



**EUROSOIL 2012**



## **SOIL SCIENCE FOR THE BENEFIT OF MANKIND AND ENVIRONMENT**

### **S13.5 International Critical Zone Observatory research focusing on soil**

The Critical Zone (CZ) is defined as the Earth's outer layer from vegetation canopy to the soil and groundwater that sustains human life. Soils are at the heart of this CZ, providing key services to society like:

- Food and other biomass production
- Storage, filtering, and transformation of water, carbon, nutrients, heat etc.
- Biological habitat and gene pool
- Source of raw materials
- Physical and cultural heritage
- Platform for man-made structures and human activity

The long- term sustainable use of these soil services and resources depends on our understanding of the CZ processes and how they are perturbed by Drivers such as land use and climate change. Soils are a non-renewable resource, the functional phase of their overall life cycle should be sustained, -prolonged where possible-, through adequate soil management and policy. A growing international network of Critical Zone Observatories (CZOs) enables experiments across global, regional, and local environmental gradients, providing the scientific underpinning for such Responses.

#### **a. Field studies in Critical Zone Observatories**

We invite presentations on experimental and observational studies of soil functioning within the CZ. Contributions are welcomed that quantify relations between environmental gradients, soil processes and soil functions; that demonstrate adequate monitoring of relevant indicators for soil State (quality and functioning), or for the relative position within the soil life cycle; that quantify the effects of Pressures (soil threats) on soil State and functioning; or that aim to quantify the societal Impact of sub-optimal soil functioning.

#### **b. Modelling soil within the Critical Zone**

This session will explore fundamental aspects of soil carbon dynamics in soil-plant-water-terrestrial ecosystems. Presentations are invited regarding: Carbon dynamics, aggregate stability and turnover and food web dynamic models with respect to field applications and scale dependence; Scaling up modelling issues and verification of up-scaling methodologies from the plot to watershed to region and continental scales; Linking watershed models to Life Cycle Assessments; Modelling studies at Critical Zone Observatories.