

Title: Recent trends in sources and sinks of methane

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Understanding the drivers of past climate change are crucial for understanding future warming. The recent temporal development in the atmospheric concentration of methane, the second largest greenhouse gas forcer, is not fully understood. The concentration leveled off at the beginning of the millennium with a renewed growth since 2007. In this study, we investigate two of the suspected causes: changes in OH-concentration and hence changes in methane lifetime, and changes in natural emissions from wetlands. The main sink of methane in the atmosphere is oxidation of OH. The trend in the OH sink is investigated using a chemical transport model (OsloCTM3). Anthropogenic emissions as well as meteorological factors contribute to an increased OH sink from 1990 to 2007, the end of the stabilization period. The second suspect for changes in methane concentration, changes in natural emissions from wetlands, are studied using the Community Land Model (CLM5.0). In addition to the global perspective, the modelled time development of natural methane emissions for the Nordic countries are assessed, and challenges for global models to simulate regional conditions discussed.