CV – Luca Dal Zilio

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Research IDs: Google Scholar ORCID Research Gate

PROFESSIONAL APPOINTMENTS

- **Senior Scientist and Lecturer** *Sep 2021 – present*
  ETH Zürich, Switzerland
  Group leader of Computational Earthquake Physics
- **Cecil and Sally Drinkward Fellow in Geophysics and Solid Mechanics** *Feb 2019 – Aug 2021*
  California Institute of Technology, Pasadena
  Advisors: Prof. Nadia Lapusta, Prof. Jean-Philippe Avouac

EDUCATION

- **PhD in Geophysics** (*with distinction*), ETH Zürich, Switzerland *Feb 2015 – Jan 2019*
  Advisor: Prof. Taras Gerya
  Cross-Scale Modeling of Mountain Building and the Seismic Cycle: From Alps to Himalaya
- **MSc in Geophysics** (*cum laude*), University of Padova, Italy *Oct 2012 – Oct 2014*
  Advisors: Prof. Manuele Faccenda, Prof. Fabio Capitanio
  Subduction-induced break-up and drifting of continental plates
- **BSc in Geophysics**, University of Padova, Italy *Sep 2009 – Jul 2012*
  Advisor: Prof. Giulio Di Toro

VISITING

- Visiting researcher, Earth Observatory of Singapore (EOS) (3 weeks) *1/2018*
- Visiting researcher, École Normale Supérieure (ENS), Paris, France (3 weeks/2x) *6/2017; 7/2018*

FUNDED PROJECTS

- USGS Earthquake Physics Research proposal (co-PI, main writer) *2020*
- Postdoc Mobility fellowship, Swiss National Science Foundation (PI, sole proposal writer) *2020*
- Early Postdoc Mobility fellowship, Swiss National Science Foundation (PI, sole proposal writer) *2019*
- SINERGIA AlpArray, 1–yr–ext. PhD, Swiss National Science Foundation (sole proposal writer) *2017*
- SINERGIA AlpArray, 3–yr PhD proposal, Swiss National Science Foundation (collaborative proposal) *2015*

AWARDS AND HONOURS

- Early career Giorgio Dal Piaz award from the Italian Geological Society *2020*
- Silver Medal from ETH Zürich for outstanding doctoral thesis *2020*
- Best overall poster presentation at SCEC annual meeting, Palm Springs, California *2019*
- Cecil and Sally Drinkward Distinguished Postdoctoral Fellow, Caltech (PI, sole proposal writer) *2019*
- Springer Nature Thesis *Award* *2019*
- EGU best annual *Blog Article* *2018*
- EGU Outstanding Student Poster *Award* *2018*
- Best Geostory award by *Nature Geoscience journal* *2018*
- Nominated by ETH Zürich for the *Global Young Scientists Summit 2018*, Singapore *2018*
- Invited keynote speaker at TEDx Event – *Earthquakes: prediction or prevention?* *2017*

SUPPORTS

- Full GeoHost support for the “36th International Geological Congress (IGC)”, New Delhi, India *2020*
- Full travel support for the “CIG Crustal Deformation Modeling Workshop”, Golden, Colorado *2019*
- Full travel support for the Workshop “Modeling Earthquake Source Processes”, Caltech *2018*
- Full travel support for the “Global Young Scientists Summit 2018”, Singapore *2018*
- Cineca High Performance Computing, 50k hours, MSc thesis project (co–PI) *2014*
- Travel grant by European Geosciences Union (EGU) Summer School 2013 *2013*

PUBLICATIONS

Peer–Reviewed Articles (*students primary advised):

1. Michel, S., Jolivet, R., Rollins, C. Jara, J., and **Dal Zilio, L.** (2021). Seismogenic potential of the Main Himalayan Thrust constrained by coupling segmentation and earthquake scaling. *Geophysical Research Letters*, *doi*
2. **Dal Zilio, L.**, Hetényi, G., Hubbard, J., & Bollinger, L. (2021). Building the Himalaya from tectonic to earthquake scales. *Nature Reviews Earth & Environment*, 2(4), 251-268, *doi*
3. **Dal Zilio, L.**, Ruh, J., Avouac, J-P. (2020). Structural evolution of orogenic wedges: interplay between erosion and weak décollements. *Tectonics*, 39(10), *doi*
4. **Dal Zilio, L.**, Kissling, E., Gerya, T., and van Dinther, Y. (2020). Slab Rollback Orogeny Model: A Test of Concept. *Geophysical Research Letters*, 47(18), *doi*
5. D'Acquisto, M.*, **Dal Zilio, L.**, van Dinther, Y., Kissling, E., and Gerya, T. (2020) Tectonics and seismicity in the Northern Apennines driven by slab retreat and crustal delamination. *Tectonophysics*, *doi*
6. **Dal Zilio, L.**, Lapusta, N., Avouac, J-P. (2020). Unraveling scaling properties of slow-slip events. *Geophysical Research Letters*, 47(10), *doi*
7. **Dal Zilio, L.**, Jolivet, R., and van Dinther, Y. (2020). Segmentation of the Main Himalayan Thrust Illuminated by Bayesian Inference of Interseismic Coupling. *Geophysical Research Letters*, 47 *doi*
8. **Dal Zilio, L.**, van Dinther, Y., Gerya, T., Avouac, J.-P. (2019) Bimodal seismicity in the Himalaya controlled by fault friction and geometry. *Nature Communications*, *doi*
9. **Dal Zilio, L.** (2018). Subduction-driven Earth machine. *Nature Geoscience (News and Views), Retrospective,* 11, 229, *doi*
10. **Dal Zilio, L.**, van Dinther, Y., and Gerya, T. V., (2018). Seismic behaviour of mountain belts controlled by plate convergence rate. *Earth and Planetary Science Letters.* 482, 81-92, *doi*
11. **Dal Zilio, L.**, Faccenda, M., and Capitanio, F. A., (2018). The role of deep subduction in supercontinent breakup. *Tectonophysics*, *doi*
12. Ficini, E.*, **Dal Zilio, L.**, Doglioni, C., and Gerya, T. V., (2017). Horizontal mantle flow controls subduction dynamics. *Scientific Reports* 7, *doi*
13. Faccenda, M., and **Dal Zilio, L.**, (2017). The role of solid–solid phase transitions in mantle convection. *Lithos* 268, 198-224, *doi*
14. Meyzen, C.M., Massironi, M., Pozzobon. R., and **Dal Zilio, L.**, (2015). Are plumes on motionless plates analogues to Martian plume feeding the giant shield volcanoes? - Volcanism and Tectonism Across the Inner Solar System, *Geological Society of London*. v. 401, *doi*

In review / submitted / preparation:

1. Brizzi, S., Becker, T. W., Faccenna, C., van Zelst, I., **Dal Zilio, L.**, van Dinther, Y., (2021). The role of sediment subduction and buoyancy on subduction dynamics and geometry. (*in review*).
2. **Dal Zilio, L.**, Lapusta, N., Avouac, J.-P., Gerya, T. (2021). Subduction earthquake cycles in a nonlinear visco-elasto-plastic megathrust. (*submitted*).

SELECTED INVITED PRESENTATIONS

- AGU Fall Meeting (online) (2020) – *Unrevealing scaling properties of slow-slip events.*
- Italian Geological Society, Annual Meeting (2020) – Giorgio Dal Piaz Award Lecture.
- 106th National Congress of the Italian Physical Society (2020): *Exploring slow-slip events and their scaling.*
- JpGU Joint Meeting, Chiba, Japan (2020) – *Episodic fluid pressure cycling controls slow-slip events.*
- 36th Int. Geological Congress, Delhi, India (2020) – *Anatomy of the Main Himalayan Thrust.*
- Southern California Earthquake Center, Pomona, CA (2020) – *Slip complexity on faults with heterogeneous friction.*
- CIG Modeling Workshop, Golden, Colorado (2019) – *The influence of tectonics on seismicity of mountain belts.*
- AGU Fall Meeting, Washington D.C. (2018) – *Slab Rollback Orogeny Model: A test-of-concept.*
- First AlpArray Meeting, Zürich, Switzerland (2018). *Modeling mountain building across the scales.*

STUDENTS

- Betti Hegyi (PhD student co-supervisor, ETH Zürich) *2021 – present*
- Antonio Lisotti (MSc thesis co-supervisor, Parma University, Italy) *2021 – present*
- Alessandro Favaroni (MSc thesis co-supervisor, Uni-Pisa, Italy) *2021 – present*
- Julian Stypulkowski (MSc thesis co-supervisor, ETH Zürich) *2018*
- Mario D'Acquisto (MSc thesis supervisor, Alp-Array project, ETH Zürich) *2018*
- Eleonora Ficini (MSc thesis and PhD co-supervisor, Sapienza University of Rome) *2015 – 2018*

TEACHING

- Continuum Mechanics (Caltech, MSc level), Teaching Assistant and Lecturer *2020*
- Fracture Mechanics and Frictional Faulting (Caltech, MSc level), Guest Lecturer *2020*
- Introduction to Structural Geology (Caltech, BSc level), Teaching Assistant *2020*
- Numerical Modeling (ETH Zürich, MSc level), Teaching Assistant *2018*
- Seismotectonics (ETH Zürich, MSc level), Guest Lecturer *2017*
- Geophysical Field Lab (ETH Zürich, BSc level), Teaching Assistant *2016 – 2017*

SYNERGISTIC ACTIVITIES

- Editorial board, *Nature Communications Earth and Environment* *2020 – present*
- Associate Editor, *Tectonics* *2020 – present*
- Topic Editor, *Frontiers in Earth Science* (Solid Earth Geophysics) *2019 – present*
- **Judge** for Outstanding Student Poster Awards at AGU and EGU *2019 – present*
- **Consulting** (Seismic Risk Assessment) for *UNICEF*, *Swiss Embassy in Nepal* *2018 – 2019*
- Book Reviewer: *Times Higher Education (THE)*
- Journal Reviewer: *Nature Geoscience*, *Science Advances*, *Nature Communications*, *Geophysical Research Letters*, *JGR: Solid Earth*, *Tectonics*, *Earth and Planetary Science Letters*, *Scientific Reports*, *Tectonophysics*, *Earth-Science Reviews*, *Terra Nova*, *EGU Solid Earth*, *Geophysical Journal International*, *Journal of Geodynamics*
- **Active memberships**: European Geosciences Union (EGU); American Geophysical Union (AGU)

International conference chair and (co-)convener:

- AGU–2019 / EGU–2020 / EGU–2021: Seismic and aseismic slip on seismogenic faults
- AGU–2020: The role of fluids in aseismic and seismic slip on faults
- AGU–2019: Cross-scale and multi-scale building of the Himalaya
- EGU–2019: Integrated approaches to bridge long-term tectonics and earthquake cycles
- EGU–2018: The Interplay between earthquakes, the seismic cycle and long-term deformation

MEDIA COVERAGE

- Detaching and uplifting, not bulldozing ***ETH News*** (*link*).
- Geodetic Data Pinpoint Earthquake-Prone Regions of the Himalayas, ***EOS*** (*link*).
- Slow moving fault pieces may limit large Himalayan quakes, ***Temblor*** (*link*).
- Coming together, splitting apart, ***The Higher Education*** (*link*).
- Why massive earthquakes menace the Himalayas, ***Nature Highlights*** (*link*).
- Devastating quakes are priming the Himalaya for a mega-disaster, ***National Geographic*** (*link*).
- Waiting for the complete rupture, ***ETH News*** (*link*).
- Why earthquakes in the Himalaya are bigger than in the Alps, ***EurekAlert*** (*link*).
- Faster tectonic-plate collisions spell bigger earthquakes, ***Nature Highlights*** (*link*).
- Why are some earthquakes so much worse than others? ***International Business Times*** (*link*).

RECENT MEETING PRESENTATIONS

- **Dal Zilio, L.**, Lapusta, N., Avouac, J., and Gerya, T. (2021). Modeling sequences of seismic and aseismic deformation in a nonlinear viscoelastic megathrust. SCEC Presentation (poster).
- **Dal Zilio, L.** and Gerya, T. (2021) *Episodic fluid pressure cycling controls earthquake sequences on subduction megathrusts.* EGU meeting (online) (oral).
- **Dal Zilio, L.** and Gerya, T. (2021) *Episodic fluid pressure cycling controls earthquake sequences on subduction megathrusts.* EGU meeting (online) (oral).
- **Dal Zilio, L.**, Lapusta, N., and Avouac, J.P. (2020). *Exploring slow slip events and their scaling in 3D simulations of fault slip.* Southern California Earthquake Center annual meeting, Palm Springs (poster).
- **Dal Zilio, L.**, Li, M., van Dinther, Y., and Pranger, C. (2020). *Towards simulating sequences of seismic and aseismic slip across scales: Initial benchmarks and future directions*. EGU meeting (online) (oral).
- **Dal Zilio, L.**, Ruh, J., and Avouac, J.P. (2019). *Long-term building of the Himalaya due to migrating mid-crustal ramps coupled with erosion.* AGU meeting, San Francisco (poster).
- **Dal Zilio, L.**, Lapusta, N., and Avouac, J.P. (2019). *Exploring slow slip events and their scaling in 3D simulations of fault slip.* Southern California Earthquake Center annual meeting, Palm Springs (poster).
- **Dal Zilio, L.**, Kissling, E., and Gerya, T. (2019). *Cross-scale modeling of Slab Rollback Orogeny Model: The Central Alps case* EGU meeting, Vienna (oral).