

The Geochemical characteristics and Zircon LA- ICP-MS U-Pb dating of Carboniferous- Permian arc-back magmatic rock of Aoyitag area, Westkunjun

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Magmatic rocks of the Carboniferous-Permian Dagbasi Pluton, located in the Aoyitag of north belt of West Kun, Xinjiang, include basic volcanic rocks and intrusive rocks. Petrological, geochronological, and geochemical studies were performed in order to reveal the petrogenesis and geochemical evolution of the magmatic rocks, as well as the tectonic evolution of the West Kun. *In situ* LA-ICP-MS zircon U-Pb dating of the Plagiogranite which, together with gabbro, formed the cumulative texture, yielded the forming age of 313.6 ± 1.6 Ma, which represents the plagiogranite and gabbro intrusive age. Zircon U-Pb age of basalt is 291.6 ± 1.7 Ma which represents the diabase intrusive age. Geochemically, the pillow basalt and gabbros are calc-alkaline series, whereas the diabase and massive basalt are tholeiitic series. All the samples have flat chondrite - normalized REE and PM - normalized trace element patterns depletion of Nb, Ta and mild to moderate positive Eu anomaly. The relative abundance of REE from samples is 4-35 times of chondrite. The content of trace element is 2-10 times of primitive-mantle, and gradually decreasing from basalt, diabase to gabbro. Sr, Nd and Pb isotope composition indicate the magma of gabbro and basalt might origin from DM mixed by EM₁, the magma of diabase from the mixture of asthenosphere and DM, which is remainder that the magma of gabbro and basalt have been distilled. A synthetic study shows that Carboniferous- Permian magmatic rocks of Aoyitag were formed in an back-arc basin setting, and represent the products of this process.

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Provenance of detrital zircons from the late Neoproterozoic to Ordovician sandstones of South China

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An upper Neoproterozoic-Ordovician sedimentary sequence, within the early Silurian orogenic belt (Wuyishan belt) of South China, consists of a thick (>10 km) succession of marine siliciclastic rocks. U-Pb dating by LA-ICP-MS of 860 detrital zircon grains from eight samples from this sequence yielded ages from 3447 ± 36 Ma to 506 ± 8 Ma. All analyzed samples share a common maximum age peak of detrital zircons at 1200–950 Ma, indicative of derivation from a Grenville-aged orogen [1]. Both late Neoproterozoic and Ordovician samples contain a valuable age peak of detrital zircons at 1405–1390 Ma, which is representative of Laurentian mid-continent granite-rhyolite province. Several subordinate age peaks (1605-1557 Ma, 1908–1700 Ma and 2700–2400 Ma) from Cambrian and Ordovician samples, may correspond to Laurentian older Proterozoic and Archean Superior provinces. Contrasting time-equivalent sedimentary sequences [2, 3, 4], zircon populations from South China are similar distinctly to the peri-Laurentia and lack of provenance from Gondwanan provinces. These results imply that South China may have closed to the southeastern margin of Laurentia during the late Neoproterozoic to early Paleozoic and have potential implications for reconstructions of the supercontinent Rodinia.

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