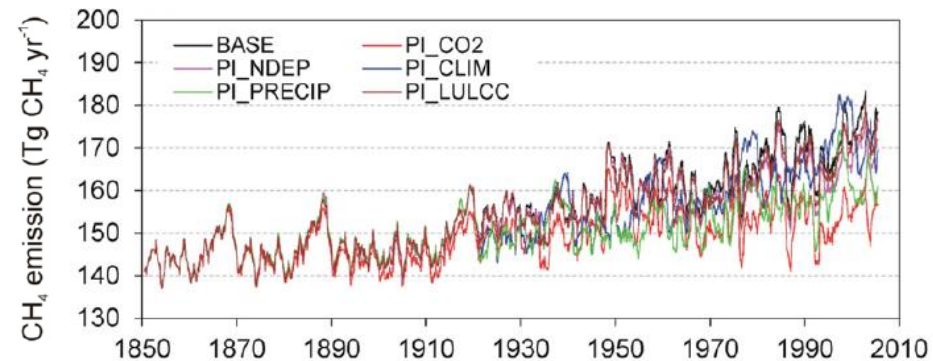# Attribution of Changes in Global Wetland Methane Emissions from Pre-Industrial to Present Using CLM4.5-BGC

Objective:
- Understanding the factors controlling CH_4 emissions from natural wetlands is important to accurately project future atmospheric concentrations.
- Results inform needed observations to improve CH_4 models.

CH_4 emissions since 1850 separated into controls from N deposition, precipitation, CO_2, climate, and land use.

Approach:
- We examined contributions of precipitation, T, CO_2, N deposition, inundation, and land-use on changes in wetland CH_4 emissions from 1850–2005.
- We used the CH_4 model integrated in CLM4.5 (identical to that in ALMv1).

Results/Impacts:
- Preindustrial CH_4 emissions were higher by 10% than present-day.
- Changes in CH_4 substrate production and the areal extent and seasonality of wetlands led to the largest sensitivity in predicted emissions.

Paudel, Rajendra, Natalie M. Mahowald, Peter G. M. Hess, Lei Meng, and **William J. Riley** (2016), Attribution of changes in global wetland methane emissions from pre-industrial to present using CLM4.5-BGC, *Environ. Res. Lett.*, 11(3):034020, doi:10.1088/1748-9326/11/3/034020.

BGC Feedbacks