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Scientists 'too pessimistic' in carbon emission predictions

JOHN ROSS THE AUSTRALIAN JULY 29, 2015 12:00AM



The carbon sink capacity of vast areas of Arctic tundra has been underestimated, a report says. Source: News Limited

Climate scientists have consistently underestimated the capacity of a vast Arctic region to absorb carbon emissions.

A report, published overnight in the journal *Biogeosciences*, has also uncovered broad disagreement among “state-of-the-art” simulations of the sequestration of atmospheric CO₂ by the tundra and forests of northern Eurasia.

The study, led by University of Massachusetts geoscientist Michael Rawlins, analysed nine leading climate models. It found they tended to overestimate carbon emissions from the region, particularly in autumn, and to underestimate the carbon sink.

“There is good news in that the region is likely storing more of the carbon being emitted by human activities than the models depict,” Dr Rawlins said.

“But the lack of agreement across the models is a concern.”

He said northern Eurasia played a key role in the global carbon cycle because of its massive forests and huge soil carbon reservoirs. The region’s “net land carbon sink” — the difference between sequestered CO₂ and natural carbon emissions — was equivalent to 6.5 per cent of global carbon emissions from fossil fuel and cement.

This more than compensated for the total carbon output from Russian industry and households, he said.

The study also found that the region’s land carbon sink had strengthened, with increased carbon uptake from plant growth outweighing increases in “respiration”. Dr Rawlins said this reflected dual factors, both triggered by atmospheric warming.

“Over recent decades, warming at high latitudes has led to a lengthening of the vegetation growing period, which has enhanced sequestration through higher rates of photosynthesis,” he told *The Australian*.

He said simulations for the period from 1960 to 2009 showed that the carbon sink had strengthened until around the beginning of the 21st century. Since then it had “stabilised”, with emissions from plant decomposition keeping pace with the gains from photosynthesis.

The researchers blamed the disparity in the models on a lack of data. Northern Eurasia was “critically under-sampled”, attracting less field study than other parts of the Arctic.

Dr Rawlins said decision-makers should not rely on a single model for predicting the Arctic’s future: “This could lead to a very biased assessment.”