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# Major, trace element, and Sr, Nd and Pb isotope studies of Cenozoic basalts from the South China Sea: origin and significance

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Major, trace element, and Sr–Nd–Pb isotopic compositions of Cenozoic alkali basalts from the South China Sea (SCS) are measured to provide an insight into the nature of their mantle sources and processes. Newly obtained whole rock K-Ar ages of basaltic rocks dredged from the SCS basin vary from 3.8Ma to 7.9Ma, which suggest that intraplate volcanism after the cessation of spreading of the SCS and is comparable to simultaneous volcanism in adjacent regions around the SCS, i.e., Leiqiong peninsula, Northern margin of the SCS, Indochina block, and so on. Major element and trace element geochemical characteristics of these basaltic rocks show that they belong to alkali basalt magma series, and are similar to OIB-type basalt. Sr-Nd-Pb isotopic data of these basaltic rocks strongly suggest a mixing of EM2 component and a depleted mantle end-member (DMM). The latest geophysical data show that there may have a mantle plume originated from the base of lower mantle or core/mantle boundary near the Hainan Island, and EM2 may be not originated from subcontinental lithospheric mantle (SCLM), but from this mantle plume. Sr-Nd-Pb isotopic data also suggest a similar mantle origin for Cenozoic basalts from the SCS and its adjacent area. Pb isotopic characteristics show that there exists a Dupal anomaly in the SCS, which is consistent with previous results. Combined with a newly found Dupal anomaly at Gakkel ridge in Arctic Ocean, it implies that Dupal anomaly is not only limited to

South Hemisphere.