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Growth season dynamics of methane emission from arctic tundra: a comparison of chamber measurements over ten years

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Wet tundra ecosystems are well-known to be a significant source for atmospheric methane. With the predicted stronger effect of global climate change on arctic terrestrial ecosystems compared to lower-latitude ecosystems, there is a special obligation to study the range of possible feedback effects on global climate that could arise from Arctic tundra ecosystems. Here we compare direct measurements of CH_4 emissions from high arctic valley at Zackenberg, NE Greenland, studied by chamber techniques during summer seasons 1997, 1999, 2000, 2005 and 2006. The measurements were carried out at the same wetland site. Nevertheless hydrology and plant composition of the site were found significantly changed between 2000 and 2005. The study years had different climate patterns (temperature, water regime), and showed differences in seasonal CH_4 fluxes. In this presentation we will propose an effort to obtain a detailed analysis of interannual differences in temperature and water regimes with resulting differences in methane emissions.