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The lightning-biota climatic feedback

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We investigates the "lightning–biota climatic feedback" which involves an increase in deposition of lightning-produced nitrogen compounds into ecosystems as a response to a global temperature rise. This increases primary production on both land and ocean, which reduces atmospheric carbon dioxide (CO_2), and consequently global temperature in return. Large uncertainties in numerous processes and parameters in this feedback exist and therefore its importance is unclear. This feedback is investigated using a conceptual dynamical model, including assessing its role in counteracting anthropogenic-induced warming by reducing the rate of accumulation and concentration of atmospheric CO_2. Overall, our study suggests that this feedback is of mild strength in the climate system, but raises the intriguing possibility that it should be considered in long-term climate simulations.