



## Laudatio for the Award Ceremony of the Prix Schläfli Geosciences 2022 of the Swiss Academy of Sciences (SCNAT) for Dr Luca Dal Zilio

The jury of the Prix Schläfli 2022 in Geosciences of the Swiss Academy of Sciences (SCNAT), consisting of Christine Pümpin (University of Basel), Dr Naki Akçar (University of Bern), and Prof. Olivier Bachmann (ETH Zurich) has evaluated four high quality applications and proposed to award the prize to Dr Luca Dal Zilio for his publication entitled 'Slab Rollback Orogeny Model: A Test of Concept'. The board of the Platform Geosciences then unanimously endorsed the decision of the jury and awarded the Prix Schläfli 2022 in Geosciences to Dr Luca Dal Zilio.

Dr Dal Zilio obtained his MSc degree in 2014 at the University of Padova and was awarded his PhD degree with distinction from ETH Zurich in 2019. His advisors were Prof. Taras Gerya, and Dr Ylona van Dinther. After his PhD, Dr Dal Zilio moved to the California Institute of Technology (Caltech), for a 2-year post doc, and is currently lecturer at ETH Zürich since September 2021.

The study proposed by Dr Dal Zilio was set on resolving what drives orogenic processes, focussing on the uplift of the Central Alps. He has been using a numerical modelling method that combine long-term geological evolution and earthquake source processes across plate boundaries. This technique allows new insights into how tectonic faults develop over very long times, and how they rupture within seconds during large earthquakes. Luca's numerical model also showed how the post-collisional evolution of the Alpine orogen is controlled by a slow, yet persistent, sinking and bending of the residual slab that is consistent with the observed lithospheric structure and earthquakes distribution in the Central Alps and the adjacent Molasse basin.

The scientific significance of Dr Dal Zilio's publication (and method) goes far beyond the usual scope of a PhD thesis and opened new avenues of research, linking the long-term lithospheric dynamics and seismicity of active mountain belts. This approach, coupling state-of-the-art modelling with sound observations of natural structures, appears particularly promising for the future, and Dr Dal Zilio has been improving this approach since he defended his PhD, adding new parameters in the modelling, such as poroelastic effects on active faults, to better constrain faults rupture mechanisms.

The jury of the Prix Schläfli was particularly impressed by Dr Dal Zilio's innovative and wide-ranging approach, shedding new light on large-scale tectonic processes using pioneering techniques. The jury also noted the involvement of Dr Dal Zilio in fostering communication and collaboration between scientists across the world, and his consulting efforts with UNICEF and the Swiss Embassy in Nepal to help communities at risks from earthquakes.

I would like to congratulate again Dr Dal Zilio on his very impressive work and wish him the best of luck for the future.

Prof. Olivier Bachmann, on behalf of the president of the Prix Schläfli 2022 Jury, Christine Pümpin.

Award Ceremony, Lausanne, November 2022