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SOIL BIODIVERSITY  
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Palais des Congrès, Dijon, France

**2-5 DECEMBER 2014**

THE FIRST GLOBAL  
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December 2-5, 2014, Dijon, France

Book of Abstracts

# PROGRAM AND ABSTRACTS

## THE FIRST GLOBAL **SOIL BIODIVERSITY** **CONFERENCE**



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INITIATIVE

December 2-5, 2014

Dijon – France

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**Abundance, richness and structure of soil fungal communities across a European transect**

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In contrast with plants and animals, biogeographical patterns of fungal assemblages have been little explored. Consequently, the factors driving the diversity and the composition of these communities are poorly understood. The EcoFINDERS project aimed at (i) characterizing the soil fungal diversity according to soil types, land uses and climate, and (ii) determining environmental variables explaining the fungal richness and community structure. High-throughput sequencing of the ITS2 region was used to explore fungal assemblages in eleven countries along a latitudinal gradient in Europe. Parallel to the sequence based analyses, the fungal abundance was measured from the same DNA samples using qPCR targeting ITS2 region.

We showed that the European soil fungal diversity varies in terms of richness, relative abundance and distribution according to land uses (forests, pastures, arable soils), soil and climatic parameters. Remarkably, fungal diversity increases from forest to arable soils and this richness pattern was also positively correlated with pH, CEC, Ca and Clay. These High-throughput sequencing results have been partially confirmed by qPCR data. Indeed, also the fungal copy numbers in soils were affected by land-use and differed between climatic zones. The highest abundances were measured in (Boreal) forestry sites and the lowest in Mediterranean soils and in arable sites. However, the fungal abundance, unlike richness, was negatively correlated with pH, whereas the soil organic matter content seemed to have no affect on fungal abundance. Interestingly, along this large climatic gradient, we did not find relationship between richness and latitude, which could be a proxy of temperature. The usual ecological pattern between richness and thermic gradient did not appear transferable to soil fungi. Finally, the PCoA analysis revealed that the composition of fungi was largely explained by soil pH and climatic parameters. These results, with additional biogeographical studies, should help to predicting future distribution patterns of soil fungi.

Keywords: soil fungi, biogeography, High-throughput sequencing, ecology