

Scientists try to unravel warming's impact on jet stream

February 12 2015, by Clement Sabourin



A plane operated by British Airways, which saw one of its planes make a record-fast trip between New York and London in January 2015, lands at Washington Dulles International Airport

A winter of strange weather and turbulent transatlantic flights has scientists asking: Has a predicted climate imbalance of the jet stream begun?

The Arctic is warming faster than other parts of the world, and scientists believe that is having a dramatic impact on the jet stream, which may be responsible for the unusual weather and stronger upper atmospheric winds of late.

On January 8, thousands of Britons were left without electricity in the aftermath of the most violent storms to hit the isles in more than a century. British Airways Flight 114 carried by strong winds journeyed from New York to London in a record five hours and 16 minutes.

Several jetliners flying from Europe to North America in recent weeks faced powerful headwinds, which forced them to make unscheduled mid-flight stops to refuel.

Canada's easternmost Goose Bay airport on the shores of Labrador in December and January welcomed several large passenger jets that had spent all of their fuel fighting winds.

Some days, the tiny, remote airport's tarmac has been lined with as many as a dozen Airbus or Boeing jetliners waiting to refuel, airport operations chief Goronwy Price told AFP.

"When the weather patterns are not right, we have a constant stream of jets coming in for gas. When things are good, you don't see them," said Price.

The jet stream—a narrow, variable band of westerly air currents miles above the Earth—is strongest in winter, when boundaries between hot tropical and cold polar air masses are most pronounced.



A plane flies above The Netherlands in April 2010, with scientists wondering now whether a predicted climate imbalance of the jetstream has begun

Currents can be even more turbulent at high altitudes flown in by jetliners some 10 kilometers (six miles) above the Earth, where winds can reach 300 kilometers (186 miles) per hour.

'Chaotic atmosphere'

Since 2012, researcher Jennifer Francis of Rutgers University in New Jersey has been trying to develop new scientific tools to study these "very messy" changes in the jet stream.

She revealed her preliminary findings to the Royal Society of Britain last fall.

"Last winter and this winter the jet stream has been unusually strong," she said, adding that scientists expect more of the same in coming years.

"The Arctic melting," she explained, "is happening very rapidly and it must be having an impact on the jet stream."

But not every expert feels the same way.

Climate expert James Screen of the University of Exeter, who recently co-authored an as yet unpublished paper on the impact of Arctic warming on the jet stream, is skeptical of any direct link between the dramatic retreat of Arctic sea ice and more turbulent air travel.

"I have not seen any evidence to suggest a trend in the speed of the jet stream over the past few decades," he said in an email.

He added, however: "That is not to say that climate change may not impact the jet stream in the future."

The jet stream changes from year to year due to natural climate variability, Screen explained, so it is difficult to detect "robust trends."

Reading University climatologist Paul Williams told AFP that "equator-to-pole temperature difference is decreasing in the bottom few kilometers of the atmosphere because of rapid Arctic warming."

Research shows "evidence that the lower part of the jet stream is weakening as a consequence," Williams said. But planes cruise at higher altitudes, where wind shears are believed to be strengthening.

More study is needed, he said, but the impacts on aviation in the coming decades "could be more clear-air turbulence, resulting in a bumpier ride for passengers."

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