

I. OUTLINE OF GLACIOLOGICAL RESEARCH PROGRAM IN EAST QUEEN MAUD LAND, EAST ANTARCTICA

Fumihiko NISHIO*

1. East Queen Maud Land Glaciological Project (EQGP)

From January 1982 a five-year glaciological program, the East Queen Maud Land Glaciological Project (EQGP), will be carried out by the Japanese Antarctic Research Expedition (JARE).

The objectives of the project are:

- 1) dynamical studies of the ice sheet, both in the Shirase ice shed and in East Queen Maud Land,
- 2) studies of accumulation mechanism on the plateau south of the katabatic wind area, and
- 3) ice coring at various places in the project area.

The dynamical studies aim at the investigation of the stability of Shirase Glacier and of the barrier effect of the mountain chain of Yamato, Belgica, and Sør Rondane against the flow of ice sheet from the hinterland. Thus, the study area is to be expanded to the west about 20°E from the previous study area on the Mizuho Plateau, making flow-line studies in the upstream of Shirase Glacier and traversing along approximately the 2,000-m contour.

The study area is also to be expanded to the south for the second objective of EQGP, covering the area of 74°S to 77°S and 30°E to 40°E. The third objective of EQGP, drilling to obtain cores and drill-hole data, is to clarify the past history of the ice sheet and to identify areal environmental characteristics: medium-depth drilling (ca. 500 m) at Mizuho Station and shallow (100 m) drilling at various places will be carried out.

The objectives of the East Queen Maud Land Glaciological Project will conform to the IAGP objectives and will also make a significant contribution to the Antarctic Climate Research Program which is currently under planning.

* National Institute of Polar Research, 9-10, Kaga 1-chome, Itabashi-ku, Tokyo 173.

2. Field work in 1982

The main glaciological field work carried out in 1982 season was as follows:

- 1) Station glaciology, test drilling for medium-depth ice coring, and surface weather observations at Mizuho Station.
- 2) Glaciological traverse between Mizuho Station and the Yamato Mountains.
- 3) Flow-line studies along 39.5°E, in the upstream area of the Shirase Glacier, installing strain grid stations and ice coring.
- 4) Installation of a triangulation network in the Meteorite Ice Field in the Yamato Mountains area and ice coring.
- 5) Meteorite search in the Meteorite Ice Field.

From January 1982 to February 1983, a total of nine oversnow traverses was carried out by JARE-23 as shown in Table 1. Personnel and their assignments are listed in Table 2 ; the items of observations are in Table 3. Figure A attached to the end of this volume shows the study area and the traverse routes covered by the East Queen Maud Land Glaciological Project (EQGP).

Compiled in this volume are the following data of observation: position, elevation and ice thickness of stations along the Routes S, H and Z; net accumulation of snow by stake method; density of surface snow cover along the Routes S, H and Z; stratigraphic and density data from cores drilled at G2 grid station; surface slopes of the ice sheet; surface meteorological data during oversnow traverses; direction of long axis of a sastrugi. Detailed results and scientific discussions on the individual research work will be presented separately in other publications.

The author is deeply indebted to all members of the wintering party of JARE-23 led by Prof. Takao Hoshiai, who extended generous supports in the field work. Thanks are also due to Prof. Akira Higashi, supervisor of the present program, and Prof. Kou Kusunoki of the National Institute of Polar Research, for their valuable advice.

Table 1. Oversnow traverses carried out by JARE-23, 1982-1983.

Period	Traverse route	Distance	Number of personnel	Oversnow vehicles
14-26 January 1982	S16 - Mizuho Station - S16	600km	8	SM50(Diesel engine, 6 ton) : 4
30 January - 15 February 1982	S16 - Mizuho Station	300	5	SM50 : 3
3-16 March 1982	Mizuho Station - G1 - Mizuho Station	180	5	SM50 : 3
28 March - 16 April 1982	Mizuho Station - YM102 - Mizuho Station	440	5	SM50 : 3
10-17 April 1982	Syowa Station - Mizuho Station	300	6	SM50 : 2 SM40(Diesel engine, 4 ton) : 2
29 April - 3 May 1982	Mizuho Station - Syowa Station	300	9	SM50 : 4 SM40 : 1
1-8 September 1982	Syowa Station - Mizuho Station	300	11	SM50 : 5
17-22 September 1982	Mizuho Station - Syowa Station	300	5	SM50 : 2 SM40 : 1
12 October 1982 - 1 February 1983	Mizuho Station - G2 - G7 - Yamato Mountains - Mizuho Station - S16	1800	8	SM50 : 4

Table 2. Personnel participated in the oversnow traverses of JARE-23, 1982-1983.

Name	Assignments
Fumihiko Nishio	Leader ; glaciology ; navigation
Shuhei Takahashi	Meteorology ; glaciology
Masao Ishikawa	Glaciology ; radio echo sounding ; radio communication
Hirokazu Ohmae	Glaciology ; meteorology ; gravity
Takayoshi Katsushima	Geology ; gravity
Fumitaka Koyama	Medical officer
Hideo Okada	Mechanic
Hisayoshi Watanabe	Cook
Masaki Sakurai	Field assistant
Morio Shimizu	Mechanic
Kenzo Kano	Movie camera ; field assistant
Kosuke Sone	Radio communication
Hirohiko Tanaka	Medical officer
Tomoya Morita	Mechanic
Seiichi Kaneko	Mechanic
Shuzo Kaneko	Mechanic
Shigeru Iino	Radio communication
Tamotsu Yoshihira	Meteorology
Yasukazu Kuratani	Geomagnetism
Kiyoshi Igarashi	Geomagnetism
Kiyoshi Shimaoka	Field assistant
Masahiko Sasaki	Meteorology
Keiichi Yamazoe	Radio communication

Table 3. Items of observations conducted by JARE-23, 1982-1983.

Items	Location	Chief observer
1. Ice thickness	Traverse routes	Ishikawa
2. Position and elevation (Satellite doppler positioning)	Traverse routes	Nishio
3. Triangulation survey	Route K (Meteorite Ice Field)	Nishio
4. Traverse survey	Routes S,H and Z	Nishio
5. Strain grid survey	Route SS	Nishio
6. Net accumulation	Traverse routes and Mizuho Station	Takahashi
7. Meteorology	Traverse routes and Mizuho Station	Takahashi
8. Drifting snow	Mizuho Station	Takahashi
9. 10m snow temperature	Traverse routes	Nishio
10. Surface slope	Traverse routes	Nishio
11. Snow surface morphology	Traverse routes	Ohmae
12. Gravity	Traverse routes	Ohmae
13. Ice coring	Traverse routes	Ohmae
14. Geology	Yamato Mountains	Katsushima
15. Collection of meteorites	Meteorite Ice Field	Katsushima