

Land use affects the composition of the atmosphere

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Tropical deforestation not only has a large impact on the carbon cycle and climate, but also affects the chemistry of the atmosphere.

That conclusion, by Laurens Ganzeveld (researcher at Wageningen University, the Netherlands), was published in an article selected by the American Geophysical Union (AGU) as a "research spotlight". With such "spotlights" the AGU brings special publications to the attention of a wider audience.

With deforestation, carbon that has been held for decades or even thousands of years is released back into the atmosphere. But cutting down trees or forests also has effects on air currents and [atmospheric composition](#). Global changes in land use, such as tropical deforestation, may therefore lead to significant changes in weather patterns and changes in the chemistry of the atmosphere -- and to the associated changes in the climate.

Laurens Ganzeveld, together with colleagues from the Max Planck Institute, the Netherlands Environmental Assessment Agency and the Cyprus Institute, studied the long-term effects of land use. Together with the [carbon cycle](#) and weather patterns land use can affect the concentrations of [greenhouse gases](#) like methane and ozone. "Our research found that deforestation causes a complex combination of changes in emissions, deposition, and turbulence. The end-result by about 2050 could be, for example, more ozone at ground level compared to the concentrations above pristine [tropical forests](#)."

Laurens Ganzeveld could not say exactly why AGU had chosen this particular study as a Research Spotlight. "But it does indicate that this is an interesting topic. After publication, it quickly became the most popular article. In any case it is clear that the dynamic impact of land use has a much more complex effect on the composition of the atmosphere than has been represented in [climate models](#) up to now."

More information: [Click here](#) for "Impact of future land use and land cover changes on atmospheric chemistry-climate interactions" by Laurens Ganzeveld et al. *Journal of Geophysical Research*.

Provided by Wageningen University

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