Late Triassic rhyolites and high-Mg andesites in the northern Hohxil area, Songpan-Ganzi terrane

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Except for some Triassic granites, coeval igneous rocks have rarely been reported in the Songpan-Ganzi terrane, which comprises the largest volume of Triassic flysch strata on earth [1]. However, our recent study identified rhyolites and andesites sandwiched in the Triassic strata of the northern Hohxil area, which is located in the northern Songpan-Ganzi terrane near the suture between the Songpan-Ganzi and Kunlun terranes. The volcanic rocks are sodium-rich and calc-alkaline. The rhyolites are strongly peraluminous and have high Sr/Y (41-95) and La/Yb (23-30) ratios, low Y (3.85-5.31 ppm) and Yb (0.38-0.46 ppm) contents, and negligible to positive Eu and Sr anormalies, similar to slab-derived adakites. The andesites are characterized by high MgO (5.83-8.88 wt.%) or Mg# (64-72), Cr (272-531 ppm) and Ni (67-147 ppm) values, similar to sanukitoids in the Cenozoic arc of southeastern Japan [2]. Both the rhyolites and andesites have low εNd(t) (-7.57~-9.59) and high $(^{86}Sr/^{87}Sr)_i$ (0.7086-0.7106) values. Our new age data indicate that they were generated during the Late Triassic (210-212 Ma). Taking into account the tectonic setting of Triassic sedimentary and magmatic rocks in central-northern Tibet [1, 3], we suggest that the northern Hohxil Triassic rhyolites were derived by partial melting of sediments from northward-subducted Songpan-Ganzi ocean during the Triassic, and the high-Mg andesites were derived from the interaction between sediment-derived melts and mantle peridotites. Our study supports the Triassic remnant ocean model for the origin of the Songpan-Ganzi oceanic basin [1].

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The discovery of fluorocarbonate mineral in the Quyang bauxite deposit, Guangxi province, China

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The bauxite deposits in China are regularly with high REE content. The popular opinion in the literature about the occurrence of the REE is that they are adsorbed mainly on the surface of clay or diaspore minerals as ion state, and the probability of the existence of REE minerals is small. Yet, there are little evidences supporting the opinions. We study the Quyang strataform bauxite deposit in the Guangxi province and find one type REE mineral in the ores. The orebody with 2-5m thickness is strataform and conformable with the underlying in the Middle Permian Maokou formation, and overlaid by the limestone in the Upper Permian series. Comparing with the wallrocks, the ores are with higher REE content and obvious positive Ce anomaly. The discovered REE minerals are determined by the EPMA. The average contents of the compound compositions in the mineral includes CaO 7.69%, Nd_2O_3 7.28%, Ce_2O_3 40.57%, La_2O_3 2.21%. The average RE_2O_3/CaO ratio (=17.53) of the minerals suggests affinity for the mineral parisite which has the highest theoretical RE_2O_3/CaO ratio (5.7; rontgenite = 4.4; synchysite = 2.9) within the group. A REE substitution for Ca, in the lattice of the mineral, may account for the higher value of the ratio in the aggregates relative to the theoretical one. In the bauxitic fluorocarbonate Ce dominates among the REE inducing a large positive Ce-anomaly with a Ce/Ce* index ranging from 3.91 to 10.53 and averaging at 6.75. It is suggested that the existence REE mineral is responsible for the high REE content and positive Ce anomaly in the ores.