Quaternary Magma genesis of Kyushu arc, SW Japan; infered from along arc geochemical variations

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It belived that the origin of the magma produced adakite is genrated by the slab melting [1]. However, the detailed genesis of adakite is still under the issue [2], so the accumulation of the study for adakite is considered to be important. Kyushu arc, SW Japan, is suitable field to do this, because Quaternary volcanoes are distributed along the arc, and both of the magamas, which could be related to slab melting and slab fluid, are observed. Therefore, the major, trace element and Sr, Nd and Pb isotope data of Quaternary magmas from northern Kyushu, SW Japan, were investigated. The along arc variation of decreasing Sr/Y from north (Sr/Y =30–100; Himeshima) to south (Sr/Y =6–24; Aso) is observed. Major and trace element compositions of magmas from Quaternary volcanoes of Himeshima, Futagoyama, Yufu-Tsurumi and Kuju are within the ranges, which can be linked to partial melting of the subducted slab [e.g. 1, 2]. The Sr-Nd-Pb isotope ratios of the magmas lie principally on the mixing curves between MORB and oceanic sediments on the Philippine Sea plate (PSP), or Shikoku Basin basalt and oceanic sediments on the PSP, with minor deviation being attributable to shallow crustal contamination. The decrease of $^{87}Sr/^{86}Sr$ with increasing Sr/Y and SiO^2 argues against a genetic link by fractional crystallization between adakites and basaltic magmas. On the basis of these observations, we conclude that high Sr/Y ratio of Quaternary magmas of northern Kyushu reflects partial melting of the subducted PSP. Beneath the Aso volcano, the boundary of young PSP and Palau-Kyushu ridge might exist, indicating Palau-Kyushu ridge presumably runs beneath Aso which also coincides with the southwestern end of the SW Japan arc.

[1] Defant & Drummond (1990) *Nature*, **347**, 662–665. [2] Castillo (2006) *Chinese Science Bulletin*, **51**, 257-268.