

Dr. Mikaël ATTAL, PhD

School of GeoSciences, University of Edinburgh
Drummond Street, Edinburgh EH8 9XP (UK)
E-mail: mikael.attal@ed.ac.uk
Phone: [+44] 0131 650 8533

I combine the analysis of real landscapes (collection of field data, topographic analysis) with numerical modelling and experimental studies to constrain the relationships between tectonics, erosion and the development of topography. My current research focuses on erosion processes in mountainous landscapes: I study the processes that drive sediment production, transport, erosion and deposition, and the hazards associated with these processes. My work can help extracting tectonic information from topography, with implication for assessing seismic and landslide hazard. Understanding the release and transfer of sediment can also help retrieving past tectonic and climatic signals in the geological archive (stratigraphy), as well as mitigating risks in sedimentary basins. Current research projects include: erosion processes, rates and hazards in China (Sichuan, Danxiashan, Loess Plateau); tectonic geomorphology and seismic risk along the Palu-Koro Fault (Indonesia); sediment transport and pollution associated with legacy mines (Scotland).

EDUCATION AND PROFESSIONAL EXPERIENCE

Since 2023: Professor of Geomorphology, Univ. of Edinburgh - School of GeoSciences, Edinburgh, UK.
2020-2023: Reader in Geomorphology, Univ. of Edinburgh - School of GeoSciences, Edinburgh, UK.
2016-2020: Senior Lecturer, Univ. of Edinburgh - School of GeoSciences, Edinburgh, UK.
2007-2016: Lecturer, Univ. of Edinburgh - School of GeoSciences, Edinburgh, UK.
2005-2007: Postdoctoral Research fellow, Univ. of Edinburgh - School of GeoSciences, Edinburgh, UK.
2003-2004: Teaching assistant, Ecole Nationale Supérieure de Géologie - Centre de Recherches Pétrographiques et Géochimiques, Nancy, France.
2002-2003: Teaching assistant, Université J. Fourier - LGCA, Grenoble, France.
1999-2003: PhD in Geomorphology, Université J. Fourier - LGCA, Grenoble, France.
1998-1999: Master "Dynamique de la Lithosphère", Université de Nice – Sophia-Antipolis, France.
1994-1998: Degree in Earth Sciences, Université de Nice – Sophia-Antipolis, France.

SELECTED PUBLICATIONS (*indicates 1st author PhD student)

- *Towers, A.H., Attal, M., Mudd, S.M., and Clubb, F.J. Investigating controls on fluvial grain sizes in post-glacial landscapes using citizen science. *Earth Surface Dynamics*, 14, 95–113, <https://doi.org/10.5194/esurf-14-95-2026>, **2026**.
- Attal, M., Harvey, E.L., Graf, E.L.S., Sinclair, H.D., Hales, T.C., Raj Adhikari, B., and Fan, X. Catastrophic remobilization of sediment during extreme rainfall events. *Proceedings of the 12th International Conference on Scour and Erosion (ICSE-12)*, Chongqing, China, November 2025, **2025**.
- Godard, V., Mudd, S.M., and Attal, M. Constraining the global variations in denudation rates associated with the last post-glacial transition. *Earth Surface Processes and Landforms*, 2025;50:e70181, <https://doi.org/10.1002/esp.70181>, **2025**.
- AGU Editorial Network. Challenges Facing Scientific Publishing in the Field of Earth & Space Sciences. *AGU Advances*, 5, e2024AV001334, <https://doi.org/10.1029/2024AV001334>, **2024**.
- *Pokhrel, P., Attal, M., Sinclair, H.D., Mudd, S.M., and Naylor, M. Downstream rounding rate of pebbles in the Himalaya. *Earth Surface Dynamics*, 12, 515–536, <https://doi.org/10.5194/esurf-12-515-2024>, **2024**.
- *Graf, E.L.S., Sinclair, H.D., Attal, M., Gailleton, B., Adhikari, B.R., and Baral, B.R. Geomorphological and hydrological controls on sediment export in earthquake-affected catchments in the Nepal Himalaya. *Earth Surface Dynamics*, 12, 135-161, <https://doi.org/10.5194/esurf-12-135-2024>, **2024**.
- *Hoskins, A.M., Attal, M., Mudd, S.M., and Castillo M. Topographic Response to Horizontal Advection in Normal Fault-Bound Mountain Ranges. *Journal of Geophysical Research – Earth Surface*, <https://doi.org/10.1029/2023JF007126>, **2023**.

- *Domingo, J.P.T., Attal, M., Mudd, S.M., Ngwenya, B.T., David, C.P.C. Seasonal fluxes and sediment routing in tropical catchments affected by nickel mining. *Earth Surface Processes and Landforms*, <https://doi.org/10.1002/esp.5198>, **2021**.
- *Dingle, E.H., Attal, M., and Sinclair, H.D. Abrasion-set limits on Himalayan gravel flux. *Nature*, 544, 471–474, doi:10.1038/nature22039, **2017**.
- Attal, M. Linkage between sediment transport and supply in mountain rivers. In: Tsutsumi, D., and Laronne, J.B., eds., “*Gravel-Bed Rivers, Processes and Disasters*”, 329-353, Wiley-Blackwell, 832 pp, **2017**.
- Attal, M., Mudd, S.M., Hurst, M.D., Weinman, B., Yoo, K., and Naylor, M. Impact of change in erosion rate and landscape steepness on hillslope and fluvial sediments grain size in the Feather River Basin (Sierra Nevada, California). *Earth Surface Dynamics*, 3, 201-222, doi:10.5194/esurf-3-201-2015, **2015**.
- *Baynes, E.R.C., Attal, M., Niedermann, S., Kirstein, L.A., Dugmore, A.J., and Naylor, M. Erosion during extreme flood events dominates Holocene canyon evolution in North-East Iceland. *Proceedings of the National Academy of Sciences*, doi: 10.1073/pnas.1415443112, **2015**.
- *Hurst, M. D., Mudd, S. M., Attal, M., and Hilley, G. Hillslopes record the growth and decay of landscapes. *Science*, 341, 868-871, doi: 10.1126/science.1241791, **2013**.
- Attal, M., and Lavé, J. Pebble abrasion during fluvial transport: experimental results and implications for the evolution of the sediment load along rivers. *Journal of Geophysical Research*, 114, F04023, doi:10.1029/2009JF001328, **2009**.

SELECTED PRESENTATIONS (last five years)

- **November 2025:** 12th International Conference on *Scour and Erosion* (ICSE), Chongqing, China (keynote).
- **October 2023, 2024, 2025:** *International Research Association on Large Landslides* (iRALL) School, Chengdu University of Technology, China (keynote).
- **September 2022:** *Applied Mathematics Days*, University of Budapest, Hungary (keynote).
- **Seminars:** State Key Laboratory of Earthquake Dynamics, Institute of Geology, Beijing, China (2025); University of Hull (2024, online); University of the Highlands and Islands (2023, online); Cardiff University (2022); Deutsche GeoForschungsZentrum (GFZ), Potsdam, Germany (2021, online).
- **Invited editor talk / publication workshop:** Chengdu University of Technology, China (2023, 2024); 8th National Association of Geographers meeting, Kazi Nazrul University, India (2024, online); Regional Conference on Geomorphology, Cappadocia, Turkey (2023); British Society for Geomorphology Annual Conference, Edinburgh (2023); AGU fall meeting, New Orleans, USA (2021).

PhD SUPERVISION

Principal Supervisor: Dr Edwin Baynes, Dr Justine Domingo, Dr Emma Graf, Dr Anthony Hoskins, Dr Masood Rehman. Current: Zidong Yao, Donny Wahyudi.

Co-Supervisor: Dr Martin Hurst, Dr Fiona Clubb, Dr Lizzie Dingle, Dr Rebekah Harries, Dr Chrystiann Lavarini, Dr Laura Quick, Dr Saraswati Thapa, Dr Prakash Pokhrel, Dr Qiuyang Chen, Dr Anya Towers. Current: Daphne Myrhvold, Rutger Vervoordeldonk.

SERVICE

Editor for the *Journal of Geophysical Research – Earth Surface* (April 2021 – December 2025).

Associate Editor for *Academia Earth and Planetary Science* (since February 2026), *Journal of Geophysical Research – Earth Surface* (January 2016 – April 2021), and *Geo: Geography and Environment* (2014-2018).

Degree coordinator: Earth Sciences, University of Edinburgh (2020-2023).

Degree programme convenor: Geology and Physical Geography, University of Edinburgh (2015-2019).

Honorary Treasurer: British Society for Geomorphology (2018-2021).

PROFESSIONAL SOCIETY MEMBERSHIP

American Geophysical Union, British Society for Geomorphology, Scottish Geology Trust, National Geographic Society