal of Glaciology*, *Scientific Reports* and *Nature*
- Co-convener for *EGU 2017 session on debris-covered glaciers*

REFEREES

- Etienne BERTHIER – Laboratoire d'étude en géophysique et océanographie spatiales (LEGOS), Toulouse, France
- Patrick WAGNON – Institut des géosciences de l'environnement (IGE), Grenoble, France
- Francesca PELLICCIOTTI – ETH, Zurich, Switzerland
- Michael LAMB – California Institute of Technology, Pasadena, USA