



## **An overlooked major source of atmospheric methane: *In situ* formation in plants**

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Methane is an important greenhouse gas and its atmospheric concentration has almost tripled since pre-industrial times. It plays a central role in atmospheric oxidation chemistry and affects stratospheric ozone and water vapour levels. Most of the methane from natural sources in Earth's atmosphere is thought to originate from biological processes in anoxic environments. Here we demonstrate using stable carbon isotopes that methane is readily formed *in situ* in terrestrial plants under oxic conditions by a hitherto undiscovered process. Significant methane emissions from both intact plants and detached leaves were observed during incubation experiments in the laboratory and in the field. If our measurements are typical for short-lived biomass and scaled on a global basis, we estimate a source strength of 62 to 236 Tg/year for living plants and 1 to 7 Tg/year for plant litter. We suggest that this newly identified source may have important implications for the global methane budget and may call for a reconsideration of the role of natural methane sources in past climate change.