

Water contents in the quenched glass rim of submarine volcanic rocks in the southern Mariana back arc

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Water contents and δD of the quenched glass rim of submarine arc and back arc volcanic rocks taken from the southern Mariana back arc area was determined using FT-IR and thermal decrepitation. Water contents of the arc rocks range from 0.7 to 1.8 wt percent and those of the back arc rocks from 1.1 to 2.0 wt percent, which are higher than those of the north Fiji Basin and Middle Mariana Trough rocks. δD values of the back arc rocks range within -47 and -37 permil (SMOW), which are heavier than those of the other back arc basins. The higher water contents and heavier δD values of those rocks indicate a possibility of direct seawater penetration into the magma.