

# Dr. Luca C. Malatesta

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Position	<b>GFZ German Research Center for Geosciences Potsdam</b> <b>Jan. 2020 – present</b> Group Leader of the Earth Surface Signal group Senior Research Scientist in the Earth Surface Modelling Section  <b>Nagasaki University</b> <b>Sep. 2021 – Dec. 2021</b> Visiting scientist in the Planetary Health Division  <b>University of Lausanne</b> <b>Sept. 2018 – Dec. 2019</b> Maître Assistant (lecturer) at the Institute of Earth Surface Dynamics  <b>UC Santa Cruz</b> <b>Mar. 2017 – Aug. 2018</b> SNSF Postdoctoral fellow Project: Transient eustatic forcing of coastal bedrock rivers with Noah Finnegan  <b>University of Geneva</b> <b>Oct. 2016 – Feb. 2017</b> Visiting scientist in the group of Sébastien Castellort
Education	<b>California Institute of Technology</b> <b>Oct. 2011 – Sept. 2016</b> PhD in Geology Thesis: Impact of climate and tectonics on the morphodynamics of alluvial piedmonts, implications for sediment transfer and the stratigraphic record. Supervisor: Jean-Philippe Avouac; Co-supervisor: Michael P. Lamb  <b>ETH Zurich</b> <b>Sep. 2009 – Aug. 2011</b> MSc in Geology Thesis: Landscape Evolution and Lateral Growth of the SW Tian Shan, Uzbekistan. Thesis supervisors: Sébastien Castellort, Vincenzo Picotti, Susan Ivy-Ochs  <b>ETH Zurich</b> <b>Sep. 2006 – Aug. 2009</b> BSc in Earth Sciences Thesis: Numerical study of the plates and slabs dynamics in double subduction systems with one-sided accretion. Thesis supervisor: Taras Gerya
Research interests	Propagation of environmental signals in the sediment routing system. Terrestrial and submarine surface processes. Creation and preservation mechanisms of fluvial and marine terraces.
Awards & Funding	<i>2018 Basin Research Early Career Award (IAS)</i> for the article “Lag and mixing during sediment transfer across the Tian Shan piedmont caused by climate-driven aggradation–incision cycles” (Malatesta et al., Basin Research, 2018)  <i>Outstanding Student Poster and PICO (OSPP)</i> award at EGU 2017 for “A model to quantify mixing across alluvial piedmonts with cycles of aggradation and incision”  <i>Early Postdoc.Mobility Fellowship</i> (1.5 year) from the Swiss National Science Foundation for the project “Transient eustatic forcing of coastal bedrock rivers”, 2017  <i>Doc.Mobility Fellowship</i> (1 year) from the Swiss National Science Foundation for the project “Nucleation of waterfalls at intermittently shielded fault scarps”, 2015  <i>Swiss Geological Society Award</i> for the “most outstanding Master's thesis in Earth Sciences”, 2011  <i>Willi Studer Prize</i> for the best Master's studies in the department of Earth Sciences at ETH Zurich, 2011

Academic services	<p>Reviewer for <i>American Journal of Science, Geology, The Depositional Record, Ecological Processes, EPSL, ESPL, E Surf D, Geomorphology, JGR Solid-Earth, JGR Earth Surface, Quaternary International, Quaternary Research, Tectonics, Tectonophysics, Terra Nova</i>; and for the agencies <i>NSF (USA)</i> and <i>ANR (France)</i></p> <p>Organizer of the Steepest Descent Meeting at the EGU General Assembly, 2017-2021.</p> <p>Convener and chair of geomorphology and tectonics sessions at EGU 2016-2022.</p> <p>Co-initiator of the Swiss Geoscience Master Congress (SGMC) and committee member of the first edition in November 2011</p>
Supervision	<p>Dr. Tetiana Amashukeli for an advanced postdoctoral project continuing her work managing and developing the Ukrainian seismic network during the war. 2022-present</p> <p>Dr. Anne-Morwenn Pastier for her postdoctoral fellowship on the creation and preservation of marine terraces under varying tectonic and climatic conditions 2020-2022</p> <p>Dr. Boris Gailleton for his postdoctoral fellowship on the modelling of landscapes with non monotonic changes in water and sediment fluxes 2020-2022</p> <p>Ruth Asiedu for a research internship on closed basins 2022</p> <p>Caroline Brand for a BSc research internship on sea cliff erosion 2021</p> <p>Sonia Flückiger for her BSc thesis at the University of Lausanne about quantitative constraints on glacial lake outburst floods from fluvial deposits 2020</p> <p>Andreas Ruby for his research internship(MSc) on the distribution of marine terraces across the Japanese archipelago as a function of local uplift rates 2020</p> <p>Emily Carreño for her undergraduate senior thesis at UC Santa Cruz on the sampling bias in global uplift rates derived from marine terraces 2018</p>
Teaching	<p>Introduction to Numerical Modelling on MATLAB (BSc, UNIL) 2018 - 2019</p> <p>Erosion, Tectonics, and Climate (BSc, UNIL) 2018 - 2019</p> <p>Dates and Rates in the Landscapes (MSc, UNIL, with Georgina King) 2019</p> <p>Introduction to Alpine Geology (BSc UNIL) 2019</p> <p>Creation of a Google Earth based field guide for the Spanish Pyrenean excursion “sedimentary rocks in the field” led by Sébastien Castelltort at ETH Zurich. 2011</p>
Outreach	<p>“Your face as an eroding mountain!” activity at the Berlin Long Night of Science 2022</p> <p>Class visits in the Pasadena Unified School District and neighbouring K-12 schools to present and discuss current Earth Science topics 2012 - 2014</p>
Languages	<p>French: native speaker    English: fluent    German: fluent    Japanese: beginner (A1)</p>
Publications	<p><u>Articles in preparation:</u></p> <p>Gailleton, B., <b>Malatesta, L. C.</b>, Cordonnier, G., Braum, J.; CHONK landscape evolution framework: cellular automata meets Eulerian grid.</p> <p>Pastier, A.-M., Huppert, K. L., <b>Malatesta, L. C.</b>; An integrated model for growth and erosion of coral reef shelves and terraces.</p> <p><u>Published articles:</u></p> <p>Olive, J.-A., <b>Malatesta, L. C.</b>, Behn, M. D., Buck, W. R., 2022, Rift tectonics modulated by the efficiency of river erosion, <i>PNAS</i>, doi:10.1073/pnas.2115077119</p> <p><b>Malatesta, L. C.</b>, Finnegan, N. J., Huppert, K. L., Carreño, E., 2022; The influence of rock uplift rate on the formation and preservation of individual marine terraces during multiple sea level stands, <i>Geology</i>, doi:10.1130/G49245.1</p> <p><b>Malatesta, L. C.</b>, Bruhat, L., Finnegan, N. J., Olive, J.-A., 2021; Co-location of the downdip end of seismic coupling and the continental shelf break, <i>JGR Solid Earth</i>, doi:10.1029/2020JB019589</p> <p>Hughes, A., Escartín, J., Olive, J.-A., Billant, J., Deplus, C., Feuillet, N., Leclerc, F., <b>Malatesta, L. C.</b>, 2021, Quantification of Gravitational Mass Wasting and Controls on Submarine Scarp Morphology Along the Roseau Fault, Lesser Antilles, <i>JGR Earth Surface</i>, doi:10.1029/2020JF005892</p> <p><b>Malatesta, L. C.</b> and Avouac J.-P.; 2018; Contrasting river incision in north and south Tian Shan piedmonts due to different glacial imprint of high range topography; <i>Geology</i>, doi:10.1130/G40320.1</p>

**Malatesta L. C.**, Lamb M. P.; 2017; Formation of waterfalls by intermittent burial of active faults; *GSA Bulletin*, doi:10.1130/B31743.1

**Malatesta, L. C.**, Avouac, J.-P., Brown, N. D., Breitenbach, S. F. M., Pan, J., Chevalier, M.-L., Rhodes, E., Saint-Carlier, D., Zhang, W., Charreau, J., Lavé, J. and Blard, P.-H.; 2018; Lag and mixing during sediment transfer across the Tian Shan piedmont caused by climate-driven aggradation–incision cycles. *Basin Research*, doi:10.1111/bre.12267

Charreau, J., Saint-Carlier, D., Dominguez, S., Lavé, J., Blard, P.-H., Avouac, J.-P., Jolivet, M., Chen, Y., Wang, S., **Malatesta, L. C.**, Brown, N.D., Rhodes, E., and ASTER Team; 2017; The Tianshan range, an example of an immature orogenic wedge? Evidence from active deformation and denudation rates within the intermontane basins; *Earth and Planetary Science Letters*, v. 479, p. 179-191, ISSN 0012-821X, doi:10.1016/j.epsl.2017.09.025.

**Malatesta L. C.**, Prancevic J. P., Avouac J.-P.; 2017; Autogenic entrenchment patterns and terraces due to coupling with lateral erosion in incising alluvial channels; *J. Geophys. Res.*, v. 122, p. 335–355, doi:10.1002/2015JF003797.

Olive J.-A., Behn M. D., **Malatesta L. C.**; 2014; Modes of extensional faulting controlled by surface processes; *Geophysical Research Letters*, Vol. 41, p. 6725–6733., doi:10.1002/2014GL061507

**Malatesta L. C.**, Castelltort S., Mantellini S., Picotti V., Hajdas I., Simpson G., Berdimuradov A. E., Tosi M., Willett S.D.; 2012; Dating the Irrigation System of the Samarkand Oasis: a Geoarchaeological Study; *Radiocarbon*, vol. 54, p. 91–105