

Mylène Jacquemart

Laboratory for Hydraulics, Hydrology and Glaciology (VAW)
Department of Civil, Environmental and Geometric Engineering

☎ +41 78 763 05 86

✉ jacquemart@vaw.baug.ethz.ch

03-10-1984 | pronouns: she/her

ORCID 0000-0003-2501-7645

[GitHub](#) - [Google Scholar](#) - [Personal page](#)

Education

- 2016 – 2021 **PhD, Geology**, *University of Colorado, Boulder, United States.*
Sept Jan
PhD thesis: *Glacier Detachments and Landslide Hazards in a Changing Climate* defended on 28.1.2021. Supervised by Dr. Kristy Tiampo, Earth Science and Observation Center (ESOC), Cooperative Institute of Research in Environmental Sciences (CIRES)
- 2013 – 2015 **M.Sc., Geography**, *University of Zurich, Switzerland.*
Jan May
Specialized in remote sensing/GIS and physical geography. Msc Thesis: *Deriving debris-flow characteristics from vertical laser profile-scanner data*; Supervised by Dr. Felix Morsdorf Remote Sensing Laboratories (RSL), University of Zurich and Christoph Graf, Swiss Federal Institute for Forest, Snow and Landscape Research (WSL).
- 2009 – 2012 **B.Sc., Geography**, *University of Zurich, Switzerland.*
Aug Dec
Focused on remote sensing/GIS and physical geography. Bsc Thesis: *Assessing Long-Term Dynamics of the Circumpolar Tundra-Taiga Ecotone with Satellite Data.*
- 2004 – 2005 **Sound Engineer**, *Zentrum für Professionelle Audiotechnik, Schönenwerd, Switzerland.*
Jan Oct

Employment history

- since 2021 **Postdoctoral researcher**, *Laboratory of Hydraulics, Hydrology and Glaciology (VAW) and Federal Institute for Forest Snow and Landscape Research (WSL), Zurich and Birmensdorf, Switzerland.*
Jun
Current projects focus on the value of InSAR for operational hazard management in Switzerland; understanding the connection between glacier retreat and paraglacial slope instabilities in south-central Alaska; modeling the thermal regime of glaciers worldwide and their connections to glacier detachments and glacier water pockets. Advisor: Prof. Dr. Daniel Farinotti
- 2013 – 2019 **Geospatial analyst**, *Geopraevent AG, Zurich, Switzerland.*
Jun Dec
Worked with RADAR, LiDAR and GIS to perform rock stability measurements and hazard evaluations. Installed monitoring systems for natural hazards in alpine environments, often using rope access techniques. Wrote technical and public reports in German, English, French and Italian.
- 2015 – 2015 **Geography intern**, *World Glacier Monitoring Service & National Snow and Ice Data Center, Zurich, Switzerland and Boulder, Colorado.*
Mar Jun
Oversaw a major expansion of the Glacier Photograph Collection from existing archives, Flickr, Wikimedia, and private collections.
- 2010 – 2021 **Freelance journalist**, *Winterthur, Switzerland.*
Jan Dec
Write feature articles, focused on science, the outdoors and alpine topics, for NZZ, Swiss Alpine Club Magazine, Der Landbote and other publications.

2006 – 2014
Jan Dec
Freelance sound engineer & rigger, *self-employed*, Switzerland.
Toured Europe's largest venues doing sound and rigging for bands and sound companies. Worked as a stage manager, crew chief, and production manager for major music festivals and event production companies.

Institutional responsibilities

since 2021
Sept
ETH Glaciological Seminar.
Co-organized bi-weekly seminar series with international speakers

Approved Research Projects

2021 – 2023
Sept Dec
CCAMM2 - Climate Change and Mass Movements, *funded by WSL*.
CO-PI of the Early Warning Project Cluster

2022 – 2025
Jan Dec
PAMIR: From ice to microorganisms and humans: Toward an interdisciplinary understanding of climate change impacts on the Third Pole, *Flagship proposal funded by the Swiss Polar Institute*.
Co-Investigator on hazards section of the proposal

Mentoring & Supervision

as of 2022
Feb
PhD student, *Jane Walden*, Co-supervision.
Thesis: Understanding the impact of rapid glacier retreat on landslide and tsunami risk in south-central Alaska

as of 2022
Feb
Master students, *Helena Laasch & Isabelle Steffen*, Co-supervision.
Thesis: Comparing UAV photogrammetry and ground-based lidar data for operational landslide monitoring

as of 2022
Feb
Bachelor student, *Vivian Spirig*, Supervision.
Thesis: Reconstructing the history of catastrophic glacier sliding events at Glacier du Grand Combin

Teaching experience

2021 – 2021
Sept Dec
Instructor, *ETH Zurich*, Dept. of Civil, Environmental and Geomatic Engineering.
Co-taught the graduate reading seminar in Glaciology

2016 – 2017
Sept May
Teaching Assistant, *University of Colorado, Boulder*, Department of Geological Sciences.
Taught an undergraduate geology lab and field course.

2012 – 2014
Aug Dec
Lead teaching assistant (Semesterassistentin), *University of Zurich, Switzerland*, Glaciology and Geomorphodynamics Group & Hydrology and Climate Group.
Developed and led labs and field trips for undergraduate students in physical geography. Gave lab-related lectures to 150 students and coordinated the team of tutors assigned to help with the labs. Graded student work and acted as a point of contact for the students.

2011
Sept
Geography teacher, *Kantonsschule Küsnacht, Switzerland*.
Taught cartography and climatology to 9th-10th grade students.

2010 – 2011
Feb Dec
Teaching assistant for cartography and physical geography, *University of Zurich, Switzerland*, Department of Geography.
Assisted undergraduate cartography and physical geography labs, graded student exercises and projects.

Memberships

- since 2019
Jan **GAPHAZ - Glacial and Periglacial Hazards**, *Scientific standing group of the International Association of Cryospheric Sciences (IACS) and the International Permafrost Association (IPA)*.
member
- since 2022
Jan **FAN - Fachleute Naturgefahren**, *Association of natural hazard professionals dedicated to furthering holistic natural hazard management in Switzerland*.
Member
- since 2017
Jan **Reviewer**.
Active reviewer for NHESS, TC, JGR, Nature Scientific Reports and other journals

Awards & Fellowships

- 2021 **Invited talk**, *American Geophysical Union*, AGU Fall Meeting 2021.
Detecting The Imprint Of Climate Change in High Mountain Hazards: Challenges and Opportunities
- 2020 **Graduate Student Research Award**, *Cooperative Institute for Research in Environmental Sciences (CIRES)*.
1 year funding to continue research on the use of satellite radar coherence as a landslide predictor
- 2018 **Invited talk**, *American Geophysical Union*, AGU Fall Meeting 2018.
In recognition of the 2017 AGU outstanding student presentation award.
- 2017 **Outstanding Student Presentation Award**, *Natural Hazards Focus Group*, AGU Fall Meeting 2017.
Recognition for outstanding student presentation and research.
- 2017 **Early Career Travel Grant**, *United States Permafrost Association*.
Awarded to fund summer field work to measure permafrost temperatures in the high peaks of the Rocky Mountains.
- 2017 **NASA Earth and Space Science Fellowship**, *National Aeronautics and Space Agency*.
3-year PhD funding
- 2013 **Outstanding Teaching Assistant Award**, *National Association of Geoscience Teachers*, Carleton College, Northfield, Minnesota.
Awarded for leading and designing hands-on curriculum for Geography undergraduates studying hydrology and glaciology.

Personal skills (languages, digital competences)

Swiss	Native	German	Fluent
German			
English	Fluent (Cambridge Proficiency Grade A, TOEFL 117/120)	Italian	Fluent (Middle school in Rome, Italy)
French	Proficient	Spanish	Conversational
Geodata	ISCE, GMT5SAR, ArcGis, QGIS, Erdas, ENVI, RiScan Pro	Graphics	Adobe Illustrator, Affinity Designer, Gimp
Programming	Python, Unix/Bash, Matlab, LaTeX, SQL	Office	Word, Excel, Powerpoint

Peer-reviewed publications

M. Jacquemart, E. Welty, M. Leopold, M. Loso, L. Lajoie, and K. F. Tiampo, “Geomorphic and sedimentary signatures of catastrophic glacier detachments: A first assessment from Flat Creek, Alaska”, *Earth Surface Processes and Landforms* (submitted for review).

A. Mitchell, S. Zubrycky, S. McDougall, J. Aaron, **M. Jacquemart**, J. Hübl, R. Kaitna, and C. Graf, “Variable hydrograph inputs for a numerical debris-flow runout model”, *Natural Hazards and Earth System Science* (submitted for review).

M. Van Wyk de Vries, S. Bhushan, **M. Jacquemart**, C. Deschamps-Berger, E. Berthier, S. Gascoin, D. E. Shean, D. H. Shugar, and A. Kääh, “Pre-collapse motion of the February 2021 Chamoli rock-ice avalanche, Indian Himalaya”, *Natural Hazards and Earth System Science* (submitted for review).

B. D. Corsa, **M. Jacquemart**, K. F. Tiampo, and M. J. Willis, “Characterization of large tsunamigenic landslides and their effects using digital surface models: A case study from Taan Fiord, Alaska”, *Remote Sensing of Environment* (2022).

A. Kääh, **M. Jacquemart**, A. Gilbert, S. Leinss, L. Girod, C. Huggel, D. Falaschi, F. Ugalde, D. Petrakov, S. Chernomorets, M. Dokukin, F. Paul, S. Gascoin, E. Berthier, and J. Kargel, “Sudden large-volume detachments of low-angle mountain glaciers –more frequent than thought”, *The Cryosphere* (2021).

S. Leinss, E. Bernardini, **M. Jacquemart**, and M. Dokukin, “Glacier detachments and rock-ice avalanches in the Petra Pervogo range, Tajikistan (1973 - 2019)”, *Natural Hazards and Earth System Science* (2021).

M. Jacquemart and A. Cicoira, “Hazardous Glacier Instabilities: Ice Avalanches, Sudden Large-Volume Detachments of Low-Angle Mountain Glaciers, and Glacier Surges”, in *Reference module in earth systems and environmental sciences*, edited by U. K. Haritashya (Elsevier, 2021).

M. Jacquemart and K. Tiampo, “Leveraging time series analysis of radar coherence and NDVI ratios to characterize pre-failure activity of the Mud Creek landslide, California”, *Natural Hazards and Earth System Science* (2021).

D. H. Shugar, **M. Jacquemart**, D. Shean, S. Bhushan, K. Upadhyay, A. Sattar, W. Schwanghart, S. McBride, M. V. W. de Vries, M. Mergili, A. Emmer, C. Deschamps-Berger, M. McDonnell, R. Bhambri, S. Allen, E. Berthier, J. L. Carrivick, J. J. Clague, M. Dokukin, S. A. Dunning, H. Frey, S. Gascoin, U. K. Haritashya, C. Huggel, A. Kääh, J. S. Kargel, J. L. Kavanaugh, P. Lacroix, D. Petley, S. Rupper, M. F. Azam, S. J. Cook, A. P. Dimri, M. Eriksson, D. Farinotti, J. Fiddes, K. R. Gnyawali, S. H. S, M. Jha, M. Koppes, A. Kumar, S. Leinss, U. Majeed, S. Mal, A. Muhuri, J. Noetzli, F. Paul, I. Rashid, K. Sain, J. Steiner, F. Ugalde, C. S. Watson, and M. J. Westoby, “A massive rock and ice avalanche caused the 2021 disaster at Chamoli, Indian Himalaya”, *Science* **373**, 300–306 (2021).

G. J. Wolken, A. K. Liljedahl, M. Brubaker, J. A. Coe, G. Fiske, H. Hvidtfeldt Christiansen, **M. Jacquemart**, B. M. Jones, A. Kääb, F. Løvholt, S. Natali, A. C. A. Rudy, and D. Streletskiy, “Glacier and Permafrost Hazards”, in *NOAA Arctic Report Card*, edited by T. A. Moon, M. L. Druckenmiller, and R. L. Thoman (2021).

C. Dai, B. Higman, P. J. Lynett, **M. Jacquemart**, I. M. Howatt, A. K. Liljedahl, A. Dufresne, J. T. Freymueller, M. Geertsema, M. W. Jones, and P. J. Haeussler, “Detection and Assessment of a Large and Potentially Tsunamigenic Periglacial Landslide in Barry Arm, Alaska”, *Geophysical Research Letters* **47** (2020).

M. Jacquemart, M. Loso, M. Leopold, E. Berthier, J. Hansen, E. Welty, J. Sykes, and K. Tiampo, “What drives Large-Scale Glacier Detachments? Insights from Flat Creek Glacier, St. Elias Mountains, Alaska”, *Geology* **48** (2020).

M. Jacquemart and M. Loso, “Catastrophic glacier collapse at Flat Creek Glacier, Wrangell St. Elias National Park and Preserve”, *Alaska Park Science* **1**, 16–25 (2019).

L. Meier, **M. Jacquemart**, R. Steinacher, D. Jäger, and M. Funk, “Monitoring of the Weissmies Glacier before the failure event of September 10, 2017 with Radar Interferometry and High-Resolution Deformation Camera”, *Proceedings of the International Snow Science Workshop, Innsbruck 2017.*, 661–664 (2018).

M. Jacquemart, L. Meier, C. Graf, and F. Morsdorf, “3-D Dynamics of debris flows quantified at sub-second intervals from laser cross-sections”, *Natural Hazards* **89**, 785–800 (2017).

L. Meier, **M. Jacquemart**, B. Blattman, and B. Arnold, “Real-Time Avalanche Detection with Long-Range, Wide-Angle Radars for Road Safety in Zermatt, Switzerland”, in *Proceedings of the international snow science workshop* (2017).

L. Meier, **M. Jacquemart**, B. Blattman, S. Wyssen, B. Arnold, and M. Funk, “Radar-based warning and alarm systems for Alpine mass movements”, *Proceedings of 13th Congress Interpraevent: Living with Natural Risks* (2016).

M. Jacquemart, “Unveiling Debris Flows: Inferring debris-flow characteristics from vertical laser profile scanner data”, MA thesis (University of Zurich, Feb. 2015).

M. Jacquemart, D. Tobler, L. Meier, and C. Graf, “Advanced Debris-Flow Monitoring and Warning System at Spreitgraben”, in *Engineering Geology for Society and Territory*, Vol. 3, edited by G. Lollino, M. Arattano, M. Rinaldi, O. Giustolisi, J.-C. Marechal, and G. E. Grand (2015), pp. 59–62.

M. Jacquemart and L. Meier, “Deformationsmessungen an Talsperren und in deren alpiner Umgebung mittels Radarinterferometrie (Measuring deformation of hydro power dams and their alpine environment using ground based radar interferometry)”, *Wasser, Energie, Luft* (2014).

D. Tobler, I. Kull, **M. Jacquemart**, and N. Haehlen, “Hazard Management in a Debris Flow Affected Area: Case Study from Spreitgraben, Switzerland”, in *Landslide Science for a Safer Geoenvironment*, Vol. 3, edited by K. Sassa, P. Canuti, and Y. Yin (2014), pp. 25–30.

Abstracts

M. Jacquemart, D. Shugar, B. Higman, M. Loso, A. Kääh, S. Leinss, and M. Geertsema, “Detecting the Imprint of Climate Change in High Mountain Hazards: Challenges and Opportunities”, AGU Fall Meeting Abstracts (Invited) (2021).

M. Jacquemart, M. Leopold, and I. Overeem, “Assessing Rock Wall Permafrost Changes in Colorado’s Front Range and Their Implications for Rock Fall”, AGU Fall Meeting Abstracts (2020).

M. Jacquemart, M. Leopold, E. Welty, L. Lajoie, M. Loso, and K. Tiampo, “Geologic signatures of catastrophic glacier detachments”, AGU Fall Meeting Abstracts (2019).

J. Brown, **M. Jacquemart**, K. Tiampo, and M. Barba-Sevilla, “Comparing GAMMA portable radar interferometer with satellite DInSAR from Sentinel 1A at Slungullion landslide, Colorado, USA. ”, AGU Fall Meeting Abstracts (2018).

M. Jacquemart, M. Loso, J. Hansen, J. Sykes, and K. Tiampo, “Instantaneous glacier loss through catastrophic collapse at Flat Creek glacier: disentangling the roles of climate, geology and glacier dynamics in Wrangell-St. Elias National Park and Preserve, Alaska”, AGU Fall Meeting Abstracts (2018).

M. Jacquemart, O. Wigmore, C. Stopka, R. Cassotto, B. Hodge, B. Corsa, R. Bilham, and K. Tiampo, “Building a decision-making framework for operational landslide monitoring: Evaluating radar, lidar and UAV methods to monitor slope stability”, AGU Fall Meeting Abstracts (2018).

M. Harlan, C. Gleason, M. Hageman, T. Pavelsky, L. Smith, E. Altenau, V. Chu, S. Cooley, W. Dolan, J. Fayne, **M. Jacquemart**, E. Kyzivat, T. Langhorst, T. Minear, B. Overstreet, D. Peters, L. Pitcher, and S. Tuozzolo, “Combining UAV and Surface Observations for Rapid Discharge Estimation and SWOT Validation in Remote Areas”, AGU Fall Meeting Abstracts (2017).

M. Jacquemart, M. Barba, K. Tiampo, and M. Willis, “Inferring drivers of California’s Big Sur landslide from precursory slope deformations measured with spaceborne radar interferometry”, AGU Fall Meeting Abstracts (2017).

K. Tiampo, M. Barba, **M. Jacquemart**, P. Gonzalez, C. McKee, S. Samsonov, and W. Feng, “The influence of high resolution topography on landslide characterization using DInSAR”, AGU Fall Meeting Abstracts (2017).

M. Jacquemart, L. Meier, F. Morsdorf, and C. Graf, “Using concatenated profiles from high-speed laser scanners to estimate debris-flow characteristics: A novel approach based on Particle Image Velocimetry”, AGU Fall Meeting Abstracts (2015).

M. Jacquemart, F. Morsdorf, and C. Graf, “Deriving debris-flow characteristics from vertical laser profile scanners”, EGU General Assembly Abstracts **17**, 4452 (2015).