

Tree Ring Research – Understanding Changing Environments

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The 7th International Conference on Dendrochronology – Cultural Diversity, Environmental Variability – took place in Beijing, China from 11 to 17 June 2006. More than two hundred presentations and around 100 posters covered all aspects of tree ring research including chemical and physical properties of tree rings; the biological basis of tree rings; climatology and hydrology; ecology; geology; the development of methods and models; archaeology and cultural studies as well as interdisciplinary studies. Special attention was given to the different uses of tree ring analysis in meteorology, geosciences and history.



Tree rings are a unique data source covering a wide range in space and time. Tree rings serve as environmental archives as they reflect environmental conditions and their changes. They allow a detailed reconstruction of tree growth – trunk, branches, roots and even needles. In times of fast environmental changes these archives become increasingly important. Consequently, the amount, length and quality of dendrochronologies is increasing all over the world, as possibilities to use them get continuously better and historical dendrochronology is linked to climatology, ecology and wood biology.

Studies of tree ring **chronologies of thousands of years** are used for long-term meteorological observations, for example, giving evidence of temperature and precipitation developments over the centuries. This is of great help for understanding changes in biodiversity.

The **variety of innovative applications** of dendrochronology for historical purposes shows that this is far more than a dating method. Dendro-provenancing is useful for identifying where the wood used in historical buildings, for example, comes from and which samples come from the same tree.

Dendroecology was defined as the science that uses tree rings dated to their exact year of formation to analyze temporal and spatial relationships between living organisms and their environment. Dendroecology is applied in many fields such as wildfire dynamics, insect dynamics, forest stand dynamics, forest management, environmental quality, human disturbances as well as in wildlife ecology.

In geosciences, dendroecology is also becoming increasingly important in reconstructing earth surface processes as it facilitates, among other things, the dating of land surfaces and the reconstruction of variable hydrological conditions in soils.

In all, tree ring research helps to understand environmental conditions and mechanisms of tree reaction. However, there is still a **huge potential for interdisciplinary cooperation** which is not yet exploited on an international level. This cooperation should lead to a more comprehensive understanding and provide more realistic and reliable information for decision support in the future.

(full report)

The conference was organized and hosted by the Institute of Botany, Chinese Academy of Sciences in conjunction with [IUFRO Working Party 5.01.07](#), Tree Ring Analysis under the auspices of the Tree-Ring Society (TRS) and the European Association for Tree-Ring Research (ATR). It was also sponsored by the National Natural Science Foundation of China (NSFC), the Chinese Academy of Sciences and the Past Global Changes (PAGES). Nearly 300 scientists from 35 countries participated. Rovaniemi, Finland, was agreed to be the venue of the next international conference of dendrochronology to be held in 2010.

Photo by Kaisu Makkonen-Spiecker: Conference Co-Chairs (from right): Peter Brown, President of the TRS, Qi-Bin Zhang, Institute of Botany, Chinese Academy of Sciences, and Heinrich Spiecker, President of the ATR.

What does it mean? <http://www.iufro.org/science/special/silvavoc/definitions-scic-summaries/>