



EINLADUNG

zum

VERA - SEMINAR

von

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**The Role of Arctic Soils in the Permafrost –
Climate Feedback**

The total organic carbon pool in arctic and boreal permafrost soils has been estimated to be about 1,760 Petagram (10^{15} g) C, more than twice today's atmospheric C pool and about half of the global soil carbon. A significant proportion of this C pool may be vulnerable to climate warming through permafrost thawing and subsequent decomposition by microorganisms. Thus, it has been suggested that permafrost soils may become a future source of CO₂ and CH₄ to the atmosphere and lead to a strong positive feedback to global warming (up to + 0.5 °C until 2200).

I will present results from several projects that aimed at understanding the mechanisms behind the permafrost-climate feedback, by identifying the major soil organic matter (SOM) stabilization mechanisms of permafrost SOM. I will address a range of different mechanisms by which SOM can be protected from decomposition, such as unfavourable temperature and moisture regimes, physical protection by formation of organo-mineral associations and chemical recalcitrance of SOM. I will focus, however, on energy and nutrient constraints of heterotrophic microbial communities and their role in SOM decomposition. I will then show that the physiology of the tiniest organisms on Earth will ultimately determine the vulnerability of the global permafrost carbon pool and thus the global permafrost-climate feedback.

Donnerstag, 12. Mai 2016, 16:30 Uhr

**1090 Wien, Währinger Str. 17, "Kavalierstrakt",
1. Stock, Victor-Franz-Hess-Hörsaal**