

# Radiocarbon

An International Journal of Cosmogenic Isotope Research

VOLUME 63 • NUMBER 5 • 2021

14



**Editor**

A.J.T. Jull

**CAMBRIDGE**  
UNIVERSITY PRESS

## Radiocarbon

An International Journal of Cosmogenic Isotope Research

### EDITOR

A. J. T. Jull · University of Arizona

### MANAGING EDITOR

Kimberley Tanner Elliott · University of Arizona

### ASSOCIATE EDITORS

Edouard Bard · Collège de France  
Nancy Beavan · Cardiff University  
Warren Beck · University of Arizona  
Elisabetta Boaretto · Weizmann Institute  
Christopher Bronk Ramsey · Oxford University  
George S. Burr · University of Arizona  
Owen K. Davis · University of Arizona  
Ellen R. M. Druffel · University of California-Irvine  
Pieter Grootes · Christian-Albrechts University  
Irka Hajdas · ETH Zurich  
Derek Hamilton · University of Glasgow  
Christine Hatté · Laboratoire des Sciences du Climat et l'Environnement  
Gregory Hodgins · University of Arizona  
Quan Hua · Australian Nuclear Science and Technology Organisation  
Yaroslav Kuzmin · Russian Academy of Sciences

Steven W. Leavitt · University of Arizona  
Ann P. McNichol · Woods Hole Oceanographic Institution  
Mihály Molnár · Hertelendi Laboratory of Environmental Studies, Hungary  
Toshio Nakamura · Nagoya University  
Jesper Olsen · Aarhus AMS Center  
Charlotte Pearson · University of Arizona  
Pavel Povinec · Comenius University  
Paula J. Reimer · Queen's University Belfast  
E. Marian Scott · University of Glasgow  
John R. Southon · University of California-Irvine  
Jocelyn Turnbull · GNS Science  
Johannes van der Plicht · Groningen University  
Antoine Zazzo · Muséum national d'Histoire naturelle  
Weijian Zhou · Institute of Earth Environment, Chinese Academy of Science

*Radiocarbon* (ISSN 0033-8222) is published quarterly by Cambridge University Press, One Liberty Plaza 20th Floor New York, NY 10006. © 2021 by the Arizona Board of Regents on behalf of the University of Arizona. All rights reserved.

### Editorial Office

Communications should be addressed to the Managing Editor, *Radiocarbon*, Department of Geosciences, The University of Arizona, 4717 East Fort Lowell Road, Tucson, AZ 85712-1201 USA. Tel.: +1 (520) 621-0641; Fax: +1 (520) 621-0584; Email: kimelliott@email.arizona.edu. Contributors should consult the Instructions for Contributors, which is available on the journal's Web site: [cambridge.org/rdc](http://cambridge.org/rdc).

### Subscriptions

Annual subscription rates for Volume 63, 2021: Institutional rate is (print and electronic) \$596 in the USA, Canada, and Mexico, £384 + VAT elsewhere. Institutional rate (electronic only) \$435 in the USA, Canada, and Mexico, £279 + VAT elsewhere. Individual rate is (print and electronic) \$196 in the USA, Canada, and Mexico, £126 + VAT elsewhere. Individual rate (electronic only) \$150 in the USA, Canada, and Mexico, £98 + VAT elsewhere. Please direct subscription inquiries and requests for back issues to Customer Services at Cambridge University Press, email: [subscriptions\\_newyork@cambridge.org](mailto:subscriptions_newyork@cambridge.org) (USA, Canada, and Mexico) or [journals@cambridge.org](mailto:journals@cambridge.org) (outside of USA, Canada, and Mexico).

### Advertising

To advertise in the journal email [advertising@cambridge.org](mailto:advertising@cambridge.org) or telephone +1 (212) 337 5062 in the USA, Canada, or Mexico; email [ad\\_sales@cambridge.org](mailto:ad_sales@cambridge.org) or telephone +44 (01223) 325898 in the rest of the world.

### Abstracting and indexing

*Radiocarbon* is indexed and/or abstracted by the following sources: *Anthropological Index*; *Anthropological Literature*; *Art and Archaeology Technical Abstracts*; *Bibliography and Index of Geology* (GeoRef); *British Archaeological Bibliography*; *Chemical Abstracts*; *Chemistry Citation Index*; *Current Advances in Ecological and Environmental Sciences*; *Current Contents* (ISI); *FRANCIS* (Institut de l'Information Scientifique et Technique – CNRS); *Geographical Abstracts*; *Geological Abstracts*; *Oceanographic Literature Review*; *Science Citation Index*; *Social Sciences Citation Index*.

### List of laboratories

Our comprehensive list of laboratories is published annually, and is also available at [www.radiocarbon.org](http://www.radiocarbon.org). We ask all laboratory directors to provide their laboratory code designation, as well as current telephone and fax numbers, and email addresses. Changes in names or addresses, additions or deletions should be reported to the managing editor. Conventional and AMS laboratories are arranged in alphabetical order by country, and we include laboratories listed by code designation.

### Permissions

No part of this publication may be reproduced, in any form or by any means, electronic, photocopying or otherwise, without permission in writing from Cambridge University Press. Policies, request forms and contacts are available at: <http://journals.cambridge.org/action/rightsAndPermissions>. Permission to copy (for users in the USA) is available from Copyright Clearance Center: <http://www.copyright.com>, email: [info@copyright.com](mailto:info@copyright.com).

**Postmaster:** Send address changes to *Radiocarbon*, Cambridge University Press, One Liberty Plaza, New York, NY 10006, USA.

# Radiocarbon

Vol 63, Nr 5, 2021

## CONTENTS

### RESEARCH ARTICLES

Manufacture of the Well-Known Central and Northeastern European Eye Fibulae: Previously Unknown Tricks of the Trade <i>Audronė Bliujienė, Kęstutis Peseckas, Justina Šapolaitė, Žilvinas Ežerinskis, Jurga Bagdzevičienė, Evaldas Babenskas, Ričardas Taraškevičius, Sergej Suzdalev, Irma Vybernaitė-Lubienė, Algirdas Pabedinskas, Laurynas Butkus, Gediminas Petrauskas</i> .....	1369
Wheat Seed ( <i>Triticum aestivum</i> L.) Radiocarbon Concentration Over the Last 75 Years <i>C Matthias Hüls, Andreas Börner, Christian Hamann</i> .....	1387
Flexible Soil Microbial Carbon Metabolism across an Asian Elevation Gradient <i>Yishan Jiang, Dayi Zhang, Nicholas J Ostle, Chunling Luo, Yan Wang, Ping Ding, Zhineng Cheng, Chengde Shen, Gan Zhang</i> .....	1397
Wiggle-Match Dating of a Floating Oak Chronology from an Early Iron Age Grave Construction (Eresztvényi Forest, Fehérvárcsurgó, Hungary) <i>Z Kern, B Jungbert, A Morgós, M Molnár, E Horváth</i> .....	1415
Radiocarbon Ages of Suyanggae Paleolithic Sites in Danyang, Korea <i>Kyeong J Kim, Ju Y Kim, Kyong W Lee, Seung W Lee, Jong Y Woo, Yung J Lee, A J Timothy Jull</i> .....	1429
An Intercomparison Project on $^{14}\text{C}$ from Single-Year Tree Rings <i>Sabrina G K Kudsk, Jesper Olsen, Gregory W L Hodgins, Mihály Molnár, Todd E Lange, Jessica A Nordby, A J Timothy Jull, Tamás Varga, Christoffer Karoff, Mads F Knudsen</i> .....	1445
Hazor EB III City Abandonment and IBA People Return: Radiocarbon Chronology and Its Implications <i>Ron Lev, Shlomit Bechar, Elisabetta Boaretto</i> .....	1453
Radiocarbon vs. Luminescence Dating of Archaeological Ceramics in the Southern Andes: a Review of Paired Dates, Bayesian Models, and a Pilot Study <i>Erik J Marsh, Antti Korpisaari, Sebastián Puerto Mundt, Alejandra Gasco, Víctor Durán</i> .....	1471
Timing the Emergence and Development of Arable Farming in Southeastern Norway by Using Summed Probability Distribution of Radiocarbon Dates and a Bayesian Age Model <i>Steinar Solheim</i> .....	1503

Early and Middle Bronze Age Chronology of the Carpathian Basin Revisited: Questions Answered or Persistent Challenges? <i>Robert Staniuk</i> .....	1525
Millet Consumption in Siberia Prior to Mid-Second Millennium BC? A Review of Recent Developments <i>Svetlana V Svyatko, Rick J Schulting, Dmitriy Papin, Paula J Reimer</i> .....	1547
A Framework for Transdisciplinary Radiocarbon Research: Use of Natural-Level and Elevated-Level $^{14}\text{C}$ in Antarctic Field Research <i>Ryan A Venturelli, Trista J Vick-Majors, Billy Collins, Alan Gagnon, Kathy Kasic, Mark D Kurz, Wei Li, John Priscu, Mark Roberts, Brad E Rosenheim, SALSA Science Team</i> .....	1555

#### **DATE LIST**

List of  $^{14}\text{C}$  Dates Obtained under the Project “The Dobużek Scarp Microregion as a Part of a Physiological and Biocultural Frontier between the Baltic and the Pontic Zone (from the 6th to the 2nd Millennium BC)”

<i>Tomasz J Chmielewski, Tomasz Goslar, Agata Haluszko, Agata Sady-Bugajska, Jan Wiejacki</i> .....	1569
---	------