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BIOCRUST: biological soil crusts vulnerability and soil surface disturbance in Sahelian zone

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Land degradation and desertification are among the major environmental problems, resulting in reduced productivity and development of bare surfaces in arid and semi-arid areas of the world. One important factor that acts to increase soil stability and nutrient content, and thus to prevent water and wind erosion and enhance soil productivity of arid environment, is the presence of biological soil crusts (BSCs). They are the dominant ground cover and a key component of arid environments built up mainly by cyanobacteria. They enhance degraded soil quality by providing a stable and water-retaining substratum and increasing fertility by N and C fixations. Appearance of BSC at the soil surface is the first sign of soil degradation; their development helps prevent soil degradation and their loss mean crossing soil degradation threshold. Soil surface disturbance due to intensification of human activities and global changes are expected to have important consequences on the development and ecological processes mediated by biological soil crusts in arid environments. The purpose of this talk is to present the BIOCRUST project which objective is to improve understanding of the temporal and spatial dynamics of BSCs in Sahelian ecosystems and to provide tools for management in assessing soil degradation due to futures changes in land uses and climate.