developments in economic geology

2

conceptual models in exploration geochemistry

compiler and editor
P.M.D.Bradshaw

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CONCEPTUAL MODELS IN EXPLORATION GEOCHEMISTRY
The Canadian Cordillera and Canadian Shield

Association of Exploration Geochemists
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CONCEPTUAL MODELS IN EXPLORATION GEOCHEMISTRY

The Canadian Cordillera and Canadian Shield

Compiled and Edited by

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FOREWORD

This volume originated from a desire to see a number of excellent case histories appear in print as these are important in guiding exploration. At the same time, it was recognized that there already exists a large and often bewildering volume of exploration geochemical data, and it was necessary to present any new data, and if possible also combine old data into a form readily useable by exploration geologists.

The contents of this volume represent the culmination of an effort to combine these two apparently opposed objectives. Firstly, the initial approach to this volume was generated by discussions between D.R. Clews, J.L. Walker, I. Thomson and myself. These discussions, together with suggestions by John Fortescue, particularly as regards the adoption of the landscape format, helped consolidate the final outline as seen. Finally, as indicated by the authorship of the different sections, a considerable number of individuals gave their data, time and ideas, allowing me to compile this volume.

The Shield and Cordillera sections together contain 38 case histories in different stages of completeness. The objective of this volume is to present these data in a concise form and to assimilate them together with the already published data into a relatively low number of idealized models or landscapes, which it is hoped, are easier to understand and assimilate into exploration programmes than the raw data on their own.

It is hoped that the style of presentation and format used here will find acceptance within the industry, and that compilation from other areas will follow.

P.M.D. BRADSHAW

March 1974

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The amount of work involved in compiling a volume such as this is quite considerable and the authors are very much indebted to a number of individuals who helped considerably in this respect.

Rod Marcroft of Barringer Research designed the layout for all the idealized models and drafted them. His invaluable help and suggestions in this regard are very much appreciated. The majority of the case history diagrams were drafted by Emma Carrillo of Newmont Mining, Barbara Procher of Amax Exploration and Ray Agnew of Brock University. Their help, particularly in undertaking this work in the limited time available, is gratefully acknowledged.

The final typing of the manuscript was undertaken by the Ontario Department of Mines and British Columbia Department of Mines. Much of the typing of the first draft, and also the final corrections were done by Barringer Research, in particular Pat Marshall of that company. To all these people we are very much indebted.

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Prologue

THE USE OF LANDSCAPE GEOCHEMISTRY TO PROCESS EXPLORATION GEOCHEMICAL DATA

JOHN A.C. FORTESCUE

> "The wise learn from the experience of others, the fool only from his own."
>
> An Old Adage

INTRODUCTION

The landscape geochemistry approach was chosen as a basis for the organization of this paper largely because it provides a rigorous, logical foundation for the systematic comparison of information obtained from exploration geochemistry. Although landscape geochemistry has been offered as a subject in Russian universities for over twenty years, it is only very recently that it has been considered seriously in North America. Some idea of relationships between landscape studies involving specific disciplines, important aspects of applied geochemistry, and general landscape geochemistry may be obtained from Fig.1 where it is seen that landscape geochemistry is that subject which includes exploration geochemistry as a special case.

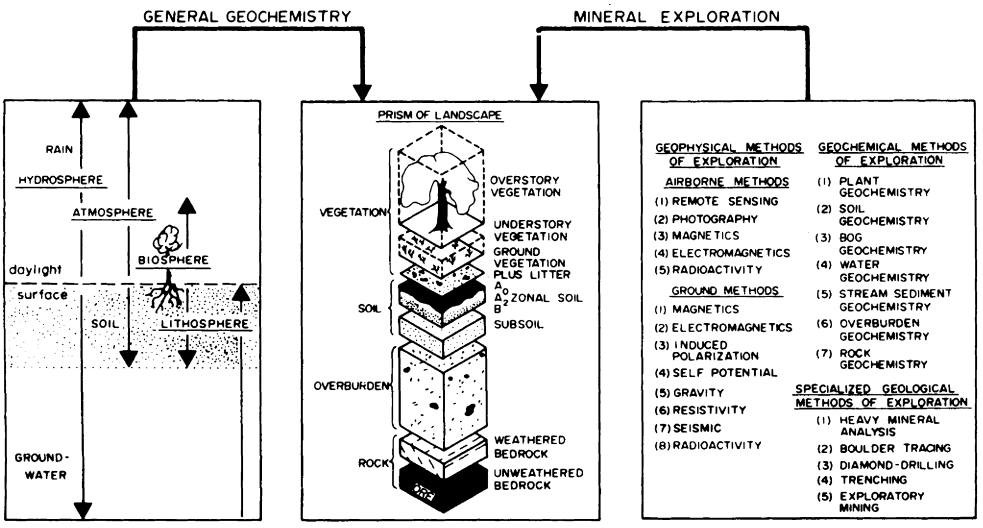

Fig.1. Relationships between general geochemistry, landscape and mineral exploration.