



THE UNIVERSITY *of* EDINBURGH

## *News Release*

Issued: Monday 24 July 2017

---

**UNDER STRICT EMBARGO UNTIL 1600 BST MONDAY 24 JULY 2017**

### **New take on historical climate change may inform Paris targets**

Efforts to implement the terms of the Paris Agreement on climate change should include a fresh understanding of how global temperatures have risen throughout the centuries, research suggests.

Previous attempts to gauge global warming over the years have defined the pre-industrial age as the period 1850-1900. However, a new study shows that by this time, when the industrial revolution was under way, warming may already have occurred.

Research estimating global temperatures from 1400-1800 could improve definitions of pre-industrial temperatures, and help decide a baseline temperature for the Paris Agreement on climate change.

This aims to keep average global temperature increases below 2C, and preferably not more than 1.5C, above pre-industrial levels.

Researchers have used their estimates of historical global temperatures to help explore how varying definitions of pre-industrial temperatures could impact upon actions needed to meet the Paris targets.

Setting out a pre-industrial baseline temperature would also affect the volume of greenhouse gases that may be emitted by nations around the world within the terms of the deal.

Researchers at the Universities of Edinburgh, Reading and Pennsylvania State used computer model simulations to estimate global temperatures for various periods between 1400 and 1800.

They found that this timescale included periods of similar warmth to the late 19th century and periods when temperatures were 0.2C cooler. Their findings indicate that during the period 1850-1900, temperatures may already have begun warming.

The latest research suggests that using the late 19th century as a pre-industrial starting point may be optimistic in terms of meeting the Paris goals.

The study, published in *Nature Climate Change*, was supported by the European Research Council, Natural Environmental Research Council, National Centre for Atmospheric Science and Royal Society, UK, and the National Science Foundation, US.

---

*Ranked among the top universities in the world*

Dr Andrew Schurer, of the University of Edinburgh's School of GeoSciences, who led the work, said: "It's important that a consensus is reached on the definition of pre-industrial temperatures, to allow scientists and policymakers to properly assess progress to reduce emissions. There is no simple answer to this – for example, temperatures at the start of the last millennium were very different to those in the 17th century. These differences in definition could have a large impact on further emissions under the Paris agreement."

Michael Mann, Distinguished Professor of Atmospheric Science and Director, Earth System Science Center, University of Pennsylvania State, co-author on the study, said: "Either the Paris targets have to be revised or we decide that the existing targets really were meant to describe only the warming since the late 19th century. If nothing else, the community needs to be far more precise in defining what baselines are being used in setting target."

For more information please contact:

Catriona Kelly, Press & PR Office, 0131 651 4401; 07791 355940; [Catriona.Kelly@ed.ac.uk](mailto:Catriona.Kelly@ed.ac.uk)