FEMS

FOCUS

July 2013 No.15

NEWSLETTER OF FEMS

FEDERATION OF EUROPEAN MICROBIOLOGICAL SOCIETIES

Microbial impact on climate change

Microbes in climate models

Dr. Paul Bodelier is a microbiologist at the Netherlands Institute of Ecology (NIOO-KNAW). He is working on the functional diversity of microorganisms in natural and semi-natural wetlands, for example rice fields and flood plains. "We microbiologists have good evidence that the properties of microbial species have to be considered in climate models".

Bodelier: "There is a strong relationship between the N-cycle and methane cycling in soils and sediments, which is affected by methane-consuming microbes present. Therefore, in some areas, nitrogen fertilisation can lead to raised methane emissions, while in other environments they are reduced. The reason is a difference in the reaction of bacterial species oxidising methane. For methane-producing microbes, we showed that from soils that are physically identical, but inhabited by communities composed of different species, up 400 times different methane emissions could be observed.
Biogeochemists think that biogeochemical reactions, such as the production or consumption of methane, are controlled mainly by physical, abiotic parameters. However, I strongly suggest that the characteristics of, and relations between microbial species should be considered in climate models. This will be especially important when predicting the effects of disturbance. Responses of microbes after disturbances can not be predicted from physical parameters."

Rice fields contribute significantly to methane production.