

# Stratigraphy, the measurement of geological time in the 21st century

A symposium in honour of the 85th birthday of Rudolf Trümpy

During the 4th Swiss Geoscience Meeting, held in Bern in November 2006 a Symposium on “Stratigraphy, the measurement of time in the 21st century” in honour of Rudolf Trümpy was organized. The celebration of the 85th birthday of Rudolf Trümpy, Professor emeritus at ETH Zürich, provided an opportunity to discuss the importance of stratigraphy in geological research of the 21st century. Earth systems history including climate history and research concerning the co-evolution of life and the physical environment asks for improved time resolution in the geological archives. New methods in stratigraphy, including chemostratigraphy and astrochronology are combined with biostratigraphy, magnetostratigraphy and geochronology in modern earth systems history.

In his introductory remarks to the symposium Rudolf Trümpy looked at the roots of modern stratigraphy in Switzerland. Stratigraphy was long considered as an auxiliary science for alpine tectonics and quaternary geology was not considered as a real geological science. New stratigraphic tools were developed in the second part of the 20th century and the combination of biostratigraphy with the “new stratigraphies” offered the opportunity to move from a rather static natural history to modern earth systems history.

A broad spectrum of new stratigraphic tools was presented in 14 presentations. Five of the talks are presented in the following papers. In addition to the papers published in this volume of the Swiss Journal of Geosciences papers on aspects of biostratigraphy, cyclostratigraphy and radioisotopic methods and on chemostratigraphy were presented. The presentations have shown that only a combination of biostratigraphic methods with new stratigraphic tools will provide the data for increasing time resolution of our geological archives.

Lithostratigraphy is an exception in the stratigraphic methods, because it forms the materially defined base of all stratigraphic research, independent of its age, its genetic history or its paleoenvironmental habitat. The age (or ages) of a lithos-

trigraphic unit must be defined with the help of a combination of all the other stratigraphies, be it in relative age sequences or in well-defined “absolute” ages.

The invited Editors: Helmut Weissert und Hanspeter Funk

Presentations at the Trümpy-Symposium with no follow-up paper in the Swiss Journal of Geosciences:

Anselmetti F., Schnellmann M., Strasser M., & Thévenon F.: Environmental and human impact from prehistoric to modern times: The Lake Lucerne event stratigraphy.

Schlüchter C.: Quaternary Times – Measuring, Precision, Understanding.

Nio S., van der Zwan K., Hilgen F. & Gootjes A.: Climate stratigraphy as a new approach in nearsynchronous correlation and estimation of geological time – insights from the subsurface and its application to outcrops.

Weissert H. Stable carbon isotope composition of marine carbonates – fingerprint of carbon cycling through geological time and a powerful tool in stratigraphy.

Schaltegger U.: Precise and accurate intercalibration of biostratigraphic and radioisotopic timescales.

Zahno C., Akçar N., Yavuz V., Ivy-Ochs S., Kubik P. W., Vardar M. & Schlüchter C.: Surface exposure dating of Quaternary palaeoglacial records from Anatolia

Akçar N., Müller-Beck H., Ivy-Ochs S., Kubik P.W. & Schlüchter, C.: Application of in-situ produced terrestrial cosmogenic nuclides to archaeology: A case study from Cuba

Di Nicola L., Baroni C., Salvatore M.C., Strasky S., Wieler R., Akçar N., Graf A., Ivy-Ochs S., Kubik P.W. & Schlüchter C.: Exposure history of pre-LGM glacial drifts in Terra Nova Bay: field work and first results Italian Antarctic expeditions.