Laudatio for the Award Ceremony of the Prix Schläfli Geosciences 2019 of the Swiss Academy of Sciences (SCNAT) for Dr Julie G. Zähringer

The jury of the Prix Schläfli 2019 in Geosciences of the Swiss Academy of Sciences (SCNAT), consisting of Dr This Rutishauser (kontextlabor.ch), Dr Charles Fierz (SLF Davos), and Dr Ulrich Krieger (ETH Zürich) has reviewed twelve applications and decided to award the prize to Dr Julie G. Zähringer for her publication entitled 'Remote sensing combined with social-ecological data: The importance of diverse land uses for ecosystem service provision in north-eastern Madagascar'.

The board of the Platform Geosciences has unanimously approved the decision to award the Prix Schläfli 2019 to Dr Julie G. Zähringer. She presents a very innovative study that links remotely sensed land cover and land use change data from northeastern Madagascar with human demands for ecosystem services from that landscape that were quantified via regional-level household surveys.

Dr Zähringer's study is an excellent example of the breadth of geographical research within the geosciences, which extends the focus beyond the purely geophysical and biogeographic aspects into the socio-economic relevance of land use aspects in smallholder livelihoods in Madagascar. The traditional shifting cultivation of the landscape that leaves agriculturally used fields fallow for four to five years, is more and more transformed to rice production systems, which represents a substantial intensification of land use, and thus an increase in pressure imposed on traditional ecosystem services obtained from fallowlands and forests. In absence of job opportunities outside the agricultural sector the family lands are becoming more and more split up as the population grows. This intensification from mixed shifting cultivation towards irrigated rice production also increases the need for draught animals, zebu cattle, that in turn require additional pasturelands, whereas fallows and the ecosystem services they provide are virtually disappearing from the landscape. At the same time, intensification leads to a higher vulnerability of the hill rice production systems to weeds, animal pests, decreased land availability, and crop damages through cyclones, thereby affecting the overall stability of the production systems in this landscape, which is considered a global biodiversity hotspot.

The strength of Dr Zähringer's study is not only the linkage between environmental and socio-economic data, but that she considers bundles of ecosystem services to fully account for the feedbacks among the ecosystem services in a bundle in response to changes in land use practices. This allowed her and her co-authors to assess the benefits and trade-offs related to land use changes for the local population, which is essential to find a balance between conservation of the biodiversity-rich forests and the provision of other ecosystem service benefits to land users.

Dr Zähringer obtained her M.Sc. in environmental sciences from ETH Zürich and was awarded her Ph.D. degree by the University of Bern where she was affiliated with the Centre for Development and Environment (CDE). She is now a habilitation track post-doctoral researcher at CDE responsible for the SNF-funded r4d project on 'Managing telecoupled landscapes'. The paper for which Julie G. Zähringer is awarded the Prix Schläfli was supervised by Prof. Dr Hans Hurni, Prof. Dr Peter Messerli, and Dr Gudrun Schwilch.

Prof. Dr Werner Eugster, president of the Platform Geosciences of the Swiss Academy of Sciences

Award Ceremony, 22 November 2019 during the Swiss Geoscience Meeting in Fribourg

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