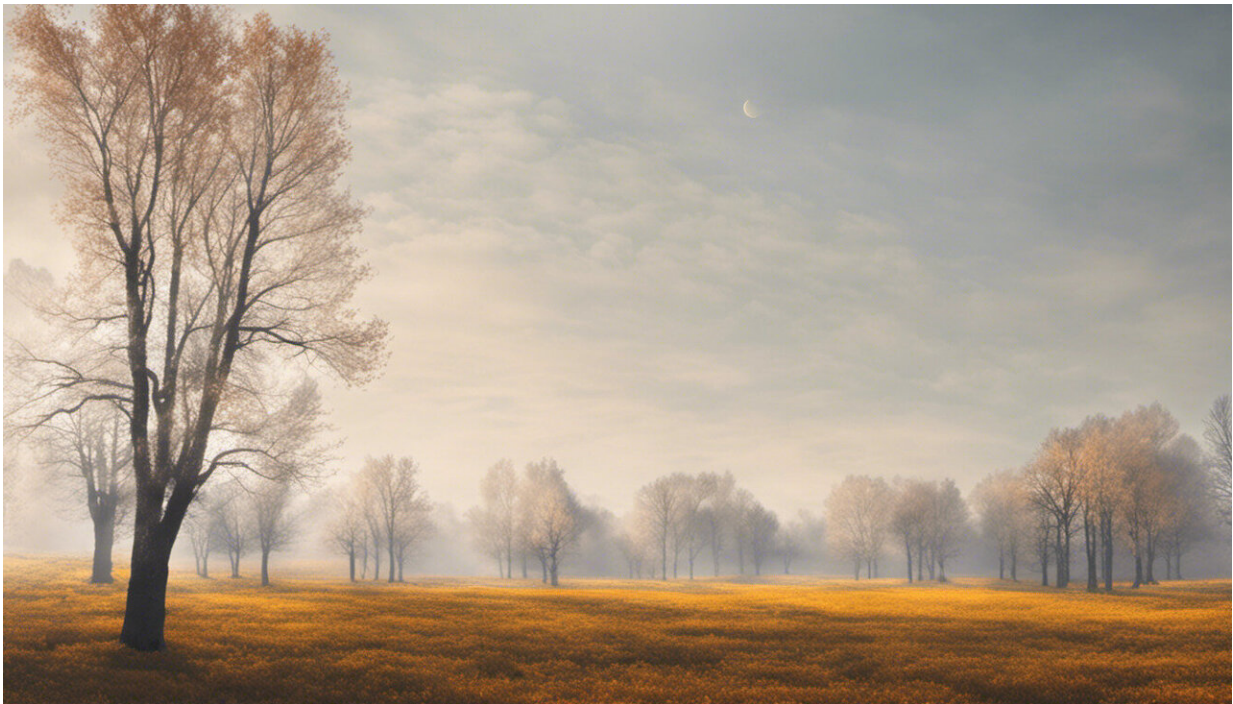


Three-degree rise in temperature will cancel out European emission reduction efforts

August 14 2017



Credit: AI-generated image ([disclaimer](#))

As a debilitating heatwave, nicknamed 'Lucifer' by the press, currently engulfs southern Europe, a new study part-supported by two EU-funded projects has warned that a rise in global temperatures of three degrees would reverse Europe's dedicated efforts to reduce ozone pollution.

Despite the COP21 international agreement to reduce global warming to below two degrees, the research team behind the study published in *Nature Communications* has warned that a global temperature rise of about three degrees is not only possible but highly likely when considering the Intended Nationally Determined Contributions submitted for the COP21.

Specifically, the study argues that if states reduce their [greenhouse gas emissions](#) as promised at COP 21 in 2015, the planet could warm by three degrees in 2050 compared to the pre-industrial era. For several decades, European regulations to limit the emissions of ozone have improved [air quality](#) and could theoretically continue to bear fruit by 2050. But climate change and, in parallel, continued [ozone pollution](#) through emissions being generated in other regions of the world would tip the balance against such stringent European efforts. Indeed, for the three degrees increase scenario, climatologists predict that there would be an overall doubling by 2100 of the global concentration of methane.

Through numerical simulations using a cascade of models of atmospheric chemistry and climate, developed within the EU-funded ECLIPSE project (that ended in 2015), the researchers have warned that in this scenario European efforts to reduce ozone emissions be effectively cancelled out. They also argue that the greatest impact would be on industrial regions, big cities and southern Europe. With a rise in temperatures by three degrees instead of two, air quality would clearly degrade, especially in southeastern Europe, where the health of the population could be severely exposed to an average of 100 ozone exceedance days a year. The researchers warn that considering the adverse effects of even short-term exposure to daily ozone concentrations, this would strongly impact both human health, as well as vegetation.

To overcome these obstacles, the research team argues that if European

air quality is to be improved, then there must be concerted global regulation on global methane emissions, which would provide positive effects on regional air quality but also benefit the fight against climate change. Moreover, it is important to note that these projections relate to a specific region and climate scenario, and the authors explain that different [emission](#) or temperature trajectories may alter the predicted [ozone](#) increases.

As well as being supported by the ECLIPSE project, the authors also acknowledge support from the EU-funded IMPACT2C project, also officially ended in 2015, which comprehensively mapped the effects of climate change on Europe from a two degree rise in [global temperatures](#). Together, both projects received nearly EUR 9 million of EU funding.

With southern Europe continuing to bake in the 'Lucifer' heatwave and the recent release of another article that warns up to 150 000 people could be killed per year in Europe as a result of [climate](#) change, it is evermore obvious that to effectively fight growing air pollution, Europe must continue to cooperate and encourage its global partners to also take effective and decisive action against [climate change](#) as outlined in the COP21 agreement.

More information: ECLIPSE—Evaluating the Climate and Air Quality Impacts of Short-Lived Pollutants:
cordis.europa.eu/project/rcn/100410_en.html

IMPACT2C—Quantifying projected impacts under 2°C warming:
cordis.europa.eu/project/rcn/99957_en.html

Provided by CORDIS

Citation: Three-degree rise in temperature will cancel out European emission reduction efforts (2017, August 14) retrieved 19 April 2024 from <https://phys.org/news/2017-08-three-degree-temperature-cancel-european-emission.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.