A Bibliography on the Chemical Weathering of Granitic Rocks

Judy Ehlen
U.S. Army Corps of Engineers
Engineer Topographic Laboratories
Fort Belvoir, Virginia 22060-5546

A.J.W. Gerrard
School of Geography
University of Birmingham
Birmingham, England B15 2TT

September 1988

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.
Destroy this report when no longer needed.
Do not return it to the originator.

The findings in this report are not to be construed as an official Department of the Army position unless so designated by other authorized documents.

The citation in this report of trade names of commercially available products does not constitute official endorsement or approval of the use of such products.
A Bibliography on the Chemical Weathering of Granitic Rocks

Judy Ehlen, USAETL, and A. J. W. Gerrard, Geography Department, University of Birmingham, England

This bibliography lists many of the papers in the international published geological, geomorphological and soils literature that discuss the chemical weathering of rocks often considered "non-soluble." Emphasis is placed on granitic rocks.
PREFACE

Part of this bibliography was compiled under DA Project 4A161102B52C, Task OC, Work Unit 010, "Indicators of Terrain Conditions."

The bibliography was prepared during the period October 1984 - May 1988 partly under the supervision of Dr. J. N. Rinker, Team Leader, Center for Remote Sensing; and Mr. Lawrence A. Gambino, Director, Research Institute.

We would like to thank the personnel of the ETL's Scientific and Technical Information Center who helped prepare this bibliography. Mildred Stiger and Dot Murphy helped to clarify and verify the details of many of the citations. Annemarie Black checked and corrected many of the non-English words and verified many of the place names. Their help was invaluable.

COL David F. Maune, EN, was Commander and Director, and Mr. Walter E. Boge was Technical Director of the Engineer Topographic Laboratories during preparation of the report.
INTRODUCTION

This bibliography was compiled as a result of discussions at "A Workshop on Desert Processes" in 1984 (McCauley and Rinker, 1987) in which it became clear that the prevalence of chemical weathering in all environments and on "non-soluble" rocks, such as granites, was not widely appreciated. This bibliography attempts to alleviate this situation by providing a list of some of the many papers on this subject. It cannot, however, be considered comprehensive, as the literature is extensive. The listed papers address all aspects of chemical weathering—the processes (for example, Keller and Frederickson, 1952; Ollier, 1984; Williams, 1949), their effects on landforms and materials (for example, Dumanowski, 1968; Thomas, 1974a; Twidale, 1982b), climatic influences (for example, Bakker, 1960; Tardy, et al., 1973; Thomas, 1974b) and weathering products (for example, Dearman, et al., 1978; Lumb, 1962). Papers discussing the controversy concerning chemical vs. physical weathering, as well as the difficulty in separating the two processes, are also included (for example, Ollier, 1984; Palmer and Neilson, 1962). In addition, a number of papers on salt weathering, which may be physical or chemical, are listed (for example, Hay and Jones, 1972; Wellman and Wilson, 1965). Papers referring to the chemical weathering of other igneous rocks (for example, Coleman, 1982; Nossin and Levelt, 1967) or other rocks generally considered "non-soluble" (for example, Frye and Swineford, 1947; White, et al., 1966) are included.

Papers with titles enclosed in ( ) are in a language other than English and have English summaries. Examples include Takenaga (1968), Amaral (1973) and Bouchard (1983). Those with titles in a language other than English are written in another language, but often have English summaries. Demolon and Bastisse (1936) and Bakker (1958) are examples. The listing is in alphabetic order.
Aartolahti, T. 1975. (On the weathering cavities in the rapakivi granite of Vehmaa, Southwest Finland). *Terra*, vol. 78, pp. 238-244.


Bech, J., Cardus, J., LaSala, M., Bouleau, A., LaMouroux, M., Quantin, P. and Segalen, P. 1983. (Study of the granite derived soils of Maresma, Catalonia, Spain.) *Cahiers ORSTOM-Série Pedologie*, vol. 20, pp. 209-221.


Hradek, M. 1972. (Exfoliation and its manifestations on valley sides of streams in regions built of granite (the example of the Novobystricka Vrchovina upland)). Studia Geographica Brno, vol. 25, pp. 163-168.


———. 1979. The influence of morphological-climatic conditions upon the granulometric features of granite regolith in mountain areas of Europe. Quaestiones Geographicae, vol. 5, pp. 55-86.


Roth, E. S. 1965. Temperature and water content as factors in desert weathering. *Journal of Geology*, vol. 73, pp. 454-468.


22


