

Tectonic formation and Palaeozoic evolution of the Gorny-Altai – Altai-Mongolia suture zones, revealed by zircon LA-ICP-MS U/Pb geochronology

Glorie, S.^{a*}, De Grave, J.^a, Zhimulev, F.^b, Buslov, M.M.^b, Izmer, A.^c, Vandoorne, W.^a,
Ryabinin, A.^b, Elburg, M.A.^a, Van den haute, P.^a

^a MINPET Group, Dept. Geology & Soil Science, Ghent University, 281-S8, Krijgslaan, B-9000, Ghent, Belgium

^b Institute of Geology & Mineralogy, SBRAS, 3 prosp. Akad. Koptyuga, Novosibirsk, 630090, Russia

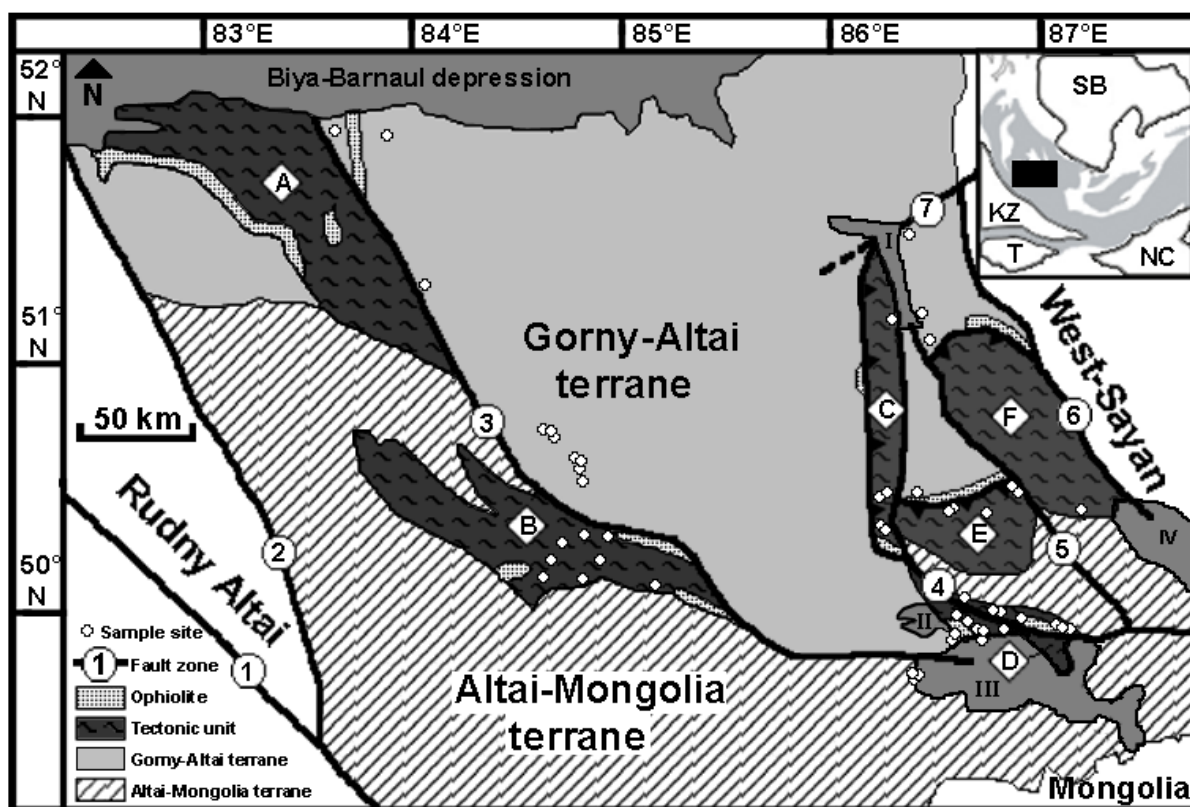
^c Dept. of Analytical Chemistry, Ghent University, Krijgslaan 281-S12, 9000 Ghent, Belgium

* Corresponding author: E-mail: Stijn.Glorie@Ugent.be Tel: +32 9 264 4568 Fax: +32 9 264 4984

The Altai Mountain Belt (AMB) is located between Siberia and Kazakhstan and forms a complex collage of tectonic units, bounded by suture zones. During the Palaeozoic, Gondwana-derived terranes and subduction-accretion complexes collided progressively with the Siberian Craton. The Late-Palaeozoic final closure of the Ob-Zaisan and Ural-Mongolian branches of the Palaeo-Asian Ocean led to the collision of amalgamated Siberia with Kazakhstan and the final formation of Palaeo-Eurasia (Dobretsov et al., 1995; Buslov et al., 2001, 2004). This introduced Late-Palaeozoic reactivation (strike-slip) of pre-existing sutures and contributed to the complexity of the AMB (Buslov et al., 2004).

In order to understand the multi-stage evolution of the Siberian AMB, we performed a detailed geochronological study on these suture zones. More specifically, we focussed on the Charysh-Terekta (CT) and Kurai-Ulagan (KU) ophiolitic suture zones, which are subduction-accretion-collision zones that stitch the Gorny Altai terrane (GA) to the Altai-Mongolia block (AM) (figure). GA forms an accretionary complex, composed of fragments of Caledonian and Hercynian mobile belts. AM is a Gondwana-derived microcontinent, dominated by passive margin, shelf and continental slope sediments (Buslov et al., 2001, 2004; Safonova et al., 2004; Ota et al., 2007).

Zircons were analyzed from several tectonic units, situated along both sutures (figure). Syn- and post-collisional granitoid intrusives were targeted, together with the gabbroid and associated plagiogranitic sequences of the ophiolite units themselves. More than 50 zircon U/Pb ages were obtained and preliminary results point towards a Late Ediacarian – Early Cambrian formation age (550-510 Ma) of the sutures and a Late Silurian – Late Devonian age (420-360 Ma) for the syn- and post-collisional granitoids. These results corroborate well with previously reported tectonic models, which are mainly based on stratigraphy and K/Ar chronology (Buslov et al., 2001, 2004; Safonova et al., 2004; Ota et al., 2007).



Simplified tectonic map of the AMB, showing its major (Pre)-Palaeozoic tectonic units: A = Maralikh-Zasurin, B = Uymon, C = Teletsk, D = Chagan-Uzun, E = Ulagan, F = Erehta; and bounding sutures / faults: 1 = Irtysh, 2 = North-Eastern, 3 = Charysh-Terekta, 4 = Kurai-Ulagan, 5 = Teletsk-Bashkauss, 6 = Shapshal, 7 = West-Sayan. Meso-Cenozoic basins: I = Teletskoye, II = Kurai, III = Chuya, IV = Dzhulukul. Continental blocks (inset): SB = Siberia, KZ = Kazakhstan, T = Tarim, NC = North-China (after Buslov et al., 2004; Ota et al., 2007).

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