
Preface

Of course such a book as we propose here is not the product of just two people working together, although the experience has been a great pleasure for us. We would like to thank our many collaborators and students who have encouraged our effort by their, often, sharp criticism. We hope that we have used their comments to good effect. Especially we would like to thank Pierre Barré for his help, enthusiasm and consent for the use of much of his thesis material in formulating the last chapter of the book. Dominique Righi was instrumental in giving us ideas, useful comments and vigorous debate for a great number of our ideas and during the periods of formulation of our conclusions. Our approach is from mineral chemistry and hence has greatly benefited from discussions with people who know soils and plants. The project of this book was realized and encouraged with the help of Wolfgang Engel who, unfortunately is not with us to see its finalization. We greatly regret his passing.

This book is not in the general pattern of accepted knowledge and analysis of the phenomena which affect the occurrence of clays in the surface environment. We stress the role of plants at the bio-interface and the importance of microsystems at the water/rock interface. We believe that the literature at our and anyone's disposal shows that the system of clay formation and reaction is highly dynamic, especially at the surface. Clay alteration profiles are slow to form, thousands to hundreds of thousands of years, but they react quickly at the surface to chemical change, essentially engendered by plants. This is the message. Clays can react in short periods, years to tens of years, and hence should be considered as part of the active surface environment. Land use can be impacted by management for periods as short as those of elected officials in governments. Thus soil scientists and ecologists can forcefully argue for better management on a year to year basis and the results can be shown within the period of an appointed official's term. Therefore a clear understanding of plant and soil interactions and the fundamental alteration processes is vital to stewardship of one of the most precious parts of nature, the soil zone.

We hope that this book and some of the ideas presented will inspire young people to look more closely at the surface environment in a quest for a more rational and viable use of soils. Surface clay minerals appear to react very rapidly to changes in environments, specifically changes in plant regime in soils. The high reactivity of this kind makes clay minerals potential indicators of changes in the Earth's surface paleo-conditions and those engendered by the action of agricultural man.

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Rocks

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