IMPLICATIONS OF $\delta^{13}C$ VARIATIONS IN C_3 PLANTS OVER THE PAST 55,000 YEARS

S W LEAVITT

Laboratory of Tree-Ring Research, University of Arizona, Tucson, Arizona 85721 USA

and

S R DANZER

Department of Geosciences, University of Arizona, Tucson, Arizona 85721 USA

The transition from most-recent glacial to postglacial (ca 10,000 BP) marks a pronounced change in $\delta^{13}C$ of atmospheric CO_2 and CO_2 concentration, and perhaps in light levels, soil moisture and other environmental conditions. Such environmental factors may influence plant carbon-isotope fractionation and, therefore, may have induced changes in plant $\delta^{13}C$ through time. Radiocarbon-dated organic matter with reported $\delta^{13}C$ values have been examined for trends or changes in $\delta^{13}C$ in response to these major environmental dislocations. A significant $\delta^{13}C$ decline from pre- to post-10,000 BP in both wood and, with a smaller magnitude, in all plant matter is consistent with an increase in the ratio of intercellular to atmospheric CO_2 partial pressures from glacial to postglacial.

A NEW TREE-RING WIDTH, $\delta^{13}C$ AND ^{14}C INVESTIGATION OF THE TWO CREEKS TYPE LOCALITY

S W LEAVITT

Laboratory of Tree-Ring Research

and

ROBERT M KALIN

Laboratory of Isotope Geochemistry, Department of Geosciences, The University of Arizona, Tucson, Arizona 85721 USA

We have recently made an extensive collection of wood from the original Two Creeks site in order to study it with respect to radiocarbon activity and stable-carbon isotope composition. The wood includes isolated logs as well as a trunk in growth position rooted in the Two Creeks soil zone. Five pieces of wood were initially selected for detailed analysis. Radiocarbon analysis was performed on ABA-treated wood and on base-soluble fractions, both on complete specimens and on the outermost rings alone. Ring widths were measured to attempt standard cross-dating, and $\delta^{13}C$ chronologies were developed using five-year ring groups as another means of cross-dating. We discuss our results from these analyses in the context of the reported age and duration of the Two Creeks interval.

FOSSIL RADIOACTIVITY FROM NEARBY SUPERNOVAE

RICHARD E LINGENFELTER

Center for Astrophysics and Space Sciences, University of California, La Jolla, California 92093 USA

We consider the present levels of various fossil radioactivities that might be expected from Galactic supernovae in the past, and compare them with currently available data. In particular, we estimate the expected activities produced directly from supernovae nucleosynthesis and indirectly by