1. Title

Key Processes and Factors to Mitigate Land Degradation

2. Type

Inter-Divisional Symposium

3. Organizer(s) & Convener

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4. Rationale

Soil supports plant growth as a base of all the ecosystems from natural ecosystem to agricultural ecosystem. On the other hand, soil is specified to an ecosystem and generated in the ecosystem. That is, the interaction of an ecosystem and the soil is carried out through material cycling and land use change impacts strongly the material cycling. Material cycling between an ecosystem and soil consists of ordering processes, such as plant production and humus accumulation, and disordering processes, such as organic matter decomposition and weathering. The balance of the ordering and disordering processes influences redistribution processes, such as surface runoff, leaching and accumulation and gas exchange. Redistribution processes are reflected in soil qualities and substance emissions from soil to the atmosphere and the aquasphere and characterize land and environmental degradation such as acidification, alkalinization, salinization, erosion, subsidence, eutrophication, water pollution and global warming.

5. Objectives

In order to create mitigation technology to reduce land degradation required for sustainable development, we must know which process strongly influences material cycling in land use change. Ordering, disordering and redistribution processes depend on climate conditions and soil types in the region, key processes are different in the region. Purpose of the symposium is to specify the key processes and the controlling factors in the material cycling to rationalize land use and land management every region.

6. Description

In this symposium, different aspects of land degradation will be discussed from the view point of material cycling. Special attention will be paid on carbon and nitrogen cycle, since they are sensitive to land use change and can represent the material flow in agroeco system well. Various area suffering from soil degradation will be introduced and the common and different points of the system compared. The final discussion should provide insights into the current situation of worlds land degradation and the natural process driving the degradation.