

The University of Maine DigitalCommons@UMaine

Earth Science Faculty Scholarship

Earth Sciences

1978

A Recent Decline in Available Moisture in Northern Victoria Land, Antarctica

Paul Andrew Mayewski

University of Maine, paul.mayewski@maine.edu

John W. Attig Jr

University of Wisconsin Colleges

Follow this and additional works at: https://digitalcommons.library.umaine.edu/ers_facpub



Part of the [Climate Commons](#), [Glaciology Commons](#), and the [Hydrology Commons](#)

Repository Citation

Mayewski, Paul Andrew and Attig, John W. Jr, "A Recent Decline in Available Moisture in Northern Victoria Land, Antarctica" (1978). *Earth Science Faculty Scholarship*. 179.

https://digitalcommons.library.umaine.edu/ers_facpub/179

This Article is brought to you for free and open access by DigitalCommons@UMaine. It has been accepted for inclusion in Earth Science Faculty Scholarship by an authorized administrator of DigitalCommons@UMaine. For more information, please contact um.library.technical.services@maine.edu.

SHORT NOTE

A RECENT DECLINE IN AVAILABLE MOISTURE IN NORTHERN VICTORIA LAND, ANTARCTICA

By PAUL A. MAYEWSKI

(Department of Earth Sciences, University of New Hampshire, Durham, New Hampshire 03824, U.S.A.)

and JOHN W. ATTIG, JR.

(Department of Geological Sciences, University of Maine, Orono, Maine 04473, U.S.A.)

ABSTRACT. Evidence from two areas in northern Victoria Land, Antarctica demonstrate that available moisture has been declining since at least 1265 B.P. The cause is not known.

RÉSUMÉ. Une baisse récente des ressources en eau disponibles dans le Nord du Victoria Land, Antarctique. Des indices sont rassemblés, recueillis depuis deux sites dans le Nord du Victoria Land en Antarctique, pour démontrer que des baisses dans l'alimentation en eau sont survenues depuis au moins 1265 ans avant nos jours. La cause n'est pas connue.

ZUSAMMENFASSUNG. Neuzeitliche Abnahme der verfügbaren Feuchtigkeit in Nord-Victoria-Land, Antarktika. Beobachtungen aus zwei Gebieten in Nord-Victoria-Land, Antarktika, weisen darauf hin, dass zumindest in den letzten 1265 Jahren die verfügbare Feuchtigkeit abgenommen hat. Die bekannt Ursache ist nicht.

RENNICK Glacier (center point lat. $71^{\circ} 15' S.$, long. $162^{\circ} 30' E.$) and its tributaries are currently receding. The grounding line is migrating inland (Mayewski and others, in press), and the area of local lakes and snow patches has decreased.

Skinner and Ricker (1968) observed that many small lakes in the Reeves Glacier area (center point lat. $74^{\circ} 45' S.$, long. $162^{\circ} 00' W.$) were formerly as much as 0.3 m deeper. In the Rennick Glacier area lacustrine strandlines and algal peats show that the lakes were formerly more extensive. ^{14}C dates from two samples of algal peats from 4 m and 2 m above current lake level are of 1265 ± 130 B.P. (6x-4069) and 1085 ± 105 B.P. (6x-4068), respectively.

Skinner and Ricker (1968) mention apparent decreases in the area of snowdrifts over the past century in the Reeves Glacier area. In the Rennick Glacier area, undated pro-talus ramparts stranded meters to tens of meters in front of snow-patches and snow ramps suggest similar decreases. Air photographs taken in 1962 and 1974 (Fig. 1) also show the decrease in snow cover on the walls of an easterly-facing bedrock embayment, west of Rennick Glacier. Similar examples exist elsewhere in the Rennick Glacier region.

The cause of this decrease in available moisture is unknown. However, monitoring of lakes and snow-patches may yield data on short-term climatic changes which will be of particular value when used in conjunction with other climatic data, such as the Holocene glacial record and ocean-bottom data.

ACKNOWLEDGEMENT

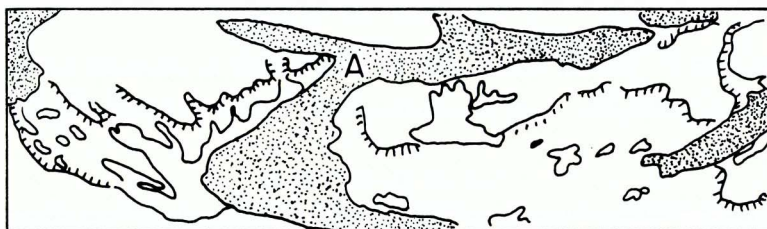
This information was collected as part of a field program in northern Victoria Land (1974-75) supported by U.S. National Science Foundation grant DPP 74-15210.

MS. received 8 February 1978

REFERENCES

- Mayewski, P. A., and others. In press. Pattern of ice surface lowering for Rennick Glacier, northern Victoria Land, Antarctica, by P. A. Mayewski, J. W. Attig, Jr., and D. J. Drewry. *Journal of Glaciology*, Vol. 22, No. 86.
- Skinner, D. N. B., and Ricker, J. 1968. The geology of the region between the Mawson and Priestley glaciers, north Victoria Land, Antarctica. Part I—basement meta-sedimentary and igneous rocks. *New Zealand Journal of Geology and Geophysics*, Vol. 11, No. 4, p. 1009-40.

(Figure 1 overleaf)






-  1974 GLACIER COVER ———→ (FROM AIR PHOTO XAM 50
1904, NOVEMBER 1974, U.S.
NAVAL SUPPORT FORCE ANT-
ARCTICA)
-  1974 LIMITS OF SNOW PATCHES
-  1962 LIMITS OF SNOW PATCHES, HACHURES DIRECTED IN TO-
WARD SNOW PATCH (FROM AIR PHOTO 093 F32 TMA 1035,
DECEMBER 1962, U.S. NAVAL SUPPORT FORCE ANTARCTICA)



Fig. 1. Example of changes in snow-patch distribution 1962-74 on the east-central side of the Morozumi Range, west side of Rennick Glacier. Photographic insert appears above photograph diagrammatically displayed. Photograph XAM 501904, November 1974, courtesy of U.S. Naval Support Force, Antarctica.