

Is the airborne fraction of anthropogenic CO<sub>2</sub> emissions increasing?

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Several recent studies have highlighted the possibility that the oceans and terrestrial ecosystems have started losing part of their ability to sequester a large proportion of the anthropogenic CO<sub>2</sub> emissions. This is an important claim, because so far only about 40% of those emissions have stayed in the atmosphere, which has prevented additional climate change. This study re-examines the available atmospheric CO<sub>2</sub> and emissions data including their uncertainties. It is shown that with those uncertainties, the trend in the airborne fraction since 1850 has been  $0.7 \pm 1.4\%$  per decade, i.e. close to and not significantly different from zero. The analysis further shows that the statistical model of a constant airborne fraction agrees best with the available data if emissions from land use change are scaled down to 82% or less of their original estimates. Despite the predictions of coupled climate-carbon cycle models, no trend in the airborne fraction can be found.

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