

Laboratory of Tree-Ring Research

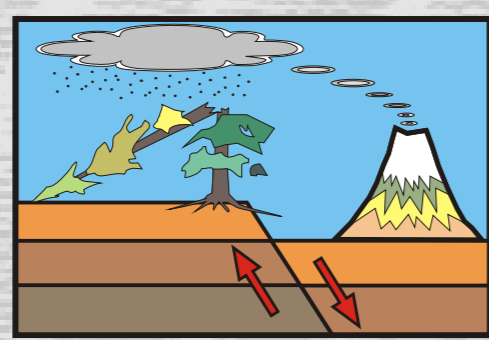
Interdisciplinary Research - Our Tradition and Future

Dendrochronology was built upon an interdisciplinary foundation. Our faculty, staff and students combine diverse types of tree-ring records and techniques to study environmental and cultural change. Our future holds great promise for learning more about the past and applying this knowledge so that we may be better prepared for the future. The Tree-Ring Lab has a long history of teaching and outreach, and this mission is expanding. To maintain our excellence in all of our missions will require a new facility designed for our needs.

Dendro-Climatology



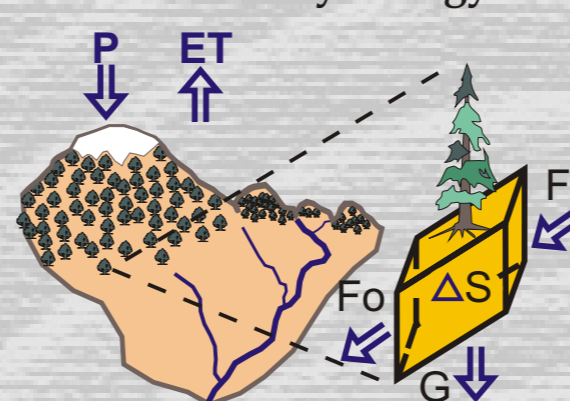
Dendro-Geology



Dendro-Ecology



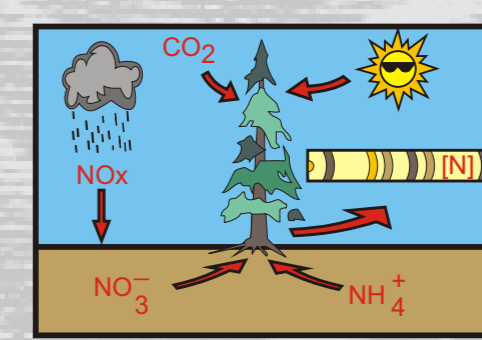
Dendro-Hydrology



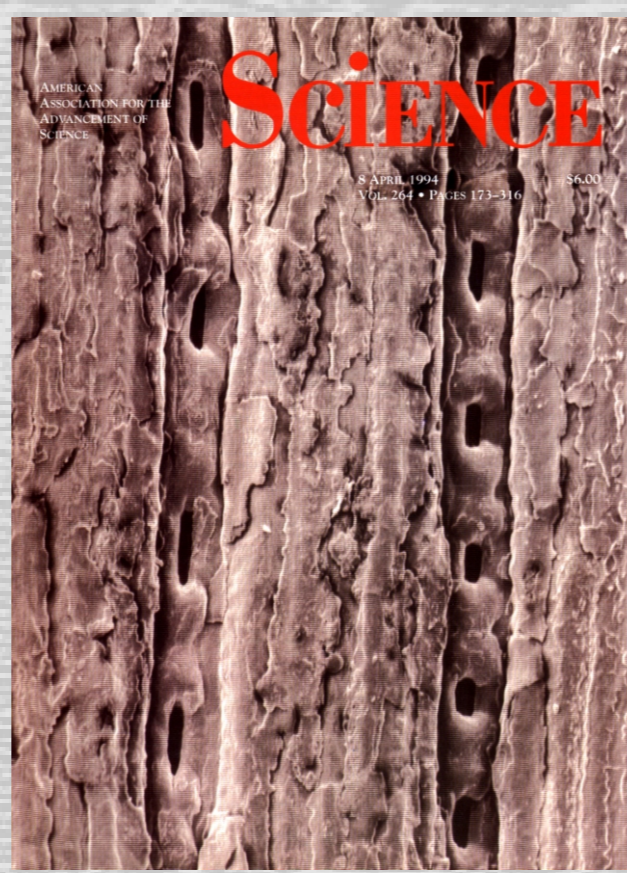
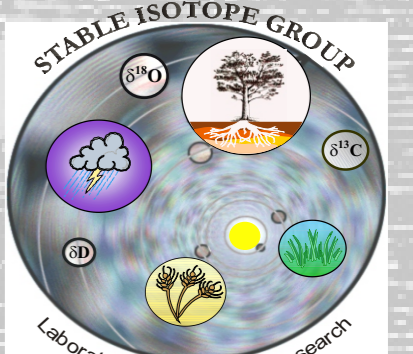
Dendro-Archaeology



Dendro-Biogeochemistry



Stable Isotope Dendrochronology



(Above) Trends in Stomatal Density and $^{13}C/^{12}C$ Ratios of *Pinus flexilis* Needles During Last Glacial-Interglacial Cycle, by P. K. Van de Water, S. W. Leavitt and J. L. Betancourt. *Science* 264:239-243, 1994.

(Right) Fire history and Climate Change in Giant Sequoia Groves, by T. W. Swetnam. *Science* 262:885-889, 1993.

Dr. Thomas Swetnam and Research Specialist, Sr. Christopher Baisan carry out fire history studies in forests throughout the western United States. The history of fires is distinctly recorded within the rings of giant sequoia and pine trees as fire scars.



Dr. Steven Leavitt (above, left) and his students, including Geosciences graduate student Edward Wright (above, right) investigate climatic changes by measuring carbon, oxygen and hydrogen isotopes within tree rings and leaves. Using these chemical markers they have recently made a breakthrough in our ability to distinguish summer from winter rainfall patterns in tree-ring records, thereby increasing our understanding of historical changes in these two critical seasons in arid land climatology.

Tree rings provide a natural basis for teaching and outreach because the applications and implications are so diverse and the ideas and materials are readily accessible to students of all ages. Undergraduates and graduate students work with the faculty and staff both in the laboratory and in the field. The Tree-Ring Lab has contact with hundreds of grade school through high school students each year, and students and visiting scientists from throughout the world come to Tucson to study at the place where dendrochronology was born.

The Tree-Ring Lab has been housed in "temporary" quarters in the UA Football Stadium since 1937. The Laboratory has outgrown the space that is available in this building, and future growth is jeopardized by these inadequate facilities. A particular concern is the overcrowded Tree-Ring Archive, which is the world's largest collection of ancient timbers. This extraordinary and priceless collection includes tree-ring specimens from throughout the world. Its current and future value is analogous to that of a great library that contains one-of-a-kind books.



(Left) Laura Baxter obtains a tree-ring sample from a beam in an Anasazi ruin in Colorado. Baxter worked with Dr. Dean as a Tree-Ring Lab intern while she was an undergraduate at Bradford University in the United Kingdom



(Above) Gridley Middle School children hold tree-ring cross sections, and (right) Research Specialist, Sr. Rex Adams demonstrates the diameter of a giant sequoia with a radial section at Borton Primary Magnet School.



The Tree-Ring Lab is located underneath the bleachers on the west side of the stadium (left and below left). The archive (below) is currently overflowing with specimens.

