

NATIONAL INSTITUTE OF POLAR RESEARCH

ANTARCTIC GEOLOGICAL MAP SERIES

SHEET 3 TEÖYA

Explanatory Text of Geological Map
of
Teöya, Antarctica

Keizo YANAI, Tatsuo TATSUMI, Toru KIKUCHI
and Terumi ISHIKAWA

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Explanatory Text of Geological Map of Teöya, Antarctica

Keizo YANAI*, Tatsuo TATSUMI**, Toru KIKUCHI*** and Terumi ISHIKAWA****

Teöya

The Teöya (islands) are separated from West Ongul Island by the Minami-no-seto Strait to the south, and consist of three main islands divided by narrow channels. Several smaller islands are located around the main islands. The Teöya are geomorphologically characterized by an undulating surface formed by glaciation. Linear precipices controlled by joint system are found at the southern end of the basins in the islands.

The islands, geologically the southern continuation of West Ongul Island (YANAI, TATSUMI and KIKUCHI, 1974), are composed largely of pyroxene gneiss, porphyroblastic gneiss and garnet-biotite gneiss, with hornblende gneiss, metabasite and granitic gneiss of limited distribution. The foliation of the gneisses generally strikes N30–40°W and dips to the east monoclinaly. The raised beach deposits and boulders of Quaternary age are found in some places.

1.1. Pyroxene gneiss (Gp)

Nearly half of the islands is occupied by pyroxene gneiss which is characterized by common occurrence of pyroxenes and brown- or blue grey-color due to colored feldspars and quartz. The rock is generally medium-grained and a homogeneous in structure as a whole. Streaks of mafic minerals are sometimes observed in the rock, representing a weak foliation. The main constituent minerals are clinopyroxene, orthopyroxene, hornblende \pm , plagioclase (An35–40), potassium feldspar and quartz.

1.2. Garnet-biotite gneiss (Ggb)

The central and western parts of Teöya are occupied by garnet-biotite gneiss which occurs concordantly with other gneisses. At the western end of the islands, the gneiss grades into the pyroxene gneiss in strike direction. The rock is medium- to fine-grained and shows a characteristic reddish brown color due to the presence of abundant garnet and biotite. The gneissose structure is distinct. The main

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constituents are garnet and biotite, associated with minor plagioclase, potassium feldspar and quartz.

1.3. Porphyroblastic gneiss (Gpo)

Porphyroblastic gneiss occurring in the central part of the islands is characterized by large porphyroblasts of potassium feldspar. The rock is coarse-grained and is marked with gneissose structure parallel to that of the country rocks. The main constituents are abundant quartz and plagioclase (An26-30) with minor amounts of garnet and biotite.

1.4. Hornblende gneiss (Gh)

Hornblende gneiss is found in the central part of the west island and in a small island in the northeast. The gneiss is a minor member. It is medium-grained, and brownish to reddish grey in color, and shows distinct foliation except for the coarser portion resulted from granitization. The main constituent minerals are green hornblende, biotite, potassium feldspar, plagioclase (An30) and quartz without garnet.

1.5. Metabasite (Bm)

Thin beds or lenses of metabasite are found within the gneisses of various types, except for the granitic gneiss. The metabasite bed in the central part of the west island represents the southern continuation of that of West Ongul Island (YANAI, TATSUMI and KIKUCHI, 1974), which has a green color showing a different tone from the melanocratic dark color of others. The rock is pyroxene amphibolite or hornblende pyroxenite, containing abundant hornblende and biotite.

1.6. Garnet-bearing granitic gneiss (Ggg)

Thin layers or lenses of garnet-bearing granitic gneiss are found within the pyroxene gneiss. The rock is medium-grained and reddish to pinkish grey in color. The gneissose structure is generally indistinct in the rock which makes it difficult to discriminate from gneissose granite. The main constituent minerals are potassium feldspar, quartz and plagioclase, associated with biotite and/or garnet.









References

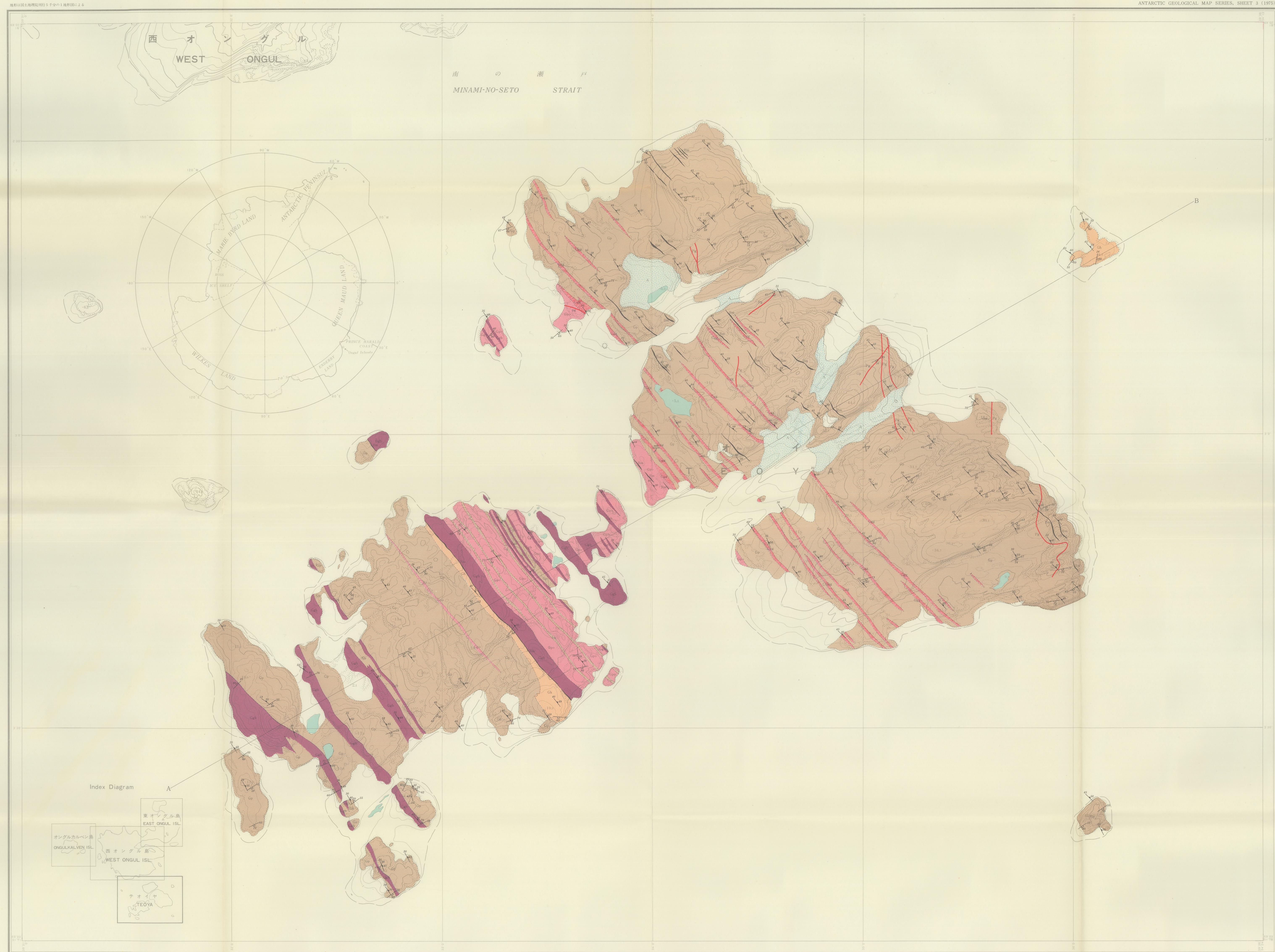
- TATSUMI, T. and T. KIKUCHI (1959a): Report of geomorphological and geological studies of the wintering team (1957-58), Part 1 (in Japanese with English abstract). *Antarctic Rec.*, 7, 373-388.
- TATSUMI, T. and T. KIKUCHI (1959b): Report of geomorphological and geological studies of the wintering team (1957-58), Part 2 (in Japanese with English abstract). *Antarctic Rec.*, 8, 443-463.
- TATSUMI, T., T. KIKUCHI and K. KIZAKI (1964): Geology of the region around Lützow-Holmbukta and Yamato Mountains (Dronning Fabiolafjella). *Antarctic Geology*, ed. by R. J. ADIE, 293-303.
- UEDA, Y. and K. YANAI (1971): K-Ar ages of rocks from the area around Syowa Station, East Antarctica (in Japanese). *J. Japanese Assoc. Mineral. Petrol. Econ. Geol.*, 65, 190.

- YANAI, K. (1971): Geology and rocks on the area around of Syowa Station, East Antarctica (in Japanese). J. Japanese Assoc. Mineral. Petrol. Econ. Geol., **65**, 190.
- YANAI, K. and H. ONUKI (1973): On the metamorphic rocks of granulite facies around Syowa Station, East Antarctica (in Japanese). J. Japanese Assoc. Mineral. Petrol. Econ. Geol., **68**, 90.
- YANAI, K. and Y. UEDA (1974): Absolute ages and geological investigations on the rocks in the area of around Syowa Station, East Antarctica (in Japanese with English abstract). Antarctic Rec., **48**, 70-81.
- YANAI, K., K. KIZAKI, T. TATSUMI and T. KIKUCHI (1974): Geological map of East Ongul Island, Antarctica. Antarctic Geological Map Series, Sheet 1 (with explanatory text pp. 13), National Institute of Polar Research.
- YANAI, K., T. TATSUMI and T. KIKUCHI (1974): Geological map of West Ongul Island, Antarctica. Antarctic Geological Map Series, Sheet 2 (with explanatory text pp. 5), National Institute of Polar Research.

テオイヤ地質図

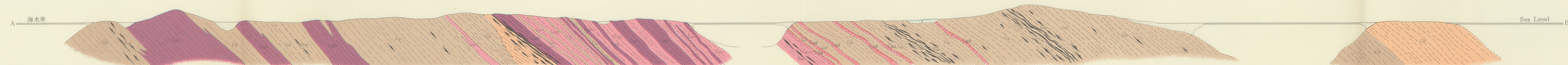
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|---|---|
|  | Swath gravel and sand
砂礫層 |
|  | Pegmatite
ペグマタイト |
|  | Garnet bearing gneissic gneiss
含ザクロ石斑岩質片麻岩 |
|  | Porphyroblastic gneiss
斑状斑状片麻岩 |
|  | Garnet biotite gneiss
ザクロ石黒雲母片麻岩 |
|  | Hornblende gneiss
角閃石片麻岩 |
|  | Pyroxene gneiss
輝石片麻岩 |
|  | Metabasites
変質緑岩 |



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Geological survey by Keizo YANAI in 1967-69
Tatsuo TATSUMI in 1956-58
Toru KIKUCHI in 1956-58
Terumi ISHIKAWA in 1971-73
Compiled by
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