[EE] Evening Poster | S (Solid Earth Sciences) | S-MP Mineralogy & Petrology

[S-MP35]Antarctica and surrounds in Supercontinent Evolution

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Supercontinent formation and dispersion has been enigmatic in the Earth's history. Eurasia is one such current supercontinent and incredible progress in the understanding of its geological evolution has been achieved in the past decade. Earlier supercontinents in the Earth's history such as Gondwana (0.5 Ga), Rodinia (1.0 Ga), Columbia/Nuna (2.0 Ga), Kenorland (2.5 Ga) and Vaalbara (3.1 Ga), have been the focus of several studies, however limited information on older supercontinents has restricted an understanding of their tectonic evolution. Antarctica and surrounding areas in Gondwana, including southern Africa, Sri Lanka, India, Australia, are key regions for studying several important unsolved issues. In honor of the retirement of Professor Kazuyuki Shiraishi, Director of the National Institute of Polar Research, who developed the pioneering geological and geochronological framework of Antarctica within the Gondwana supercontinent, we invite authors around the world to present new as well as review results on the continental scale crustal processes and tectonic evolution that are associated with supercontinent formation events in Earth's history. The well-studied Eurasia, Pangaea, Rodinia and Gondwana supercontinents are of particular focus. Topics of interest include, but not restricted to, extremes in metamorphism, P-T-d-t evolution, magmatism, and the role of fluids. We hope to provide a platform for scientific discussions that will enlighten our understanding of the physical and chemical processes in the continental crust that records episodes of orogenesis that contributed to the formation and evolution of supercontinents.

[SMP35-P04]Petrology and geochemistry of Middle Proterozoic meta-tonalite in Cape Hinode, Prince Olav Coast, East Antarctica

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Middle Proterozoic meta-tonalite distributes in Cape Hinode, Prince Olav Coast, East Antarctica. Sun et al. (2014) suggested that this meta-tonalite was strongly metamorphosed at granulite-facies. However, the metamorphic condition of Prince Olav Coast is generally achieved up to amphibolite-facies. Additionally, Shiraishi et al. (1995, 2003) referred the intrusive age of the meta-tonalite around 1017 Ma by SHRIMP U-Pb zircon method. It is not corresponding to 550 - 500 Ma that the timing of main igneous and metamorphic activities of Prince Olav Coast. Therefore, the meta-tonalite of Cape Hinode is considered to have unique lithological character in this region. This study investigates the petrological feature of the meta-tonalite in the whole area of Cape Hinode. The geochemical characteristics are also investigated to consider its petrogenesis.

Geochemical compositions of the meta-tonalite, such as higher Al, Na, and Sr, and lower K and Y, in Cape Hinode suggests that the rock is conformable to a typical TTG produced by oceanic crust melting. On the other hand, the mafic rocks included in the meta-tonalite as xenoliths or meta-dikes show a wide variation of mineral assemblage and geochemistry. The most rocks are thought to be basic products on juvenile arc setting because they have almost flat chondrite normalized REEs patterns and negative Nb and Zr and

positive LILEs MORB normalized patterns. However, several mafic rocks indicate a possibility of within plate type component based on the geochemical discriminations. These evidences suggests that the meta-tonalite of Cape Hinode was produced as a portion of a juvenile oceanic arc formed at about one billion years ago.