Figure F1. Site map, northern continental margin of South China Sea (modified from Larsen et al., 2018a). Red stars = Expedition 368 sites on OMH, yellow stars = Expedition 367/368/368X sites in COT, squares = Ocean Drilling Program Leg 184 and Expedition 349 sites.

Figure F2. A, B. Whole-rock classification diagrams after Winchester and Floyd (1977).

Figure F3. Tectonic discrimination diagrams. A. After Wood (1980). NMORB = normal MORB, EMORB = enriched MORB, WIPB = within plate basalt. B. After Pearce and Cann (1973).

Figure F4. Multielement trace element diagrams of Site U1504 greenschists normalized to primitive mantle (McDonough and Sun, 1995) compared to (A, B) average depleted (D), normal (N), and enriched (E) MORB (Gale et al., 2013) and OIB-type oceanic basalts exemplified by Tristan da Cunha (TdC; Willbold and Stracke, 2006); (C, D) postspreading Miocene intraplate alkali basalts from Site U1431 (Zhang et al., 2017, 2018); and (D, E) Miocene–Pliocene young SCS seamounts (Yan et al., 2008).

Figure F5. A–G. Downhole trends (starting at top of Holes U1504A and U1504B) of select incompatible trace elements and trace element ratios in Site U1504 metamorphic basement. Average MORB from Gale et al. (2013). OIB exemplified by Tristan da Cunha average from Willbold and Stracke (2006).

Figure F6. Multielement trace element diagram of greenschists normalized to primitive mantle from McDonough and Sun (1995), Subunit 1a in Holes U1504A (red) and U1504B (blue) and Subunit 1b in Hole U1504B (green).

Figure F7. (A) $^{206}Pb/^{204}Pb$ vs. $^{207}Pb/^{204}Pb$ and (B) $^{206}Pb/^{204}Pb$ vs. $^{208}Pb/^{204}Pb$ of Site U1504 greenschists compared to global MORB and OIB (Willbold and Stracke, 2010), MORB-type Miocene basalts and younger alkaline basalts from Site U1431 in the SCS (Zhang et al., 2017, 2018), and Miocene–Pliocene young SCS seamounts (Yan et al., 2008). NHRL = Northern Hemisphere reference line (Dupré and Allègre, 1983). MORB/OIB at 329 Ma (dashed area) calculated with U, Th, and Pb abundances for average depleted MORB mantle from Workman and Hart (2005) for MORB and for primitive mantle from McDonough and Sun (1995) for OIB. Arrows = direction of ingrowth from radioactive ^{235}U (^{207}Pb), ^{238}U (^{206}Pb), and ^{232}Th (^{208}Pb).

Figure F8. Pb isotope variations in metamorphic subunits, Site U1504 greenschists. Left: Downhole variation of $^{207}Pb/^{204}Pb$. Right: $^{206}Pb/^{204}Pb$ vs. $^{207}Pb/^{204}Pb$ for measured and initial Pb isotope ratios calculated with age of 329 ± 2 Ma. NHRL = Northern Hemisphere reference line.

Figure F9. Inverse $^{206}Pb/^{204}Pb$ vs. $^{207}Pb/^{204}Pb$ diagram from IsoplotR (Vermeesch, 2018), Site U1504. Black arrows point to sample (small black dots; errors are too small to be visible) on isochron line. Calculation uses analytical uncertainty of 2 standard error (SE) abs, error correlation (ρ) of $^{206}Pb/^{204}Pb$ and $^{207}Pb/^{204}Pb$ (Ludwig, 1988), $^{238}U/^{235}U$ = 137.818 ± 0.0225, ^{238}U decay constant = 0.000155125 ± 0.000000083, and ^{235}U decay constant = 0.00098485 ± 0.00000067. Line 1: Isochron age and its estimated uncertainty (σ), studentized 100(1-α)% confidence interval for isochron age using appropriate number of degrees of freedom, and approximate 100(1 − α)% confidence interval for isochron age with overdispersion, calculated as $z = y\sqrt{MSWD}$. Line 2: Initial $^{207}Pb/^{204}Pb$ obtained by linear regression and its estimated uncertainty (σ), studentized 100(1 − α)% confidence interval for initial $^{207}Pb/^{204}Pb$ using appropriate number of degrees of freedom, approximate 100(1 − α)% confidence interval for initial $^{207}Pb/^{204}Pb$ with overdispersion, calculated as $z = y\sqrt{MSWD}$. Line 3: MSWD for linear fit, chi-square p-value ($p[\chi^2]$) for the fit (0.000000000000074).

Figure F10. $^{176}Hf/^{177}Hf$ vs. $^{143}Nd/^{144}Nd$ of Site U1504 greenschists compared to global MORB (Gale et al., 2013) and OIB (Willbold and Stracke, 2010), MORB-type Miocene basalts and younger alkaline basalts from Site U1431 in the SCS (Zhang et al., 2017, 2018), and Miocene–Pliocene young SCS seamounts (Yan et al., 2008, 2019). Mantle array after Vervoort et al. (1999). MORB/OIB at 329 Ma (dashed area) calculated with Sm, Nd, Lu and Hf abundances for average depleted MORB mantle from Workman and Hart (2005) for MORB, and for primitive mantle from McDonough and Sun (1995) for OIB. Pictogram-arrows indicating direction of ingrowth from radioactive ^{147}Sm (^{143}Nd) and ^{176}Lu (^{176}Hf).