



Modeling Modern Methane Emissions from Natural Wetlands: 2: Interannual Variations 1982-1993

NASA Technical Reports Server (NTRS), et al., Bernadette P. Walter

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By Bernadette P. Walter

Bibliogov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 54 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. A global run of a process-based methane model Walter et al. , this issue is performed using high-frequency atmospheric forcing fields from ECMWF reanalyses of the period from 1982 to 1993. We calculate global annual methane emissions to be 260 Tg yr. 25 of methane emissions originate from wetlands north of 30 deg. N. Only 60 of the produced methane is emitted, while the rest is re-oxidized. A comparison of zonal integrals of simulated global wetland emissions and results obtained by an inverse modeling approach shows good agreement. In a test with data from two wetlands, the seasonality of simulated and observed methane emissions agrees well. The effects of sub-grid scale variations in model parameters and input data are examined. Modeled methane emissions show high regional, seasonal and interannual variability. Seasonal cycles of methane emissions are dominated by temperature in high latitude wetlands, and by changes in the water table in tropical wetlands. Sensitivity tests show that - 1 C changes in temperature lead to - 20 changes in methane emissions from wetlands. Uniform changes of - 20 in precipitation alter...



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