



Northern peatlands as a slow tipping element of glacial cycles

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Some studies of tipping phenomena in a periodically forced system show the possibility of a smooth transition from one limit cycle to another limit cycle. The smooth transition makes it difficult to detect if the system crossed the tipping point, but one can make a guess based on the study of tipping elements. Here we make a guess about the tipping point of the natural glacial-interglacial cycle based on the study of carbon accumulation in northern peatlands. Northern peatlands removed a large amount of carbon dioxide from the atmosphere in course of their natural development. The amount of carbon removed by northern peatlands is roughly comparable with the amount of cumulative carbon emissions related to human activities during the period from 1860 to 2010. Since northern peatlands are still removing carbon dioxide from the atmosphere, they would play an important role in global carbon cycle recovery from anthropogenic emissions. If cumulative carbon emissions will be kept below 1000 PgC, then northern peatlands would remove in a relevant time frame the carbon that ocean won't remove and thus reduce the risk of "breaking" the natural glacial-interglacial cycle.