



CURRICULUM VITAE (CVA)

Part A. PERSONAL INFORMATION		CV date	20/06/2023
First name	Jonas Bruno		
Family name	Ruh		
Gender (*)	male	Birth date	07/11/1982
Passport	X1435185	(Swiss Passport)	
e-mail	jonas.ruh@erdw.ethz.ch	URL Web: jonasruh.wordpress.com	
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-7035-1453		
Web of Science Researcher ID	AAK-8990-2021		

A.1. Current position

Position	Ramón y Cajal Fellow		
Initial date	01/01/2023		
Institution	CSIC		
Department/Center	Institute of Marine Sciences (ICM), Barcelona		
Country	Spain	Teleph. number	+34 681 966 859
Key words	Structural geology, numerical modelling, geodynamics, tectonics		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country
Jan 2019 – Dec 2022 (48 Mts)	Lecturer at Dept. of Earth Sciences, ETHZ, Switzerland
Apr 2016 – Dec 2018 (33 Mts)	Advance SNSF PostDoc Fellow, ICTJA – CSIC, Barcelona
Apr 2014 – Mar 2016 (24 Mts)	Marie Curie PostDoc Fellow, Sorbonne Univ. Paris (France)

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Earth Sciences	ETH Zürich, Switzerland	2014
MSc in Earth Sciences	ETH Zürich, Switzerland	2009
BSc in Earth Sciences	ETH Zürich, Switzerland	2007

Part B. CV SUMMARY (max. 5000 characters, including spaces)

My research focuses on lithospheric deformation across all spatial and temporal scales. This includes micro- and mesoscopic processes like dynamic grain size evolution, fluid flow as a response to transient seismogenic processes, but also the large-scale and long-term tectonic evolution along plate boundaries. To address these topics, I combine a range of geological and geophysical techniques including mechanical numerical modelling, structural fieldwork, paleomagnetism, geo- and thermochronology, and seismic data interpretation allowing for a comprehensive approach to solve timely scientific questions.

I obtained a BSc, MSc, and PhD (for which I received ETH Silver Medal) from ETH Zürich (1st worldwide in Earth Sciences). I was a Marie Curie PostDoc at the Sorbonne University in Paris and the ICM – CSIC in Barcelona. I was an SNSF PostDoc at the Geo3BCN – CSIC. I was lecturer at the ETH Zürich (Habilitation 2022). Since January 2023, I hold a Ramón y Cajal fellowship from the Spanish Ministry of Education and Innovation, hosted by the ICM – CSIC.

I develop and permanently improve open-source numerical codes that simulate complex tectonic processes (“Norma”: DOI: [10.3929/ethz-b-000490633](https://doi.org/10.3929/ethz-b-000490633)). These codes allow for a wide range of application, which include cm-scale evolution of brittle-ductile shear zones, crustal-scale structural evolution of mountain belts, and mantle-scale subduction dynamics. This numerical tool resulted in scientific recognition across the geoscientific community, allowing me to conduct independent research at the highest level, and prospering collaborations with scientists from top institutes around the globe.

I conducted extensive structural fieldwork and data sampling for paleomagnetism, geo- and thermochronology, provenance analysis, and experimental deformation with the aim of



integrating fieldwork, geophysical data collection and numerical experiments to obtain a more comprehensive insight into lithosphere- and mantle-scale processes.

As a lecturer at ETH Zürich, my teaching included structural geology, geological mapping, numerical modelling, and structural field courses at the Bachelor and Master level. I currently supervise and previously (co-)supervised/advised 6 PhD, 6 MSc and 4 BSc students and I am an active collaborator in scientific projects across the globe, including several MSc, PhD and PostDoc fellow that apply my numerical codes. My track record includes 34 SCI journal articles (15 first author, 4 single author, 9 second author) with a total of ~800/1000 citations (Scopus/Google Scholar). I furthermore serve the scientific community as organizer, convener (AGU and EGU) and participant of scientific conferences, and a proficient reviewer for scientific journals (25+ reviews per year) and research grants (ERC, GFD).

Part C. RELEVANT MERITS

C.1. Selected Publications

- Ruh, J.B.**, Tokle, L. and Behr, W.M. (2022): Grain-size-evolution controls on lithospheric weakening during continental rifting. *Nature Geoscience*, 15, 585-590.
- Rast, M. and **Ruh, J.B.** (2021): Numerical shear experiments of quartz-biotite aggregates: Insights on strain weakening and two-phase flow laws. *Journal of Structural Geology*, 149, 104375.
- Ruh, J.B.** (2020): Numerical modeling of tectonic underplating in accretionary wedge systems. *Geosphere*, 16 (6), 1385-1407.
- Dal Zilio, L., **Ruh, J.B.** and Avouac, J.-P. (2020): Structural evolution of orogenic wedges: interplay between erosion and weak décollements. *Tectonics*, 39 (10), TC6210.
- Ruh, J.B.**, Vergés, J. and Burg, J.-P. (2018): Shale-related minibasins atop a massive olistostrome in an active accretionary wedge setting: Two-dimensional numerical modeling applied to the Iranian Makran, *Geology*, 46 (9), 791-794.
- Ruh, J.B.**, Sallarès, V., Ranero, C.R. and Gerya T. (2016): Crustal deformation dynamics and stress evolution during seamount subduction: high-resolution 3D numerical modelling, *Journal of Geophysical Research – Solid Earth*, 121 (9), 6880-6902.
- Ruh, J.B.** (2016): Submarine Landslides caused by Seamounts entering Accretionary Wedge Systems, *Terra Nova*, 28 (3), 163-170.
- Ruh, J.B.**, Le Pourhiet, L., Agard, P., Burov, G. and Gerya, T. (2015): Tectonic slicing of subducting oceanic crust along plate interfaces: numerical modelling, *Geochemistry Geophysics Geosystems*, 16 (10), 3505-3531.
- Ruh, J.B.**, Hirt, A., Mohammadi, A. and Burg, J.-P. (2014): Folding history of the Zagros Simply Folded Belt constrained from magnetostratigraphy, *Tectonics*, 33 (8), 1534-1551.
- Ruh, J.B.**, Kaus, B. and Burg, J.-P. (2012): Numerical investigation of deformation mechanics in fold-and-thrust belts: Influence of rheology of single and multiple décollements, *Tectonics*, 31 (3), TC3047.

C.2. Selected Congress and Invited Presentations (oral)

- Conference talk: **Ruh, J.B.**, Tokle, L., and Behr, W.M. (2021). Self-consistent grain size evolution controls lithospheric shear zone formation during continental rifting. EGU General Assembly. 27. Apr., online.
- Conference talk: **Ruh, J.B.**, Tokle, L., and Behr, W.M. (2020). Modelling effects of olivine grain size evolution on upper mantle dynamics. AGU Fall Meeting. 7.-11. Dec., online.
- Invited conference talk: **Ruh, J.B.**, Vergés, J. and Burg, J.-P. (2019). Importance of fluid overpressure for the structural evolution of the Makran accretionary wedge. Swiss Geoscience Meeting. 23. Nov, Fribourg, Switzerland.
- Conference talk: **Ruh, J.B.**, Sallarès, V., Ranero, C.R. and Gerya T. (2017). Crustal deformation dynamics and stress evolution during seamount subduction: high-resolution 3D numerical modelling. ZIP workshop, 19. Apr., Castelldefels, Spain.
- Conference talk: **Ruh, J.B.** (2017). Effect of fluid pressure distribution on the structural evolution of accretionary wedge. Fold-and-Thrust Belts: Structural Style, Evolution and Exploration. The Geological Society of London. 2. Nov., London, Great Britain.
- Invited conference talk: Le Pourhiet, L., **Ruh, J.B.**, Pranger, C.C., Zheng, L., van Dinther, Y., May, D., Gerya, T. and Burov, E.B. (2015). Numerical modelling of subduction plate



interface, technical advances for outstanding questions. AGU Fall Meeting. 24. Dec., San Francisco, USA.

Conference talk: **Ruh, J.B.**, Burov, E., Gerya, T., Agard, P. and LePourhiet, L. (2015).

Tectonic slicing of subducted oceanic crust along plate interfaces: numerical modeling. EGU General Assembly. 17. Apr., Vienna, Austria.

Invited conference talk: **Ruh, J.B.**, Burg, J.-P. and Kaus, B. (2012): Numerical investigation of deformation mechanics in the Makran fold-and-thrust belt. Darius workshop, Barcelona.

Invited talks at institutes: ~30 invited seminar talks at (e.g.) Oxford Univ., Salzburg Univ., ETH Zürich, Bayreuth Univ., FU Berlin, Mainz Univ., UPMC Paris, etc.

C.3. Research projects

- Severo Ochoa Project (ICM intern), 2023 (**sole PI**). Project title: *Mobilization of soft sediments: Integrated study of rheological and seismic properties*. Budget: 35,000 €.
- Ramón y Cajal Fellowship, 2023 (**sole PI**). Project title: *Numerical modelling of large-scale tectonic processes*. Budget: 60,000 €.
- Research Preparation Grant by the University of Geneva acting as the Leading House for Swiss Science and Technology Cooperation with Russia and the CIS Region, 2020 (**lead PI**). Project title: *Towards understanding the structural evolution of the Verkhoyansk fold-and-thrust belt (Russia)*. Budget: 20,000 CHF (~20,000 €).
- SNSF Project, 2020 (**co-lead PI**). Project title: *Coupling mechanics and fluid flow of evolving fault zones*. Budget: 304,464 CHF (~305,000 €).
- SNSF Advanced PostDoc Fellowship, 2016 (**sole PI**). Project title: *Tectonic inversion of a basement-involved fold-and-thrust belt: Temporal and structural evolution of the Kopet Dagh (NE Iran) and its implications for the Arabia-Eurasia collision history*. Budget: 269,400 CHF (~270,000 €).

C.4. Panel and Reviewing

2023 – present: Convener Tectonics and Structural Geology sessions at AGU

2020 – present: Member of the GEODES (Geoscience Diversity and Equality Switzerland) committee

2020 – 2022: Convener of the Structural Geology, Tectonics and Geodynamics session of the Swiss Geoscience Meetings

2019 – 2021: **Member of the editorial board of Geology (GSA), Rank: 1/47**

2019 – present: Member of the revision panel for four PhD theses

2015 – present: Main- and co-convener Tectonics and Structural Geology sessions at EGU

2020: Co-editor for a **Special Issue in Geosciences**: „Surface-Deep Earth Interactions: From Integrated Datasets to Landscape Evolution and Geodynamic Modeling“

2016: Co-editor for a **Special Issue in Geological Magazine**: „Tectonic evolution and mechanics of basement-involved fold-and-thrust belts“

2013 – present: Frequent peer reviewer for Nature Geosc., Geology, EPSL, Tectonics, Journal of Geophysical Research, AGU Books, Lithos, Tectonophysics, American Journal of Science, Journal of Structural Geology, etc., ERC, NSF and DFG research grants (accepting to review >25 articles per year).

C.5. Awards and Fellowships

2022: **Ramón y Cajal Fellow**, Spanish Ministry of Education and Innovation

2019: **Paul Niggli Medal** for outstanding early career scientist (Swiss Society of Mineralogy and Petrology)

2016: SNSF Advanced PostDoc Fellow

2015: **Silver Medal** for outstanding Doctoral Thesis (ETH Zürich)

2014: Marie Curie ITN PostDoc Fellow

C.6. Organization of Scientific Meetings

2020: Co-organizer of the Geoscience Diversity and Equality Workshop (GEODES), Zürich, Switzerland

2020: Co-organizer of the Swiss Geoscience Meeting, Zürich, Switzerland



2015: Co-organizer of the XIV International Workshop on Modelling of Mantle and Lithosphere Dynamics, Oléron, France

C.7. Geologic Fieldwork Experience

- 2019 – 2021: - Fieldwork in the Swiss Alps supervising Bachelor and Master Theses
2016 – 2018: - Extensive fieldwork in the Kopet Dagh Mountains, NE Iran
2015: - Marine cruise across the Hellenic arc in the scope of ITN–ZIP
- Fieldwork in the western Makran on behalf of the Nat. Iranian Oil Comp.
2014: - Field trip in the scope of ZIP: “Walking along ancient plate boundaries”
2010 – 2013: - Extensive fieldwork in Iranian Sistan, Makran and Zagros
2008: - Fieldwork on the Sudbury Igneous Complex, Canada (MSc thesis)
2005: - Structure and sediment geological fieldwork in the Yassin valley, Pakistan.

C.8. Student Supervision

- Markus Rast, PhD (ongoing), *Coupling mechanics and fluid flow of evolving faults* (co-main supervisor)
- Mahdi Bakhtbidar, PhD (ongoing), *Numerical and Analogue Modelling of Salt-bearing rifted margins* (co-supervisor)
- Fatemeh Gomar, PhD (ongoing), *Numerical modelling of basement-cover interaction in the Zagros Simply Folded Belt* (co-supervisor)
- Kathrin Oettli, MSc (ongoing), *Complex deformation history of the southwestern part of the Dolomites: Insights from structural and chemical analysis* (main supervisor)
- Livia Pierhöfer, MSc (ongoing), *Effect of multi-layer detachments on the evolution of triangle zones* (main supervisor)
- Julien Vouga, MSc (ongoing), *Tectonic evolution of the Sistan-Makran triple junction* (main supervisor)
- Lorena Juchler, MSc (2022), *Automated Extraction of Layer Thickness Information from Geological Maps for the Rapid Evaluation of Mineral Occurrences* (co-supervisor)
- Lukas Rigling, MSc (2021), *Uplift history of the Kopet Dagh Mountains, NE Iran, inferred from low-temperature thermochronology* (main supervisor)
- Markus Rast, MSc (2020), *Geology, geochronology and rock magnetism along Bedretto tunnel (Gotthard massif, Central Alps) and numerical modelling of quartz-biotite aggregates* (main supervisor). **Received ETH Silver Medal and Prize of the Swiss Geological Society for his Master Thesis**
- Kathrin Oettli, BSc (2021), *High-pressure barometry of eclogites from Alpe Arami with the quartz-in-garnet technique* (main supervisor)
- Livia Pierhöfer, BSc (2021), *Mechanical behavior of garnets in eclogites and metapelites during shearing: a numerical modelling approach* (main supervisor)
- Mireia Peral, PhD (2020), *Dynamics of subduction Systems with opposite polarity in adjacent segments: application to the Westernmost Mediterranean* (supervisor of publication of PhD thesis; see Peral et al., 2020)
- Kobra Heydarzadeh, PhD (2020), *Growth Strata in the Central Zagros fold-and-thrust belt, Dehdasht area* (supervisor of publication of PhD thesis; see Heydarzadeh et al., 2020)

C.9. Patents and licensed merits

2021: “Norma”: Open access numerical code published under GNU3 license in the ETH Data Archive DOI: [10.3929/ethz-b-000490633](https://doi.org/10.3929/ethz-b-000490633)

C.10. Dissemination and Outreach

- 2022: News blog – An underrated factor: <https://ethz.ch/en/news-and-events/eth-news/news/2022/06/an-underrated-factor.html>
- 2020: EGU blog – The Makran accretionary wedge: an ideal natural laboratory to study accretionary processes: <https://blogs.egu.eu/divisions/ts/2020/06/16/the-makran-accretionary-wedge-an-ideal-natural-laboratory-to-study-accretionary-processes>
- 2017: Exhibition Fête de la science, Paris. http://www.zip-itn.eu/publications-outreach/zip_exhibition