Effect of slab melting for the production of EMs isotopic signature

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Adakite, named after magmas from Adak Island in the Aleutian arc has attracted attention as modern geochemical analogues of tonalite–trondhjemite–granodiorite suite, which exhibits geochemical characteristics indicating high-pressure melting of basaltic source rocks. As adakite is typically generated in young subduction zones where high geothermal gradients can be attained in the slab, previous studies have shown that adakite magmas are produced by slab melting. In addition, as sediments have lower solidus temperature than the oceanic basaltic crusts, the sediments could melt before or during the adakite productions. Thus, both subducted oceanic basaltic crust and sediments could have melted beneath hot subduction zones. As melts can effectively remove incompatible elements from slab, melting of oceanic basaltic crust and sediments would profoundly affect how the mantle heterogeneity has evolved throughout the Earth's history. The SW Japan Arc is known to host adakites on the Quaternary volcanic front and the Miocene forearc volcanic rocks produced by melting of subducted sediment. Hence, the SW Japan arc should be a suitable example to evaluate the role of melting of oceanic crust and sediments. In this presentation, we will show new isotopic and trace element data of adakites from Aono volcanic group in the SW Japan, and discuss behavior of the subducted oceanic basaltic crust and sediments at hot subduction zone.