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TITLE: Impacts of Atmospheric Anthropogenic Nitrogen on the Open Ocean

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ABSTRACT:

Increasing quantities of atmospheric anthropogenic fixed nitrogen entering the open ocean could account for up to about a third of the ocean's external (nonrecycled) nitrogen supply and up to approximately 3% of the annual new marine biological production, approximately 0.3 petagram of carbon per year. This input could account for the production of up to approximately 1.6 teragrams of nitrous oxide (N₂O) per year. Although approximately 10% of the ocean's drawdown of atmospheric anthropogenic carbon dioxide may result from this atmospheric nitrogen fertilization, leading to a decrease in radiative forcing, up to about two-thirds of this amount may be offset by the increase in N₂O emissions. The effects of increasing atmospheric nitrogen deposition are expected to continue to grow in the future.

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