Climate risk from wind farms is minimal, study says

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Windmills at sunset. Credit: Augustin Colette

Concerns that giant wind farms aimed at easing climate change in fact aggravate the problem are misplaced, a scientific study said on Tuesday.

In the past four years, several investigations have suggested that—on a local scale—a wind farm can slightly raise temperatures and boost rainfall through the way its wake mixes layers of warm and cold air.

This has prompted concerns that vast wind farms could modify the

weather even in places far away.

One 2010 simulation found weather conditions could be significantly changed for locations several thousand kilometres (miles) downstream from wind farms.

But a new probe, published in the journal *Nature Communications*, said previous region-wide simulations had lacked key details about the impact of turbine wake, which was in fact almost negligible.

Researchers led by Robert Vautard of France's Laboratory for Climate and Environment Sciences examined the likely effect of wind farms on regional weather for 2020 if the European Union's plan for limiting climate change are implemented in full.

Under it, renewables are supposed to account for 20 percent of the EU's energy mix by 2020.

For its calculations, the team used the measured local weather impacts of wind farms operational in 2012 to model future effects based on the projected increase in farms, including offshore turbines—a big trend in wind power.

It concluded that climate impacts from wind installations will be "limited" in 2020.

In the worse case, wind farm impacts will be far below normal variability in weather and repercussions from man-made climate change, said the paper.

Any changes of consequence would occur only in winter, through a combination of two factors: the local effects of the wind farms together with a weak but tenacious anticyclone affecting wind circulation over

Europe.

Under such conditions, temperatures could rise or fall by 0.3 degrees Celsius (0.6 degrees Fahrenheit) and rainfall could fall by up to five percent for certain areas.

"The impacts remain much weaker than the natural climate interannual variability and changes expected from greenhouse gas emissions," the paper said.

More information: Regional climate model simulations indicate limited climatic impacts by operational and planned European wind farms. R. Vautard, F. Thais, I. Tobin, F..-M. Bréon, J.-G. Devezeaux de Lavergne, A. Colette, P. Yiou, and P. M. Ruti, *Nature Communications*, Published on line 11 February 2014. DOI: 10.1038/ncomms4196. Paper: dx.doi.org/10.1038/ncomms4196