

# Geochemistry of Cretaceous volcanic-intrusive magmatism in western Guangdong and its geological significance

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Late Mesozoic intermediate-acidic volcanic rocks are widespread in the coastal area of southeast China, while they have little distribution inland. Systematic zircon LA-ICPMS U-Pb dating reveals that Cretaceous volcanic-intrusive activities developed in western Guangdong (inland). Representative volcanic rocks, i. e. Maanshan and Zhougongding rhyodacites, have zircon U-Pb isotopic ages of  $100\pm 1$  Ma, and the intrusive ones including the Deqing monzonitic granite body and the Xinghua granodiorite body in the Shidong complex, as well as the Tiaocun granodiorite body in the Guangping complex yield ages of  $99\pm 2$  Ma, ca. 100 Ma, and  $104\pm 3$  Ma respectively. The biotite-granites of the Shidong complex main body ( $461\pm 35$  Ma) and that of the Guangping complex ( $444\pm 6$  Ma) are Caledonian.

Both Cretaceous volcanic-intrusive rocks and Caledonian intrusive rocks are characterized by high-K calc-alkali features, enrichment in Rb, Th, Ce, Zr, Hf, Sm, depletion in Ba, Nb, Ta, P, Ti, and weak REE tetrad effects. But there are some differences in the negative Eu anomalies with Caledonian intrusive rocks showing the most distinct one, and Cretaceous volcanic rocks having the least distinct. Studies of Sr-Nd isotopes show that the Cretaceous rhyodacite, granitoids, and the Caledonian biotite granite all have high ( $^{87}\text{Sr}/^{86}\text{Sr}$ )<sub>i</sub> values (0.7105 - 0.7518), low  $\epsilon\text{Nd}(t)$  values (-7.23 to -11.39), and two-stage Nd modal ages ( $T_{2DM}$ ) ranging from 1.6 to 2.0 Ga, which indicate that they may all derive from the Proterozoic crust basement by partial melting processes.

The petrochemical features of Cretaceous volcanic-intrusive magmatism in western Guangdong are similar to those of the Late Mesozoic volcanic-intrusive magmatisms in the coastal area of SE China. Their occurrences are related with the important lithospheric extension event in southeast China at ca. 100 Ma. This study also enable us to extend the "volcanic line" southwestward to western Guangdong.