

Geodynamic Evolution of East Antarctica:  
A Key to the East–West Gondwana Connection

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Geodynamic Evolution of East Antarctica:  
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## Preface

International collaboration to study geophysical phenomena in the polar region dates back to 1882, which was designated as the first International Polar Year (IPY). The second IPY was organized 50 years later in 1932. Thereafter, in view of the progress in observation potentiality and scientific demands, the third IPY was arranged 25 years after the second IPY, and it was renamed as the International Geophysical Year (IGY) and ran during the period from July 1957 to December 1958.

Japan commenced its scientific activity in the Antarctic in 1957 as one of the 64 participating nations in IGY, and established 'Syowa Station' on the Ongul Islands, Lützow-Holm Bay in East Antarctica by the 1st Japanese Antarctic Research Expedition (JARE-1) on 29 January 1957. Since then, Japan has been undertaking observation and research projects on various disciplines of natural sciences extending over 50 years in the Antarctic.

Geological survey around Syowa Station, a region where no human being had ever set foot, started from the beginning in 1957 by JARE-1. During the past 50 years, a total number of nearly 100 geologists has joined in JARE to conduct geological surveys in the Lützow-Holm Bay region, Prince Olav Coast, the Yamato Mountains, the Belgica Mountains, the Sør Rondane Mountains, and Enderby Land, in East Antarctica. Despite a paucity of outcrops because of ice cover, difficulty of access and extreme weather, the JARE has successfully revealed vital elements of the geology of East Antarctica, and this led us to the attempt to clarify the origin and evolution of continents and their dynamics in the Earth's history.

Geological correlation of East Antarctica with adjoining continents has been a major topic of discussion among geologists. However, in the early 1990s, JARE succeeded in revolutionizing our understanding of East Antarctic geodynamics by the discovery of a Cambrian mobile belt in Lützow-Holm Bay. A couple of decades after, through this Special Publication, we attempt to compile reviews and new research from localities across East Antarctica, especially from Dronning Maud Land and Enderby Land. Reviews provide extensive bibliographies of results obtained by geologists who participated in the JARE geological activities. Comprehensive geological, petrological

and geochemical studies will potentially form a platform for future research on the geodynamics of amalgamation of Gondwana in the Neoproterozoic to Early Palaeozoic. In addition, the coincidence of Gondwana amalgamation with major global-scale climatic, environmental and biological changes in Late Neoproterozoic to Early Palaeozoic times implies a close connection between large-scale tectonic events and global change, which needs to be confirmed in the future.

The success of geological studies of JARE is indebted to the dedicated logistic support of the crews of icebreakers *Soya*, *Fuji* and *Shirase*. The journey is continuing with the commissioning of a new vessel. The last 50 years of dedicated group work of the Japanese Antarctic Research Expeditions in Antarctica is commendable, in this extreme environment of hazardous weather and travel conditions.

We hope this Special Publication will enthuse the young generation and be a new starting point for the next 50 years research activity on the Antarctic geosciences.



This publication is a part of the Japanese contribution to IPY 2007–2008.

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