



## **The Khoy ophiolite: new field observations, geochemistry and geochronology**

Anna Lechmann (1), Jean-Pierre Burg (1), Ali Mohammadi (1), and Mohammad Faridi (2)

(1) Geological Institute, ETH Zurich, Zurich, Switzerland (anna.lechmann@erdw.ethz.ch), (2) Geological Survey of Iran, Northwestern Regional Office, Tabriz, Iran

The tectonic assemblage at the junction of the Bitlis-Zagros and Izmir-Ankara-Erzincan suture zones is exposed in the region of the Khoy Ophiolitic Complex, in the Azerbaijan Province of NW Iran.

We present new petrography, major and trace element analyses, LA-ICP-MS U-Pb zircon ages and Sr-Nd-Pb isotope data of mantle and crustal suites together with field observations and stratigraphic ages obtained from foraminifera-bearing sediments.

Ultramafic rocks crop out as mappable (km-scale) continuous units with fault bounded contacts to neighbouring lithologies and as blocks (m-scale) within an olistostrome. They vary from fresh lherzolite, harzburgite and dunite tectonites with primary mantle structures to completely serpentized and metasomatized (with metamorphic olivine) samples. Rodingite dikes with MORB-REE signatures are common. Gabbros, also with MORB signature, occur only in small volumes. Pillow basalts have either a MORB or a calc-alkaline signature depending on sample location. First results show that the Khoy Ophiolitic Complex formed during the Jurassic (152-159 Ma) and came in a supra-subduction position, with calc-alkaline magmatism showing negative Nb-Ta and Ti anomalies, in Albian (105-109 Ma) times. Heavy minerals including Cr-spinel and serpentine within the turbidites of the region indicate that the ophiolites were being eroded as early as the Late Cretaceous. An Early Miocene olistostrome, containing blocks of the ophiolitic sequences unconformably covers the ophiolitic complex and the Late-Cretaceous to Eocene turbiditic sequences. A tuff layer dated at 43 Ma within a fine-grained and thin-bedded sandstone block within the olistostrome witnesses continuing volcanic activity in Eocene times.

The Khoy Ophiolite compares well with the Inner Zagros and North Makran ophiolites, recording Jurassic extension in the Iranian continental margin followed by Late Cretaceous subduction.

This work is supported by SNF Research Grant (project 200021\_153124/1).