

Fanny Brun

Post-doctoral researcher

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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

- March 2019 - **Postdoctoral researcher**, *Department of Physical Geography - Utrecht University*, Utrecht, Adviser: Walter IMMERZEEL.
Tibetan Plateau lakes and climate change
- November 2018 - **Postdoctoral researcher**, *Institut des géosciences de l'environnement (IGE)*, Grenoble, Advisers: Etienne BERTHIER and Patrick WAGNON.
February 2019 Remote sensing of the cryosphere
- September 2015 - **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 - **Master thesis**, *Eidgenössische Technische Hochschule (ETH)*, Zürich, Advisers: Francesca PELLICCIOTTI and Patrick WAGNON.
July 2015 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 - **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.
- May 2014 Seasonal changes in surface albedo of Himalayan glaciers from MODIS data and links with the annual mass balance
- March 2013 - **Internship - M1**, *California Institute of Technology*, Pasadena, Adviser: Micheal LAMB.
July 2013 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

2019 Prix de géophysique; awarded by the Comité National Français de Géodésie et Géophysique

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

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

OTHER

- Guest Editor for the special issue "Regional Assessments of Glacier Mass Changes Based on Geodetic Methods" in *Frontiers in Earth Sciences*
- Reviewer for *The Cryosphere*, *Journal of Glaciology*, *Journal of Hydrology*, *Scientific Reports*, *Earth and Planetary Science Letters*, *Nature Geoscience* and *Nature*
- Co-convener for EGU 2017 session on debris-covered glaciers

PUBLICATIONS

In review

22. Berthier, E., and **F. Brun**, Karakoram glacier mass balances since 2008: persistence of the anomaly and influence of a gigantic rock avalanche on Siachen Glacier, *in review*.
21. **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*.
20. Dussaillant, I., E. Berthier, **F. Brun**, M. H. Masiokas, R. Hugonnet, V. Favier, A. Rabatel, P. Pitte, and L. Ruiz, Two decades of glacier mass loss along the Andes, *in review*.
19. 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.

2019 and in press.

18. Dehecq, A., N. Gourmelen, A. S. Gardner, **F. Brun**, D. Goldberg, P. W. Nienow, E. Berthier, C. Vincent, P. Wagnon, and E. Trouvé (2019), Twenty-first century glacier slowdown driven by mass loss in High Mountain Asia, *Nature Geoscience*, 12(1), 22–27, 10.1038/s41561-018-0271-9.

2018

17. **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), Ice cliff contribution to the tongue-wide ablation of Changri Nup Glacier, Nepal, central Himalaya, *The Cryosphere*, 12(11), 3439–3457, 10.5194/tc-12-3439-2018.
16. Dussaillant, 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.

15. Kääb, A., S. Leinss, A. Gilbert, Y. Bühler, S. Gascoïn, 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.
14. Menounos, B., R. Hugonnet, D. Shean, A. Gardner, I. Howat, E. Berthier, B. Pelto, C. Tennant, J. Shea, M.-J. Noh, **F. Brun**, and A. Dehecq (2018), Heterogeneous changes in western North American glaciers linked to decadal variability in zonal wind strength, *Geophysical Research Letters*.
13. 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*, *2018*, 1–25, 10.5194/tc-2018-152.
12. 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*, *64*, 236–246, 10.1017/jog.2018.12.
11. Wang, J., C. Song, J. T. Reager, F. Yao, J. S. Famiglietti, Y. Sheng, G. M. MacDonald, **F. Brun**, H. M. Schmied, R. A. Marston, and Y. Wada (2018), Recent global decline in endorheic basin water storages, *Nature Geoscience*, *11*(12), 926–932, 10.1038/s41561-018-0265-7.

2017

10. **Brun, F.**, E. Berthier, P. Wagnon, A. Kääb, 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 Al. 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.

CHAPTERS IN BOOKS

1. Bolch, T., J. M. Shea, L. Shiyin, M. F. Azam, Y. Gao, S. Gruber, W. W. Immerzeel, A. Kulkarni, H. Li, A. A. Tahir, G. Zhang, Y. Zhang, A. Banerjee, E. Berthier, **F. Brun**, A. Kaab, P. Kraaijenbrink, G. Moholdt, L. Nicholson, N. Pepin, and A. Racoviteanu (2018), Chapter 7: Status and Change of the HKH-TP Cryosphere, in *Hindu Kush Himalayan Monitoring and Assessment Program (HIMAP)*.

REFEREES

- Walter IMMERZEEL – Department of Physical Geography, Utrecht University, The Netherlands
- 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