The Western Rayner Complex – connection between Dronning Maud Land and Enderby Land, East Antarctica

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The Western Rayner Complex is located in the key connection area among three distinct geologic units Archaean Napier Complex to the northeast, Mesoproterozoic Rayner Complex to the southeast and the Neoproterozoic-Cambiran Lützow-Holm Complex to the west. The age of the Western Rayner Complex has been well constrained as 550-520 Ma metamorphism and ~780Ma or c.2500 Ma protoliths (Shiraishi et al., 1997, 2008). The area can be subdivided into the charnockite-dominant western part (Vechernyaya Suite; ~780 Ma) and the mixed protolith eastern part (Forefinger Suite; c.2500 Ma). UHT peak metamorphic conditions and a clockwise P-T trajectory have been estimated for pelitic rocks from Forefinger Point (Harley et al., 1990; Motoyoshi et al., 1995).

According to the recent SHRIMP zircon studies on the neighboring Rayner Complex (Horie et al., 2016) and the geologic field studies (JARE-58; Hokada, Baba, Kamei, Kitano), the Rayner Glacier is considered as the boundary between the ~900 Ma Rayner and the ~500 Ma Western Rayner Complexes. We have investigated high–T metamorphic rocks from 3 nunataks in Enderby land, East Antarctica. Two unnamed nunataks “1702-24-2 Nunatak” and “1702-24-3 Nunatak” are located on both sides across the Rayner Glacier, the inferred boundary between the Rayner Complex and the Western Rayner Complex. Quartzo-feldspathic Bt gneiss and Cpx-Hb-bearing mafic-intermediate gneisses are distributed in 1702-24-2 nunatak. Quartzo-feldspathic Grt-Bt or Bt gneisses and Opx-bearing mafic granulite occur in 1702-24-3 Nunatak. Another outcrop, Point Widdows is located in western part of the Western Rayner Complex, and is predominated by massive quartzo-feldspathic Opx gneiss (charnockite) with local hydration zones. This presentation summarizes the current understanding of the Western Rayner Complex, and the surrounding areas of this part of Antarctica.

References

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