

**AMERICAN METEOROLOGICAL SOCIETY
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New Research Detects Human-induced Climate Change at a Regional Scale in Canada, Southern Europe and China

Canadian and British climate scientists have clearly detected human-induced climate change at a regional scale in Canada, southern Europe and China. This new research is the first to combine the results from several climate model simulations, increasing scientific confidence in these findings.

The study, by climate scientists Xuebin Zhang and Francis Zwiers of Environment Canada, and Peter Stott of the UK Meteorological Office, is published in the September issue of the American Meteorological Society's *Journal of Climate*. In the study, the scientists used four climate models – two developed by Environment Canada, and two developed by the UK Met Office.

The three regions in the study have experienced rising temperatures during the 20th century. The scientists analyzed temperature measurements from 1900 to 1999, to determine the geographic patterns and timing of this warming, as it changed from decade to decade. The researchers then used computer-based climate models developed at the Canadian Centre for Climate Modeling and Analysis and the Hadley Centre for Climate Prediction and Research to simulate the climates over the same time periods.

They found that simulations which include human influences on climate were able to reproduce the patterns and evolution of the observed temperature changes. This indicates that the models can simulate climate change, even at a scale as small as that of a large country, and that natural variability of the climate system alone can not explain the observed warming.

In Canada, south of 70° N. latitude, human-induced climate change was detected most clearly in the period from 1950 to 1999. Canada has warmed

by about 1° C. over the past 100 years. The temperature rise from 1950 to 1999 was more pronounced than in the first half of the 20th century.

Over the past 10 years, climate scientists have been making steady progress in finding evidence of human-induced climate change. The challenge is to separate the natural fluctuations in climate from those that are caused by human activities. On a global scale, it is easier to detect such small changes in climate, as the natural fluctuations tend to average out for a large area. Scientists are now able to identify the human fingerprint on smaller areas, even at the scale of a single large country. Researchers attribute this progress to improvements in computer models, faster supercomputer capability, a growing record of historical climate information, and the fact that climate change is now becoming more pronounced.

This research also gives the scientists increased confidence in their ability to predict future climate change. By using computer models to simulate climate change that has already occurred, the researchers have demonstrated the accuracy of the model projections.

The American Meteorological Society (www.ametsoc.org) is the nation's leading professional organization for those involved in the atmospheric and related sciences. Founded in 1919, the AMS has more 11,000 international members, organizes nearly a dozen scientific conferences annually, and publishes nine peer-reviewed journals.

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For a PDF copy of the paper "*Multi-model Multi-signal Climate Change Detection at Regional Scale*" contact Stephanie Kenitzer, AMS, Kenitzer@ametsoc.org or (425) 432-2192