



14C14

Department of Geosciences
University of Arizona
Tucson, Arizona 85721
Tel. (602) 621-8888

THE 14TH INTERNATIONAL RADIOCARBON CONFERENCE will take place May 20th through May 24th 1991. We have accepted almost 200 abstracts and assigned them to 17 oral and 4 poster sessions. In addition, the conference features three **pre-conference workshops** (Liquid Scintillation Counting, Prospects for Temporal Extension of the Radiocarbon Calibration, and Paleoenvironments of the Eastern Mediterranean), a **Paleoastrophysics Workshop** and two post-conference field trips.

The conference and workshops will be at the **Westward Look Resort**, 245 East Ina Road, Tucson, AZ 85704. The conference rate per room is \$60.00, plus tax, for 1 to 3 persons. Rooms are equipped with refrigerators and other amenities. **Attendees must make their reservations directly with the hotel** by calling (602) 297-1151 (Voice), or (602) 742-1573 (FAX). The toll-free number from outside Arizona is (800) 722-2500. Please direct any questions about your room reservation to the hotel. Reservations must be made by April 19, 1991.

Evening and social activities include a traditional **Mexican reception** on Monday, a trip to the Arizona-Sonora Desert Museum and Old Tucson (admission not included) on Wednesday afternoon. A trip to **Kitt Peak** Astronomical Observatory (\$15 extra) will be another option for Wednesday afternoon. The banquet (southwestern barbecue) on Thursday evening will feature regional fare. The banquet fee will be \$30.00 per person.

We invite conference participants to **tour our laboratories** on the University campus on Tuesday evening, after which transportation will be provided for a **Dine-Around** tour of local restaurants.

A **registration** form is enclosed. The registration fee is \$225.00 after December 15th 1990. Accompanying guest fee is \$50.00. The student registration fee is \$100.00 for full-time university students only. Conference Proceedings will be published by *RADIOCARBON* and may be ordered now at the pre-publication price of \$40.00. The registration fee includes opening reception on Monday evening, continental breakfasts and coffee-breaks, transportation and entrance fee to the Arizona-Sonora Desert Museum, laboratory tour and reception, and transportation for the Dine-Around.

The Westward Look Resort will organize optional **daytime tours** for accompanying guests to local attractions such as San Xavier Mission, Tubac and University Museums.

The Westward Look Resort is located approximately 10 miles north of central Tucson in the foothills of the Santa Catalina Mountains. Participants who arrive at Tucson International Airport can travel by Arizona Stagecoach limousine service at an approximate cost of \$15.50 per person. Arizona Stagecoach has a desk in the lower concourse baggage-claim area. Conference representatives will be at the Tucson airport during peak arrival times to assist with transportation. Many air fares to Phoenix are less expensive than fares to Tucson. Participants who arrive at Phoenix Sky Harbor International Airport may travel by Arizona Shuttle Service to the Ina Road drop-off point, where transportation to Westward Look will be provided. The cost is approximately \$18. The trip from Sky Harbor is about two hours. Car rental is available at both airports. Trains run three times a week to Tucson from Los Angeles and three times from New Orleans.

Arrangements are underway for two **POST-CONFERENCE TOURS**. The Grand Canyon trip will include four days/three nights, with overnight stops in Sedona, the Grand Canyon and Flagstaff. Other highlights of the trip will include a visit to a **Ghost Town** (Jerome), **Montezuma Castle**, **Oak Creek Canyon**, the **Little Colorado River Gorge**, the **Painted Desert** and the **Heard Museum** in Phoenix. All this is fully escorted with tour guides to talk on American history, geology, folklore, etc. The second trip, to southeastern Arizona, will visit the **Murray Springs** and **Lehner Clovis/Mammoth sites**, escorted by C. Vance Haynes, Jr, the principal excavator. This two-day trip will overnight in **Bisbee**, at the famous **Copper Queen Hotel**, and stop at **Tombstone**, "The Town Too Tough To Die" and the **Amerind Foundation**, a research museum of Native American cultures. Please see the reverse for costs, and send your deposit for your selected tour with the registration fee.

Fax: (602) 621-2672

Telex: 650-3839821

Bitnet: C14@ARIZRVAX

14th International Radiocarbon Conference

CONFERENCE SESSIONS

	Morning	Afternoon
Monday, May 20	1A. Current Topics in Global Change & Radiocarbon Dating	1B. Isotopic Indicators of Global Change 2. Geologic Studies
Tuesday, May 21	3A. Beta-Counting Techniques - Gas Proportional 4A. AMS & Applications - Poster Session (Beta Counting)	3B. Beta-Counting Techniques - Liquid Scintillation 4B. AMS - Target Preparation - Poster Session (AMS)
Wednesday, May 22	5. Environmental Sciences 6. Archaeometry & Archaeology - Poster Session	Field Trips
Thursday, May 23	7. Calibration 8A. Geochemical Methods & Applications	8B. Geochemical Methods & Applications 9. Oceans 10. Groundwater Studies
Friday, May 24	11A. Paleoastronomy & Natural Variations of Cosmogenic Isotopes 12. ¹⁴ C Intercomparison Study 13. General Topics & Posters	11B. Paleoastronomy - Business Meeting

POST-CONFERENCE FIELD TRIPS

1. <u>Grand Canyon</u> Saturday, May 25 - Tuesday, May 28, 1991 (4 days/3 nights) includes full American breakfast daily, taxes, gratuities and tour guide. Deposits are required.	<u>Single</u> \$450 \$125	<u>Double*</u> (per person) \$350 \$125
2. <u>Southeast Arizona</u> Saturday, May 25 - Sunday, May 26, 1991 (2 days/1 night) includes breakfast, dinner, taxes, gratuities and tour guide. Deposits are required.	\$190 \$ 50	\$150 \$ 50

*Sharing a room with a colleague is encouraged.

PRE-CONFERENCE WORKSHOPS - MAY 19, 1991

**PALEOENVIRONMENTS OF THE EASTERN MEDITERRANEAN
Radiometric Dating and the Interpretation of Interdisciplinary Data Sets**

Recent advances in dating technologies have spurred a rapid accumulation of data sets, shedding new light on the Paleolithic and Holocene of the Eastern Mediterranean. Analyses of deep-sea cores, archaeological surveys and excavations, along with radiometric dating, enable us to test paleoclimatic models and previous interpretations of cultural sequences.

Among the topics on the agenda are: 1) Correlations among U-series, TL, ESR, U/Th dates and ^{14}C dates; 2) paleoclimatic events as recorded in pollen cores, land snails, sediments, sea levels and groundwater; 3) ^{14}C dating of "desert cultures," and the role of environmental changes in the "Agricultural Revolution."

We plan to hold the Workshop the day before the general conference, *ie*, Sunday, May 19. You would then arrive on Saturday. Accommodations will be available at the same hotel. The Workshop will be jointly sponsored by the Anthropology Department of the University of Arizona and the Peabody Museum of Harvard University.

Contact:

Renee Kra
Department of Geosciences
The University of Arizona
4717 East Ft Lowell Road
Tucson, AZ 85712
Tel: (602)881-0857
Fax: (602)881-0554
Bitnet: C14@ARIZRVAX

or

Ofer Bar-Yosef
Department of Anthropology
Peabody Museum
Harvard University
Cambridge, MA 02138
Tel: (617)495-2252
Fax: (617)495-1396
Bitnet: OFER@HARVARDA.BITNET

PROSPECTS FOR TEMPORAL EXTENSION OF THE RADIOCARBON CALIBRATION

Many fields of science have benefited from the existence of absolute, dendrochronologically based radiocarbon calibration. There is great interest in the several millennia immediately before the start of the existing calibrations, for example, concerning the nature and chronology of the 'Younger Dryas' event. This informal workshop will focus on the questions:

- What are the prospects for extending absolutely dated tree-ring chronologies in at least two parts of the world?
- How would this be done?
- Might other materials than tree rings be used, or is their dating too uncertain?
- What implications does the recent work using U/Th ratios have for this process?

The workshop will be held at the Westward Look Resort on Sunday, May 19.

Contact:

Malcolm Hughes
Tree-Ring Laboratory
The University of Arizona
Tucson, AZ 85721

Tel: (602)621-6470
Fax: (602)621-8229
Bitnet: MHUGHES@ARIZRVAX

LIQUID SCINTILLATION WORKSHOP
Applications for Radiocarbon Dating

State-of-the-art liquid scintillation (LS) counting technology has developed greatly in the last decade as witnessed at the conference in Gatlinburg last fall. Radiocarbon dating science pushes the limits of LS technology. This workshop will showcase the use of LS technology for radiocarbon dating and the precision possible with these instruments.

The objectives of this workshop are 1) to collate experience in different facets of LS radiocarbon dating from labs worldwide, 2) organize this information and use it as a forum for discussion of specific topics, and 3) produce a comprehensive compilation of techniques in use for LS radiocarbon dating.

Workshop organizers include Robert Kalin, chair, Herbert Haas, Austin Long, John Noakes, Henry Polach and Jerry Stipp. The organizers will present an overview of techniques, and the workshop will be a forum for discussion on the use of LS counting for radiocarbon dating. These discussions will take place in both the laboratory and meeting room.

The topics to be covered:

- *Sample Submission and Laboratory Records*
- *Pretreatment of Samples for Radiocarbon Dating*
Relationship of sample material to original material and event.
- *Vacuum Line Chemistry: Benzene Synthesis*
Techniques and Pitfalls
- *Catalysis Chemistry*
- *Counting Procedures*
Vial selection and Scintillators
- *LS Counting - Fixed window counters to Modern High Performance counters*
General Principles
Practical Use of Instruments
- *Date Calculations and Statistics*
Data interpretations, Tree-ring calibration and Reporting of data.
- *Quality Assurance and Quality Control*
- *Historical Perspective*

Lodging is available at the Westward Look Resort at the conference rate beginning May 16. We will have a social hour on the evening of May 17. Continental breakfast and luncheon will be provided on Saturday and Sunday. Participation is limited to 25 at a cost of \$25 each.

The proceedings of the workshop will be printed and distributed to participants.

Contact:

Robert Kalin
Laboratory of Isotope Geochemistry
Department of Geosciences
The University of Arizona
Tucson, AZ 85721
Tel: (602)881-5746
Fax: (602)881-0554
Bitnet: BKALIN@ARIZRVAX

REGISTRATION FORM - 14TH INTERNATIONAL ¹⁴C CONFERENCE
Tucson, Arizona, USA, 20-24 May 1991

FEES (please check the appropriate box)	NO. OF PERSONS	AMOUNT ENCLOSED
REGISTRATION:		
After December 15, 1990 - \$225 <input type="checkbox"/>	—	\$ _____
Student (full-time university) - \$100 <input type="checkbox"/>	—	\$ _____
ID No.: _____		
ACCOMPANYING GUEST(S) (\$50 per person) <input type="checkbox"/>	—	\$ _____
Name(s): _____		
BANQUET (\$30 per person) <input type="checkbox"/>	—	\$ _____
PROCEEDINGS (\$40 per volume) <input type="checkbox"/>	—	\$ _____
PRE-CONFERENCE WORKSHOPS:		
Liquid Scintillation Counting (\$25) <input type="checkbox"/>	—	\$ _____
Radiocarbon Calibration (\$15) <input type="checkbox"/>	—	\$ _____
Paleoenvironments <input type="checkbox"/>	—	\$ _____
KITT PEAK TRIP (\$15) <input type="checkbox"/>	—	\$ _____
POST-CONFERENCE TOUR DEPOSIT:		
Grand Canyon (\$125 per person) <input type="checkbox"/>	—	\$ _____
Southeast Arizona (\$50 per person) <input type="checkbox"/>	—	\$ _____
Single (1) or double (2) occupancy Roomate name: _____	—	
TOTAL		\$ _____

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Signature _____ Date _____

Completed Registration Form and checks should be sent to: Forms may be faxed to:

Radiocarbon Conference
 Extended University - Conference Services
 The University of Arizona
 1955 East Sixth Street
 Tucson, Arizona 85719

(602) 621-3269

You may telephone Joe Segilia at
 (602) 621-7724 - Extended University
 if you have questions about your registration.



RADIOCARBON

Announces the Publication of the Following Special Issues:

Proceedings of the 13th International Radiocarbon Conference

Dubrovnik, Yugoslavia, 20–25 June 1988

Volume 31, No. 3, 1989 @ \$60.00

This special issue contains papers on recent developments in Sample Preparation and Measurement Techniques, Intercomparison Study, Carbon Cycle in the Environment, Global ^{14}C Variations, Applications and much more. 874 pages. The Proceedings issue is part of the 1989 subscription.

**Proceedings of the International Workshop
On Intercomparison of Radiocarbon Laboratories**

Glasgow, Scotland, 12–15 September 1989

Volume 32, No. 3, 1990 @ \$40.00

A workshop in Glasgow on the Intercomparison of Radiocarbon Laboratories was hosted by the University of Glasgow, Scottish Universities Research and Reactor Centre and the NERC ^{14}C laboratory at East Kilbride. The scientific program of the workshop covered previous and current intercomparison studies among radiocarbon laboratories, as well as plans for accuracy improvement in this field. This issue contains papers and discussions and is part of the 1990 subscription.

**Radiocarbon After Four Decades:
An Interdisciplinary Perspective**

Lake Arrowhead, California, 4–8 June 1990

Special Hardcover Edition Published by Radiocarbon and The University of Arizona Press

The conference commemorated the dawn of radiocarbon as a dating, biological and environmental tracer isotope. This conference volume will document the major contributions of ^{14}C dating to archaeology, biochemistry, environmental studies, geochemistry, geology, geophysics, hydrology and oceanography over the last 40 years. This monograph will be offered outside of our three regular issues, at a discount to subscribers.

For more information on ordering or subscriptions, please write to:

Radiocarbon
Department of Geosciences
The University of Arizona
4717 East Ft Lowell Road
Tucson, AZ 85712 USA
Tel: 602-881-0857
Fax: 602-881-0554
Bitnet: C14@ARIZRVAX



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AIMS AND SCOPE:

North American Archaeologist is concerned with all aspects of American Archaeology. Geographically it covers the continent north of the region of high cultures in Mesoamerica—the United States and part of northern Mexico. Topically it spans the entire range of cultural evolution in America from Paleo-Indian studies to Industrial Archaeology. Theoretical and methodological articles, provided their data base is North America, are also accepted and research based on cultural resource management as well as work by state and local societies is solicited along with the more traditional academic-museum projects. The editor particularly encourages papers that cut across regional or topical boundaries but more specialized items are also welcomed. All papers appear as articles irrespective of length and to insure variety in each issue succinct reports are preferred.

** Complimentary sample issue available on request*

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Archaeometry

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Contents of Vol 32, part 2 (August 1990)

Millstone provenancing used in tracing the route of a fourth-century BC Greek merchant ship (*Williams-Thorpe & Thorpe*), Lipids from samples of skin from seven Dutch bog bodies (*Evershed*), Islamic glass weights and stamps (*Gratuze & Barrandon*), Roman pottery from *Augusta Praetoria* (Aosta, Italy) (*Mirti, Zelano, Aruga, Ferrara & Appolonia*), Drawing potsherds: a low-cost computer-based system (*Turner, Keary & Peacock*), Soldering with gold alloys in ancient South America (*Scott & Doehne*), A thermal method for archaeological prospection (*Bellerby, Noel & Branigan*), Les verres anciens: databilité par thermoluminescence (*Müller & Schvoerer*), Radiocarbon dates from the Oxford AMS system (*Hedges, Housley, Bronk & van Klinken*)

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Published twice a year by the Research Laboratory for Archaeology & the History of Art, Oxford University, 6 Keble Road, Oxford OX1 3QJ, UK. FAX no. 0865 273932.

Editors: M S Tite, M J Aitken, E T Hall,
R Hedges, J Henderson

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The prime research journal for the archaeologist interested in the involvement of the physical sciences in archaeology and art history. Articles are written with the non-specialist in mind while Research Notes provide state-of-the-art specialist reports.

Contents of Vol 33, part 1 (February 1991)

English porcelains (*M S Tite & M Bimson*), Principal component analyses of glass compositions (*M J Baxter*), Dating time-since-death of oyster shells (*E N Powell et al*), Distinguishing European trade copper and north-eastern North American native copper (*R G V Hancock et al*), The structure of oriental lacquer by nuclear magnetic resonance spectroscopy (*J B Lambert et al*), The detection of cadmium in gold/silver alloys (*N D Meeks and P T Craddock*), Proto-Campanian and A-Campanian ceramics (*M Vendrell-Saz et al*), Thermal archaeological surveying (*A Tabbagh and A Hesse*), Radiocarbon dates from the Oxford AMS system (*R E M Hedges et al*)

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R Hedges, J Henderson

NOTICE TO READERS AND CONTRIBUTORS

Since its inception, the basic purpose of *RADIOCARBON* has been the publication of compilations of ^{14}C dates produced by various laboratories. These lists are extremely useful for the dissemination of basic ^{14}C information.

In recent years, *RADIOCARBON* has also been publishing technical and interpretative articles on all aspects of ^{14}C . We would like to encourage this type of publication on a regular basis. In addition, we will be publishing compilations of published and unpublished dates along with interpretative text for these dates on a regional basis. Authors who would like to compose such an article for his/her area of interest should contact the Managing Editor for information.

Other sections recently added to our regular issues include NOTES AND COMMENTS, LETTERS TO THE EDITOR, RADIOCARBON UPDATES and ANNOUNCEMENTS. Authors are invited to extend discussions or raise pertinent questions to the results of scientific investigations that have appeared on our pages. These sections include short, technical notes to relay information concerning innovative sample preparation procedures. Laboratories may also seek assistance in technical aspects of radiocarbon dating. Book reviews are also encouraged as are advertisements.

Manuscripts. Papers may now be submitted on both floppy diskettes and hard copy. When submitting a manuscript, include three hard copies, double-spaced. When the final copy is prepared after review, please provide a floppy diskette along with one hard copy. We will accept, in order of preference, WordPerfect 5.1 or 5.0, Microsoft Word, Wordstar or any IBM word-processing software program. ASCII files, MS DOS and CPM formatted diskettes are also acceptable. The diskettes should be either $3\frac{1}{2}$ " (720 K or 1.44 megabytes) or $5\frac{1}{4}$ " (360K or 1.2 megabytes). Radiocarbon papers should follow the recommendations in INSTRUCTIONS TO AUTHORS (R, 1990, v 32, no. 1, p 115-118). Offprints are available upon request. Our deadline schedule for submitting manuscripts is:

<i>For</i>	<i>Date</i>
Vol 33, No. 3, 1991	May 1, 1991
Vol 34, No. 1, 1992	Sept 1, 1991
Vol 34, No. 2, 1992	Jan 1, 1992

Half-life of ^{14}C . In accordance with the decision of the Fifth Radiocarbon Dating Conference, Cambridge, England, 1962, all dates published in this volume (as in previous volumes) are based on the Libby value, 5568 yr, for the half-life. This decision was reaffirmed at the 11th International Radiocarbon Conference in Seattle, Washington, 1982. Because of various uncertainties, when ^{14}C measurements are expressed as dates in years BP, the accuracy of the dates is limited, and refinements that take some but not all uncertainties into account may be misleading. The mean of three recent determinations of the half-life, 5730 ± 40 yr, (*Nature*, 1962, v 195, no. 4845, p 984), is regarded as the best value presently available. Published dates in years BP can be converted to this basis by multiplying them by 1.03.

AD/BC Dates. In accordance with the decision of the Ninth International Radiocarbon Conference, Los Angeles and San Diego, California, 1976, the designation of AD/BC, obtained by subtracting AD 1950 from conventional BP determinations is discontinued in *RADIOCARBON*. Authors or submitters may include calendar estimates as a comment, and report these estimates as cal AD/BC, citing the specific calibration curve used to obtain the estimate. Calibrated dates will now be reported as "cal BP" or "cal AD/BC" according to the consensus of the Twelfth International Radiocarbon Conference, Trondheim, Norway, 1985.

Measuring of $\delta^{14}\text{C}$. In Volume 3, 1961, we endorsed the notation Δ (Lamont VIII, 1961) for geochemical measurements of ^{14}C activity, corrected for isotopic fractionation in samples and in the NBS oxalic acid standard. The value of $\delta^{14}\text{C}$ that entered the calculation of Δ was defined by reference to Lamont VI, 1959, and was corrected for age. This fact has been lost sight of, by editors as well as by authors, and recent papers have used $\delta^{14}\text{C}$ as the observed deviation from the standard. At the New Zealand Radiocarbon Dating Conference it was recommended to use $\delta^{14}\text{C}$ only for age-corrected samples. Without an age correction, the value should then be reported as percent of modern relative to 0.95 NBS oxalic acid (Proceedings 8th Conference on Radiocarbon Dating, Wellington, New Zealand, 1972). The Ninth International Radiocarbon Conference, Los Angeles and San Diego, California, 1976, recommended that the reference standard, 0.95 NBS oxalic acid activity, be normalized to $\delta^{13}\text{C} = -19\text{‰}$.

In several fields, however, age corrections are not possible. $\delta^{14}\text{C}$ and Δ , uncorrected for age, have been used extensively in oceanography, and are an integral part of models and theories. For the present, therefore, we continue the editorial policy of using Δ notations for samples not corrected for age.

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Austin Long iii

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