U–Pb zircon geochronology in western part of the Rayner Complex, East Antarctica

KENJI HORIE[1,2]*, TOMOKAZU HOKADA[1,2], YOICHI MOTOYOSHI[1,2], KAZUYUKI SHIRAISHI[1,2], YOSHIKUNI HIROI[3], AND MAMI TAKEHARA[1]

[1] National Institute of Polar Research, 10-3, Midori-cho, Tachikawa 190-8518, Japan (*correspondence: horie.kenji@nipr.ac.jp)

2 SOKENDAI, Midori-cho 10-3, Tachikawa, 190-8518, Japan

3 Department of Earth Sciences, Graduate School of Science, Chiba University, 1-33, Yayoi-cho, Inage-ku, 263-8522, Japan

East Antarctica has been recognized as a critical location within Rodinia, the early Neoproterozoic supercontinent assumed to have assembled along late Mesoproterozoic to early Neoproterozoic mobile belts. The Rayner Complex, East Antarctica is considered to belong to the Circum-Antarctic Mobile Belt which is one of the major pieces of evidence for the Rodinia reconstruction. U–Pb zircon geochronology using SHRIMP IIe was applied to nine metasedimentary samples collected from Mt. Yuzhnaya, Condon Hills, and Mt. Lira in the inland region of the Rayner Complex of western Enderby Land, in order to define the eastern limits of the western Rayner Complex that underwent the Pan-African metamorphism and to evaluate potential source areas to metasedimentary rocks.

Condon Hills and Mt. Lira revealed metamorphic ages of ~894 Ma and ~934 Ma, respectively, which is consistent with previously reported amphibolite- to granulite-facies metamorphism in association with Rayner Structural Episode (RSE). Mt. Yuzhnaya samples affected by the RSE contain the zircon grains rejuvenated during 590–570 Ma, which indicates that the Pan-African reworking, found around western coastal region of the Rayner Complex adjacent to the Lützow-Holm Complex, can be extended up to Mt. Yuzhnaya. On the other hand, the Condon Hills samples include Archean detritus, and the age peaks from 3850 Ma to 2491 Ma are the oldest components in the Rayner Complex of western Enderby Land. There is no evidence of reworked Napier Complex rocks in the studied Rayner samples.