

## **Eocene granites in South Sakhalin, Russian Far East: Correlation with the Hokkaido Island**

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The granitic rocks from South Sakhalin provide clues to examine the crustal evolution of its composite accretionary terranes and correlation with that of the Hokkaido Island. Two mid-Eocene granitic plutons in South Sakhalin show markedly different geochemical characteristics: (1) the Okhotsk granites that intruded into the Ozersk terrane from 44 to 42 Ma are ferroan and alkali-calcic, and have transitional I- and A-type features, and (2) the Aniva granites that intruded into the Tonin-Aniva terrane at 41-40 Ma are peraluminous, magnesian and calc-alkaline, typical of S-type features. The Sr-Nd-Hf isotopic ratios of both plutons suggest a common magma origin from partial melting of mixed sources with a dominant juvenile mantle component and a subordinate crustal component of the accretionary complexes. They have  $\epsilon_{\text{Nd}}(T)$  values of +3.7 to +0.5 and initial  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios of 0.7046 to 0.7055. The Hf isotopic data of most zircons show  $\epsilon_{\text{Hf}}(T)$  values from +16 to +5. We argue that the I/A-type Okhotsk and S-type Aniva granites can be correlated to the mid-Eocene granites in Hokkaido with similar isotopic signatures. We attribute the granitic magmatism (44-40 Ma) in South Sakhalin to a tectonic transition from supra-subduction to strike-slip and post-accretionary processes in the junction of the Asian continent, the Pacific plate, and the Sea of Okhotsk plate.