ADVERTISEMENT

5 October 2010 Last updated at 12:34 ET

368 Share

Wind farms 'affect local climate'

By Katia Moskvitch
Science reporter, BBC News

One of the solutions would be changing the rotor design

Wind farms, especially big ones, generate turbulence that can significantly alter air temperatures near the ground, say researchers.

As turbines often stand on agricultural land, these changes could in turn affect crop productivity.

In the journal Proceedings of the National Academy of Sciences (PNAS), the team says the impact could be reduced by changing rotor design.

Another option would be to site farms in areas with high natural turbulence.

The world's very first wind farm was set up in southern New Hampshire, US, in 1980.

Almost a decade later, in 1989, a meteorological field study conducted on a wind farm in San Gorgonio, California, gathered temperature data over a period of almost two months.

This data formed the basis of **the current study**.

The team, led by Somnath Baidya Roy from the University of Illinois, analysed the information - seemingly, "the only meteorological field campaign conducted in an operational wind farm".

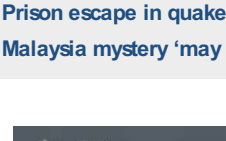
The scientists also conducted multiple computer simulations of a wind farm using a climate model called RAMS (Regional Atmospheric Modeling System).

The research showed that, depending on the natural air conditions, mixing the air with a turbine's rotor would either result in a warming or a cooling near the surface.

Related Stories

- UK 'needs domestic wind industry'
- Huge growth at largest wind farm
- Solway wind farm plans under fire

> **"The major threats to agriculture in terms of changing the air temperature come directly from the fossil fuel industry and deforestation"**
>
> Jonathan Scurlock
> National Farmers Union



US political donation limits quashed

Yanukovych decries Crimea annexation
Stolen art 'hung on kitchen wall'
Prison escape in quake-hit Chile city
Malaysia mystery 'may not be solved'

ADVERTISEMENT

A $2bn industry
Why US must lock up 34,000 immigrants daily

Spies at school
How the secret police tracked my childhood

Shared | Read | Video/Audio

1 Microsoft scam man is sentenced
2 Stolen art 'hung on kitchen wall'
3 US political donation limits quashed
4 Putin divorce goes through
5 Yanukovych decries Crimea annexation
6 Celebrity apology breaks Weibo records
7 Waterstone 'predicts e-book decline'

Web2PDF
converted by Web2PDFConvert.com

"This turbulence leads to a warming near the surface at night and a cooling during the day," Dr Roy told BBC News.

He added that the effects were in the range of 0.4 to 1.5C.

To reduce this turbulence effect and therefore the impact on the ground temperature, the authors suggest two possible solutions.

One is changing the rotors - possibly a rather expensive strategy, but, argue the scientists, "designing new rotors that generate less turbulence in their wakes also increases the productivity of wind farms".

And the second tactic would be moving the wind farm in question to a different site, with high natural turbulence.

Crops grown around turbines could be affected

Fossil fuels

But Jonathan Scurlock, chief adviser on climate change and renewable energy at the National Farmers Union, said that using wind energy was "one of many measures, which can be [used] to mitigate climate change".

"The major threats to agriculture in terms of changing the air temperature come directly from the fossil fuel industry and deforestation, increasing CO2 concentration in the atmosphere," he added.

"Farmers have got far more to fear from … well-known climatic processes driven by fossil fuel emissions than anything that is going to come as a consequence of deploying wind power."

But Dr Roy noted that even though wind farms were unlikely to have an effect on global climate change, "the impacts on local climate can be large".

He also said that the study was not about comparing wind power to any other technology, but about considering and addressing possible side effects of this green energy.

"Wind energy is likely to be a part of the solution of the global warming problem," he said.

"Often, in a rush to implement new technologies, we ignore possible side effects that may show up in the future.

"As a strong proponent of renewable energy, I am interested in making sure that the technology is properly implemented, [to ensure] long term sustainability of wind power by helping operators and utility companies to indentify impacts of wind farms on local weather and if necessary, take appropriate steps to mitigate these effects."

> **"Often, in a rush to implement new technologies, we ignore possible side effects that may show up in the future"**
>
> Somnath Baidya Roy
> University of Illinois

Related Stories

UK 'needs domestic wind industry' 27 SEPTEMBER 2010, SCIENCE & ENVIRONMENT

Huge growth at largest wind farm 07 SEPTEMBER 2010, GLASGOW & WEST SCOTLAND

Solway wind farm plans under fire 17 AUGUST 2010, SOUTH SCOTLAND

Related Internet links

Proceedings of the National Academy of Sciences

The BBC is not responsible for the content of external Internet sites

Malaysia mystery 'may not be solved' 8
Prison escape in quake-hit Chile city 9
How the secret police tracked my childhood 10

New, New York?
What if you could redraw the city's map - and build it from scratch?

The Travel Show
The snappy revival of old photo booths which are making a return to the streets of Europe

ADS BY GOOGLE

Hair Growth Vitamins
We Tried Them All. Here's The Only One We Recommend.
consumersguides.com

How to Fix Slow Computer
Easily Repair a Slow Computer. Very Simple Instructions (Recommended)
windowsanswers.net/Slow-Computer

Coffee Exposed
A shocking secret coffee co's don't want you to know
www.coffeefool.com

Web2PDF
converted by Web2PDFConvert.com

368 Share

The origin of lions discovered
A new genetic analysis confirms where modern lions came from, scientists say.

'Love drug' increases group lying

Climate inaction catastrophic - US

Mobile **Connected TV** **News feeds** **Alerts** **E-mail news**

Editors' blog
BBC College of Journalism
News sources
Media Action
Editorial Guidelines

BBC © 2014 The BBC is not responsible for the content of external sites. Read more.

Mobile site
Advertise With Us
Ad Choices

Terms of Use
Privacy
Cookies

About the BBC
Accessibility Help
Contact the BBC
Parental Guidance

Web2PDF
converted by Web2PDFConvert.com