

## Re-Os-PGE systematics of the Izu-Bonin-Mariana arc-basin system

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IODP EXPEDITION 351 SCIENCE PARTY

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International Ocean Discovery Program (IODP) Expedition 351 (June-July 2014) cored 1461 m of arc-derived volcanoclastic sediments and 150 m of igneous basement rocks at Site U1438 in the Amami Sankaku Basin (ASB), west of the Kyushu-Palau-Ridge (KPR). The recovered basaltic lavas at the bottom of Site U1438E represent the proto-arc basement of the now active Izu-Bonin-Mariana (IBM) arc. In order to understand the magmatic evolution of the IBM arc-backarc system, we analyzed Re-Os isotope ratios and PGE abundances, together with major and trace elements, in proto arc basement samples and compared them with samples from the various drill sites in the Philippine Sea Plate (PSP; DSDP Sites 291-294; 444A, 446A, 450 and ODP Site 1201) and the active Mariana Trough and IBM arc.

Our results reveal that the pre-arc basement is highly depleted, with relatively high MgO (mostly >8 wt%), low SiO<sub>2</sub> (most samples have <50 wt%), high Cr (up to 340 ppm) and Ni (up to 140 ppm) and Ti/V ratios of ~ 20. The pre-arc basement shows CI-normalized patterns with flat HREE and very depleted LREE. In the pre-arc basement at Site U1438, the abundances of Re range from 1268 to 1551 ppt, whereas the abundances of Os are in the range of 17 to 254 ppt. The PGE abundances of Site 1201 (and other PSP sites) are slightly different, with noticeable depletions in Pd and subchondritic Ru/Ir. However, the measured <sup>187</sup>Os/<sup>188</sup>Os ratios in the pre-arc basement at Site U1438 range from 0.157-0.241, i.e. similar to samples of comparable age from PSP Site 1201; that is with measured <sup>187</sup>Os/<sup>188</sup>Os ratios of 0.200-0.228 (the exact ages for both drill cores are yet unknown). We will compare all available datasets from the IBM arc-basin system and will stress the importance of considering the abundances and isotope signatures in the newly recovered IBM arc basement rocks, rather than MORBs, for modelling subduction zone processes and island arc maturation.