



Geochemical Study of Mid Atlantic Ridge Peridotites at 15°N (ODP Site 1272 and ODP Site 1274)

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During ODP Leg 209, eight sites were drilled along the Mid-Atlantic Ridge from 14°43' to 15°44' N, allowing recovery of ~ 354 meters of residual mantle peridotite intruded by gabbroic rocks (up to 25% of recovered samples). We present here the results of a whole rock major and trace element study of 28 peridotites selected among the less altered samples at Site 1272 (South of the 15°20 fault zone) and Site 1274 (North of the 15°20 fault zone). Trace element data were determined by ICP-MS (Montpellier, France). Site 1272 and Site 1274 peridotites are mainly harzburgites (clinopyroxene –cpx– < 5%) with a few dunites. Harzburgites are characterized by highly variable orthopyroxene contents (10-30 vol.%). All studied peridotites have been modified by alteration, predominantly to lizardite (>70% serpentinisation; loss on ignition >10 wt%). Yet, except for alkali-earth elements and U, the studied peridotites major and trace element compositions show no evidence of compositional changes during alteration. Sites 1272 and 1274 peridotites are characterized by high Mg# ($100 \times \text{gmolar Mg}/[\text{Mg} + \text{Fe}]$) (90.3%– 92.2%) and low Al₂O₃ contents (<0.9%). Site 1272 and Site 1274 peridotites display flat to light Rare Earth Element (REE) depleted patterns (harzburgites : Ce_N <0.015; Yb_N <0.26 – dunites : Ce_N <0.001; Yb_N <0.08-_N: chondrite normalised). The most depleted harzburgites are observed at Site 1272 (Ce_N <0.003; Yb_N: 0.045-0.1). REE allow distinguishing two harzburgites groups at Site 1274. The first one has patterns similar to those of Site 1272 peridotites yet with slightly higher REE content (Ce_N: 0.0015-0.015; Yb_N: 0.14-0.26). The second has on average lower heavy REE contents (Yb_N: 0.1-0.18) and more variable light REE contents (Ce_N: <0.002-0.05). These samples are found at the bottom of Hole 1274A where cpx has the highest Na- and Ti contents. Site 1272 and Site 1274 peridotites represent the most refractory peridotites yet sampled at a slow-spreading ridge.