Geophysical Research Abstracts,
Vol. 11, EGU2009-3137-3, 2009
EGU General Assembly 2009

Development of a synthetic indicator of soil quality in mountainous area (Becoming of soil organic matter under anthropic and climatic forcings)

A. Saenger, J.-J. Brun, and S. De Danieli

Cemagref Grenoble, Mountain Ecosystems Dt, St Martin d'Heres, France (email: anais.saenger@cemagref.fr)

The concept of soil quality is essential to provide a better awareness and evaluating of soil resources and ecosystem services performing by soils. Furthermore, within the context of the adoption of the Framework Directive for Soil Protection by the European Parliament, soil quality assessment and monitoring will become a great challenge for the next decade. Today, there is a growing need to develop reliable indicators, suitable for different scales, easy to implement and able to account for soil quality in its globality.

Based on the assumption that soil organic matter integrates environmental characteristics and disturbances into varied space-time scales, thus being a good revealing of global soil quality, this project proposes to test the agglomeration of several biological and physicochemical criteria relating to soil organic matter to develop a synthetic indicator of soil quality. This work will proceed in a mountain context where soil quality has received little attention although these ecosystems are submitted to various anthropic forcings and will probably experience greater warming than the global average. The synthetic indicator will be calibrated on a set of reference points of the Vercors massif (Alps, France) then validated and spatialized at a protected area scale. The use of the near infra-red spectroscopy (NIRS) should make it possible to predict the value of the synthetic indicator in any point of the massif, in a fast and inexpensive way, thus providing an excellent spatial resolution making it possible to establish a very fine cartography of the soil quality as well as a long-term monitoring facility.

Scénarii of evolution of soil quality during the 21st century will be also proposed at the conclusion of this work.