



Marine N inventory sensitivity to atmospheric N deposition

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The marine inventory of fixed nitrogen (N), an essential nutrient controlling productivity, is determined by the balance between N_2 fixation by cyanobacteria and N-loss via microbially-mediated processes under low oxygen conditions. Human-driven perturbations of ocean temperature and atmospheric N deposition impact on the magnitude of N-loss and N-gain with potential effects on oceanic N_2O emissions. However, the timescale and the net effect of these changes on the N inventory is not known. This is particularly so since the degree of coupling between the major source and sink of N is debated and the sign of the feedbacks among these two opposite processes is not well defined. Here we use a global biogeochemical model to investigate how projected changes in ocean warming and atmospheric N deposition may impact the marine N inventory and affect future N_2O emissions.