

Australia wishes to support Brazil's intervention regarding the importance of soil environments and soil biodiversity with regard to the long-term ecological resilience of natural ecosystems and sustainable agricultural production. Measuring and monitoring soil microbial communities, their: abundance, diversity and function, and understanding the impacts of land use, is necessary to develop management strategies that maintain healthy and productive soil ecosystems. Until recently this has been a challenging task as methods for rapid identification and quantification of microbes have been lacking. As a result, soil communities remain one of the least understood and yet most ecologically important ecosystems on our planet.

Recently, significant advances in the science of environmental metagenomics has facilitated direct measurement of both taxonomic and functional diversity of soil microbial communities. Using these methods Australia has initiated the Biomes of Australian Soil Environments (BASE) project. This project combines the use of metagenomic technologies and environmental and spatial analysis to measure and model soil biodiversity across the major soil and vegetation environments in Australia. By comparing samples from natural ecosystems to those from the major farming systems, we are exploring the effects of landuse on both soil microbial diversity and ecological function.

The data from this study are opening new opportunities in biodiversity measurement, monitoring and environmental modeling for soil ecosystems. All data are being made available to the national and international scientific community as they become available through our own on-line databases and through our participation in the Earth Microbiome Project. We would welcome discussion with others interested in the application of environmental metagenomics to biodiversity measurement and environmental modeling.