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The fraction of carbon dioxide emissions that is mopped up by terrestrial and marine sinks has probably decreased over the past 50 years. According to an overview article published online in Nature Geoscience, models suggest that this trend is a result of climate change and climate variability, which would imply a positive feedback between climate and the carbon cycle.

Corinne Le Quere and colleagues analysed the literature on carbon dioxide sinks and sources, and found that the recent rise in carbon dioxide emissions - by 29% between 2000 and 2008 - can largely be attributed to increasing contributions from emerging economies, production and trade of manufactured products, and the use of coal as a fuel source. The amount of carbon dioxide that remains in the atmosphere and contributes to greenhouse warming has probably increased from 40% of emissions to 45% between 1959 and 2008, however, the authors caution that uncertainties are large.

The ability of the biosphere to take up atmospheric carbon dioxide could be crucial for achieving climate stabilization. The researchers therefore conclude that it is of utmost importance to reduce error margins in quantifications of terrestrial and marine carbon sinks.

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