



1. Title

Minerals as Regulators of Carbon Flow Through Soils

2. Type

Commission Symposium: Comm. 2.4-Soil Mineralogy

3. Organizer(s) & Convener

Balwant Singh

Faculty of Agriculture and Environment, The University of Sydney, Sydney, NSW 2006, Australia

Tel: +61 2 8627 1140

Mobile: +61 0400 117 107

Fax: +61 2 8627 1099

E-mail: Balwant.Singh@sydney.edu.au

Website: <http://sydney.edu.au/agriculture>

Markus Kleber

Faculty of Soil Science, Department of Crop and Soil Science, Oregon State University, Corvallis, OR 97331, USA

Tel: +1.541.737.5718

Fax: +1.541.737.3479

E-mail: markus.kleber@oregonstate.edu

Website: <http://cropandsoil.oregonstate.edu/people/Kleber-Markus>

4. Rationale

The flow of carbon through the soil ecosystem drives life processes all over the planet. A long tradition has focused on a role of mineral surfaces in retarding carbon flow through soils, a process that is commonly called "carbon stabilization", often without providing a clear definition of how the "stabilizing effect" of minerals might be measured and parameterized. But recent developments emphasize that the mineral matrix, i.e. the site specific assembly of phyllosilicates, pedogenic oxides, poorly crystalline aluminosilicates and redox active metals is involved in a much wider scope of processes. Minerals can be nutrient sources for plants and microorganisms, templates for synthesis, provide energy, accept electrons, adsorb and coprecipitate organics and so accelerate as well as retard carbon flow through the soil system. It is clearly necessary to publicly re-evaluate the paradigm of "mineral control".

5. Objectives

The objective of this symposium is to provide a forum for the public re-evaluation of the long standing paradigm of "mineral control" on soil carbon turnover. We believe that the scientific community is held back by the use of non quantitative jargon (for example, what is "stable carbon", numerically?) and encourage a discussion based on rigorous definitions, quantitative categories and numerical arguments.





6. Description

The combination of improved laboratory procedures with the advent of state-of-the art microscopic and spectroscopic techniques has provided new insights to the interaction between minerals and organic matter in soils. The symposium will bring together some key papers on this subject including an invited talk that will provide an overview on the topic.

