

GEOMORPHOLOGICAL DEVELOPMENT OF THE YAMATO
AND BELGICA MOUNTAINS, EAST ANTARCTICA:
AN AIRPHOTO INTERPRETATION

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Abstract: Geomorphological maps on a scale of about 1 : 50000 were compiled by airphoto interpretation in order to examine the geomorphological development of both the Yamato and the Belgica Mountains. According to the difference of the freshness and the geneses of the morphology, the landforms of the mountains were classified as follows: 1) Ice-smoothed summit surface of bedrock, 2) Debris-covered ice-smoothed summit surface, 3) Ice-smoothed gentle slope with or without debris cover, 4) Dry cirque and trough without abrupt upper junction of wall or shoulder, 5) Cliff with abrupt junction formed by local glaciers, 6) Cliff with abrupt junction formed by outlet glaciers, 7) Fresh cliff relating to erosion of local glaciers, 8) Fresh cliff relating to erosion of outlet glaciers, 9) Cliff or slope made by rapid mass-movement, 10) Mountain slopes except the above-listed ones, 11) Flat moraine field on the ice sheet and glaciers, 12) Ice-cored morainic hill, 13) Outlet glacier tongue and 14) Local glacier.

All the mountain massifs had once been covered with the ice sheet at the maximum stage and then they emerged as the ice sheet receded to the present stage. Accordingly, chronological sequence of these landforms can be deduced from the relationship between the landforms and the ice sheet, outlet glaciers, and local glaciers. The dry cirque and trough without abrupt junction might have been shaped by the local or outlet glaciers antecedent to the deformation by the ice sheet erosion. Ice-smoothed summit surfaces and gentle slopes received areal scouring by the ice sheet which covered the mountains. Cliffs with abrupt junction were formed by selective linear erosion of the outlet or local glaciers after the ice sheet surface came to some lower levels. Fresh cliffs may be the youngest landforms among them.

This sequence does not conflict with that described in the previous works such as Y. YOSHIDA and K. FUJIWARA (*Nankyoku Shiryo*, **18**, 1, 1963), Y. YOSHIDA (*Dai-yon-ki Kenkyu*, **15**, 168, 1977), and Y. YOSHIDA (*Mem. Natl Inst. Polar Res., Ser. C*, **13**, 83 p., 1983). It could not be ascertained from the airphoto interpretation whether or not the ice sheet rethickening occurred during the deglaciation period from the maximum ice sheet level.

The geomorphological features of the separate massifs in these mountains are largely different. Some represent steep alpine forms and the others represent moderately hilly forms. Areal proportion of the landforms in each massif was measured and compared with those of other massifs. The result indicates that three massifs of the Belgica Mountains are comparable to the D, E, F and G massifs in the Yamato Mountains.

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