

**Embargoed until
Sunday, 21 April 2013, 7 p.m. CEST**

Birmensdorf, 21. April 2013



Birgit Ottmer
Communications
Telefon +41-1-739 22 74, Fax +41-1-739 22 15
birgit.ottmer@wsl.ch

Media release WSL

Climate history: major differences between the continents

The Northern and Southern Hemispheres have experienced significantly different climate changes over the past one to two millennia. The Medieval Warm Period, for example, began over 300 years later in the South than in the North while the so-called Little Ice Age started several decades earlier in the North compared with the South. This is the conclusion of a new study conducted as part of the Past Global Changes (PAGES) 2k project and published in Nature Geoscience on 21 April 2013. WSL researchers made important contributions to the temperature reconstructions for Europe, South America and Australia.

Headed by the PAGES Office at the University of Bern, some 80 researchers from around the world consolidated and jointly evaluated their data and studies on past climate changes. The data sources used included marine and lake sediments, glacier ice, dripstones and – as in the case of the participating WSL researchers – tree rings. Armed with this information, the researchers were able, for the first time, to reconstruct and compare temperature changes in seven continental-scale regions (Antarctica, South America, North America, Australia, Asia, Europe, Arctic) over the past one to two millennia.

Although the major changes (i.e. a general cooling trend that ended in the late nineteenth century to be followed by recent warming) took place globally, changes

within the Northern and Southern Hemispheres were much more similar than those between the hemispheres. The Medieval Warm Period in the Northern Hemisphere lasted from around AD 830 to 1100, whereas in South America and Australia a comparable warm phase did not occur until some three centuries later (from around AD 1160 to 1370). The Little Ice Age was essentially a global phenomenon but it began several decades earlier (around AD 1500) in the Arctic, Europe and Asia compared to the other regions. The warming trend in the twentieth century was approximately twice as intense in the Northern Hemisphere as in the South. Overall, the global average temperature between 1971 and 2000 was higher than at any other time over the past 1,400 years.



Two WSL researchers, Ulf Büntgen and Raphael Neukom, were involved in the PAGES project. Büntgen used tree rings to reconstruct the European climate while Neukom employed the same method to investigate temperature changes in South America and Australia. Tree rings were the most important basis for reconstructions for all three continents. “The fact that we were able to reconstruct temperatures in Europe over the past 2,000 years is all down to the data built up by WSL,” Büntgen explains. “It allowed us to contribute one of the longest annual time series of the whole consortium.” Neukom adds: “In the tropical regions of Australia and the high Andes, most of our data came from coral, sediments and ice cores. However, the tree-ring data from Tasmania, New Zealand and Patagonia were crucial for ensuring a balanced geographical coverage of these regions. The longest of these tree-ring time series go back over two millennia. But because the geographical coverage for these areas is less extensive than in Europe, our reconstructions could only focus on the past 1,000 years.”

However important the individual, continent-specific reconstructions are, what makes the study unique is that it covers and compares almost all of the Earth’s continents. “Even just a few years ago we would have aimed for a single worldwide temperature series,” Büntgen explains. “Nowadays, we know how important it is to have a better understanding of regional differences.”

More of the study’s findings, together with organisational information, can be found in the PAGES 2k Consortium press release published by the University of Bern:
http://www.kommunikation.unibe.ch/content/medien/medienmitteilungen/news/2013/pages/index_ger.html

Original article:

“Continental-scale temperature variability during the past two millennia”, PAGES 2k Consortium, Nature Geoscience, online from 21 April 2013.
<http://dx.doi.org/10.1038/ngeo1797>

WSL contacts:

PD Dr Ulf Büntgen: ulf.buentgen@wsl.ch, +41 (0)44 739 26 79

Dr Raphael Neukom: raphael.neukom@wsl.ch, +41 (0)44 739 29 64

Ulf Büntgen and Raphael Neukom are affiliated with the Oeschger Centre for Climate Change Research at the University of Bern.

Birgit Ottmer, Communications Officer: birgit.ottmer@wsl.ch, +41 (0)44 739 22 74

Captions



Andrew M. Lorrey from the National Climate Centre Auckland (NZ) is sampling a kauri (*Agathis australis*) in New Zealand. These trees can reach 50 m in height and live several thousand years. (Photo: Joëlle Gergis, University of Melbourne)