Volcanism in S. China at the Permo-Triassic boundary

Contact person: Prof. Urs Schaltegger

Context

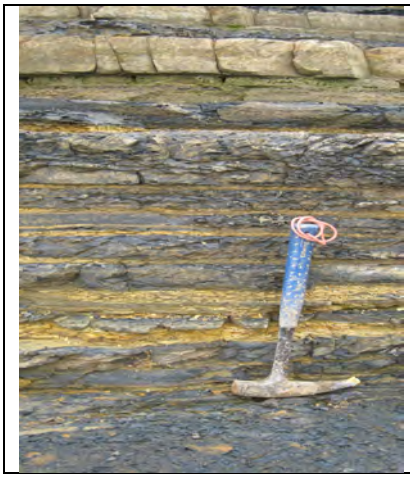
The Nanpanjiang Basin in South China has an exceptionally expanded sedimentary record ranging from the upper Permian into early Late Triassic strata. These sedimentary sequences are continuously studied to obtain a highly precise timescale across the Permian-Triassic Boundary mass extinction and during the Late Permian and Early Triassic climatic, environmental and biotic disturbances. The high-precision ages are obtained by isotope-dilution TIMS U-Pb age determinations on zircon in interbedded volcanic ashes. Claims for a derivation of these ashes from the Siberian Large Igneous provinces have been made in the scientific literature. The goal of this work is to establish the origin of these ashes, presumably derived from the Lang Song volcanic arc at the Chinese-Vietnamese boundary. This study is a collaborative work with the research group of Prof. H. Bucher, Univ. of Zürich.

Objectives and Methods

The planned work will start on a collection of mafic, intermediate and felsic volcanic rock samples that have been collected during fieldwork of the Zürich-Geneva Triassic research group in the last years. Volcanic rocks will be studied through chemical analyses of whole-rock powders, aimed at reconstruction the geodynamic context of this arc. Direct comparison with the well-studied ash beds will be possible through laser ablation U-Pb age determinations, as well as chemical and Hf isotopic analyses on volcanic zircon, and trace element analyses in apatite.

Literature

Baresel B. et al. (2015) Combining high-precision geochronology with accessory mineral chemistry: zircon and apatite from volcanic ashes at the Permian-Triassic boundary. Goldschmidt Conference 2015, Prague, 16-21. 8. 2015; Ovtcharova M. et al. (2015) Developing a strategy for accurate definition of a geological boundary through radio-isotopic and biochronological dating: the Early-Middle Triassic boundary (South China). *Earth Sci. Rev.* 146, 65-76; Faure M, et al. Triassic tectonics of the southern margin of the South China Block. *C. R. Geoscience* (2015), http://dx.doi.org/10.1016/j.crte.2015.06.012



Websites to visit :

http://cms.unige.ch/sciences/terre/research/Groups/isotope_geology/isotope%20group.php

http://cms.unige.ch/sciences/terre/people/personal_pages/UrsSchaltegger/UrsSchaltegger

http://www.pim.uzh.ch/forschung/index.php?region=366-85

Choice of orientation and modules:

Orientation GATO (Geochemistry, Alpine tectonics and Ore Deposits); Modules: Isotope Geochemistry, Analytical Toolbox, Magmatic Petrology.