
Data Repository

SUPPLEMENTARY FILE DR1. ANALYTICAL METHODS

TABLE DR1. Mineral Compositions For Blueschist and Mafic Schist From the type 2 melange in the Laohushan Complex, North Qilian Orogenic Belt

TABLE DR2. LA-ICPMS Zircon U-Pb ages For Mudstone, Mica-quartz Schist, Quartz Schist And Sandstone From the Laohushan Complex, North Qilian Orogenic Belt

TABLE DR3. Summary of the age data on ophiolites, magmatic and metamorphic rocks in the North Qilian Orogenic Belt
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Electron Probe Microanalysis (EPMA)

Mineral major compositions were analyzed using a JEOL JXA-8230 electron microprobe at the Center for Global Tectonics, School of Earth Sciences, China University of Geosciences (CUG), Wuhan. Analytical conditions for each spot were 15 kV accelerating voltage, 20 nA beam current with 1–5 μm beam diameter. The background counting time was 5s and the routine analyses were obtained with counting time of 10–20 s. The analyzed data were corrected online using the ZAF correction procedure. Natural and synthetic minerals from the SPI company served as standards. Analytical errors were less than 2%.

Zircon U–Pb dating

Before zircon U-Pb dating, the rock samples were crushed and zircon grains were separated by magnetic and heavy liquid methods. Zircons with good crystal shapes were selected by handpicking under a binocular microscope and the selected zircons were mounted in the epoxy resin and polished to half of their thickness. Transmitted and reflected light photomicrographs were taken under the microscope, and cathodoluminescence (CL) images were taken at the State Key Laboratory of Geological Progress and Mineral Researches (GPMR), China University of Geosciences (CUG), Wuhan using a Gatan Mono CL4+ instrument installed on a Quanta 450 FEG scanning electron microscope (SEM).

LA–ICPMS zircon U–Pb analyses were conducted at the GPMR, CUG, Wuhan and the John de Laeter Centre, Curtin University, Australia by an instrument of Geo-Las 2005 laser ablation system, coupled with an Agilent 7500a ICP–MS instrument and a Resonetics S-155-LR 193 nm excimer laser ablation system coupled to an Agilent 7700x quadrupole mass spectrometer, respectively. The ablation spot size for Geo-Las 2005 laser ablation system is 32 μm and for the S-155-LR laser ablation system is 30 μm. Detailed operating conditions are the same as described in Liu et al. (2008) and Kylander-Clark et al. (2013). Each analysis conducted at the GPMR, CUG, Wuhan includes ~20–30 s (gas blank) background acquisition and 50s data acquisition from the sample. Zircon 91500 was used as external standard for U–Pb dating, and was analyzed twice every 5 analyses. National Institute of Standards and Technology SRM 610 and zircon standard GJ-1 were measured twice every 20 analyses as the external standard for concentration calculation and unknown, respectively. Analyses of unknowns conducted using the Agilent 7700x quadrupole mass spectrometer were bracketed with reference materials every ten unknown analyses, which include zircon 91500, OGC, GJ-1 and PLE. Standard Off-line selection and integration of background and analyte signals, and time-drift correction and quantitative calibration for trace element analyses and U–Pb dating were performed by ICPMSDataCal (Liu et al., 2008). Concordia diagrams and weighted mean age calculations were made using Isoplot/Ex version 3.0 (Ludwig, 2003).
REFERENCES CITED


