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Formation and Evolution of the South Shetland Islands Based on Volcanic Geochronology and Geochemistry

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The analyses of rock samples from King George, Nelson, Livingston, Deception and other Islands indicate most islands consisting of the South Shetland are composed of volcanic rocks as basalt, trachyte, trachybasalt and trachyandesite. The volcanism can be roughly divided into four main episodes from the late Cretaceous to the present based on $^{40}Ar/^{39}Ar$ and K-Ar dating: 96.7-91. 2 Ma, 60.95-55.0 Ma, 43-35.3Ma and Quaternary, which reveal that most volcanic eruptions occurred in the early Tertiary, young volcanic eruption mainly occurred in Deception Island and the islands had been formed since the late Cretaceous. Magma of volcanic eruptions gradually evolved from basic to acid with the lapse of time. Regardless of any kind of magma they have similar isotope ratios: $^{87}Sr/^{86}Sr$; 0.703299-0.703988, $^{143}Nd/^{144}Nd$; 0.512835-0.513799, it is suggestive of that they originated from the same source of mantle like Hawaii magma source.