

# <sup>14</sup>C-Chronology

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The radiocarbon dating method is commonly used to estimate the age of carbon-bearing material deposited in nature during the last 50 kyr. During nearly six decades of its application, the method has become a research discipline in itself. An ever-growing demand for reliable chronologies drives developments in preparative and measurement techniques. The need for calibration of the <sup>14</sup>C timescale, which has been the main challenge posed by the <sup>14</sup>C dating method almost from the beginning, has resulted in extended studies of suitable archives (trees, lake sediments, corals, stalagmites), as well as the development of calibration programs. All these developments were possible because of interdisciplinary collaborations. The exciting questions emerging as the work continues call for closer collaboration to keep the communities informed and interacting. For example, recent discussions on the timing of the Neanderthal extinction, the dispersion of modern *Homo sapiens* across Europe, and the possible connections to the climate changes that took place around that time of meltwater event Heinrich 4, rely heavily on the radiocarbon timescale and calibration. Our knowledge of paleo-reservoir ages, which is critical for marine records, is still very limited and a combined effort of the paleo and <sup>14</sup>C communities is needed. Furthermore, new calibration tools are now available and the benefits of using them should be presented to the paleocommunity.

In this issue of *PAGES news*, nine contributions present overview and progress reports on new developments in <sup>14</sup>C dating method and applications: The complex global cycle of the cosmogenic isotope <sup>14</sup>C is addressed by Konrad Huguen. He presents an overview of the recent reconstructions of  $\Delta^{14}\text{C}$  (the measure of variability in the atmospheric <sup>14</sup>C content), which also contribute to the effort to extend the radiocarbon calibration curve back to the limit of the method (ca. 50-60 kyr BP). The progress and future prospects of the extension of the calibration curve is the focus of the IntCal group, presented in this issue by Paula Reimer. Promising new results from dating ancient Kauri wood from New Zealand (OIS3) were obtained by Alan Hogg and co-workers. Work towards more precise chronologies depends on the quality of radiocarbon ages. Results of two recent inter-comparison exercises (FIRI and VIRI) are reported by Marian Scott. In the contribution from Ron and Paula Reimer, spatial variability of marine reservoir ages is addressed; an important correction included in the calibration program and needed for marine records. Reconstruction of paleoreservoir ages is addressed by Pieter Grootes and Michael Sarnthein. Christopher Bronk Ramsey describes the Bayesian approach to calibrating sequences of <sup>14</sup>C ages using OxCal. A similar approach using the Bpeat code based on the MexCal program is presented by Maarten Blaauw. The higher precision of chronologies based on such approaches is illustrated by examples discussed in the contribution by David Lowe, Rewi Newnham and myself.

These are only a few examples of <sup>14</sup>C research activities that aim to improve the radiocarbon timescale and our understanding of complex processes that complicate this otherwise very straightforward method. We are all looking forward to the new, exciting data and even closer collaboration between the paleo and <sup>14</sup>C communities.

## PAGES calendar 2007

**April 11 - 14, 2007, Nanjing, China**  
**2nd LIMPACS Salinity, Climate Change and Salinisation Workshop**

Further Information:  
[www.geog.ucl.ac.uk/ecrc/limpacs/events.htm](http://www.geog.ucl.ac.uk/ecrc/limpacs/events.htm)

**May 19 - 24, 2007, Obergurgel, Austria**  
**Ocean Controls in Abrupt Climate Change**  
**ESF-FWF Conference in Partnership with LFUI**

Further Information:  
[www.pages.unibe.ch/calendar/2007/ESF\\_Conference\\_announcement.pdf](http://www.pages.unibe.ch/calendar/2007/ESF_Conference_announcement.pdf)

**July 11 - 14, 2007, Barcelona, Spain**  
**4th International Limnogeology Congress**

Further Information:  
[www.ilic2007.com/](http://www.ilic2007.com/)

**July 28 - August 3, Cairns, Australia**  
**XVII INQUA Congress 2007**

Further Information:  
[www.inqua2007.net.au](http://www.inqua2007.net.au)

**August 27 - 31, 2007, Beijing, China**  
**Third Alexander von Humboldt International Conference: East Asian Summer Monsoon, past, present and future**

Further Information:  
[www.pages.unibe.ch/calendar/2007/monsoon\\_simp.pdf](http://www.pages.unibe.ch/calendar/2007/monsoon_simp.pdf)

**August 27 - 31, 2007, Hamburg, Germany**  
**Second International Conference on Earth System Modeling**

Further Information:  
[www.mpimet.mpg.de/icesm](http://www.mpimet.mpg.de/icesm)