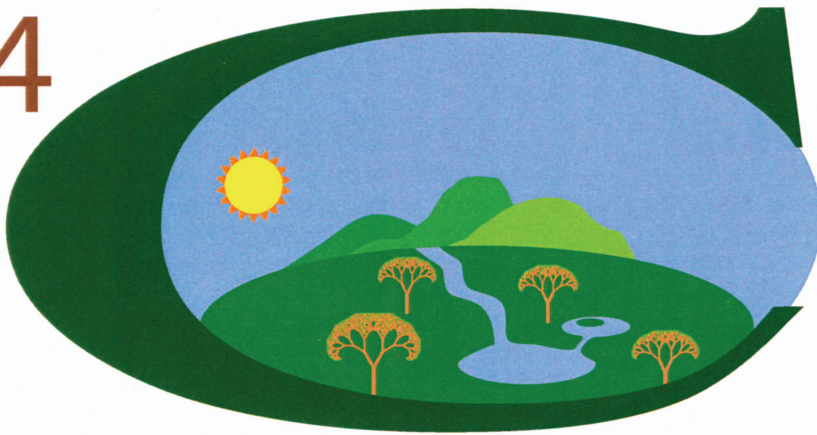


Radiocarbon

An International Journal of Cosmogenic Isotope Research

VOLUME 57 / NUMBER 3 / 2015

14



in the Environment

Proceedings of the 1st Radiocarbon in the Environment Conference
18–22 August 2014 | Belfast, Northern Ireland

Guest Editors Paula Reimer & Evelyn Keaveney

ISSN: 0033-8222

RADIOCARBON

An International Journal of Cosmogenic Isotope Research

Editor: A J T JULL

Associate Editors: J WARREN BECK, GEORGE S BURR, AND GREGORY W L HODGINS

Managing Editor: MARK E MCCLURE

Published by

Department of Geosciences

The University of Arizona

Published four times a year at The University of Arizona, Tucson, AZ 85712-1201, USA.

© 2015 by the Arizona Board of Regents on behalf of the University of Arizona. All rights reserved.

Subscription rate (2014): \$365.00 (institutions), \$140.00 (individuals). Foreign postage is extra. A complete price list, including proceedings of international conferences, special publications and back issues, appears in the back pages of this issue. *Advertising rates* available upon request, or see www.radiocarbon.org/adrates.html.

Missing issues will be replaced without charge only if claim is made within three months (six months for India, New Zealand, and Australia) after the publication date. Claims for missing issues will not be honored if non-delivery results from failure by the subscriber to notify the Journal of an address change.

Authors: See our "Information for Authors" document at www.radiocarbon.org/Authors/ for guidelines on manuscript submission and format. All correspondence and manuscripts 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.: +1 520 881-0857; Fax: +1 520 881-0554; Email: editor@radiocarbon.org.

List of laboratories. Our comprehensive list of laboratories is published annually, and is also available at www.radiocarbon.org/Info/lablist.html. 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.

RADIOCARBON on the World Wide Web: <http://www.radiocarbon.org/>

Cover design: Radiocarbon.

Images courtesy of the guest editors.

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.*

Proceedings of 1st International Conference “Radiocarbon in the Environment”

Edited by Evelyn M Keaveney and Paula J Reimer
Special issue, Radiocarbon, Vol 57, Nr 3, 2015

CONTENTS

PREFACE FROM THE GUEST EDITORS

| | |
|--|-----|
| Radiocarbon in the Environment – An Introduction <i>Evelyn M Keaveney, Paula J Reimer</i> | iii |
|--|-----|

ARTICLES

Applications of ¹⁴C in Forensic Science

| | |
|---|-----|
| Radiocarbon Analysis of Modern Skeletal Remains to Determine Year of Birth and Death— A Case Study <i>G T Cook, L A N Ainscough, E Dunbar</i> | 327 |
|---|-----|

¹⁴C and Energy Production: Nuclear Fuel to Biofuel

| | |
|--|-----|
| Anomalous ¹⁴ C Enrichments in the Eastern UK Coastal Environment <i>Graham K P Muir, Gordon T Cook, Angus B MacKenzie, Gillian MacKinnon, Pauline Gulliver</i> | 337 |
| Temporal Trend in the Transfer of Sellafield-Derived ¹⁴ C into Different Size Fractions of the Carbonate Component of NE Irish Sea Sediment <i>Graham K P Muir, Gordon T Cook, Brian G Tripney, Angus B MacKenzie, Helena Stewart, Kieran M Tierney</i> | 347 |

| | |
|--|-----|
| Radiocarbon in the Atmosphere of the Žilkovce Monitoring Station of the Bohunice NPP: 25 Years of Continuous Monthly Measurements <i>P P Povinec, A Šivo, M Ješkovský, I Svetlík, M Richtáriková, J Kaizer</i> | 355 |
|--|-----|

¹⁴C and Stable Isotopes in the Urban Environment

| | |
|---|-----|
| Temporal and Spatial Variations of Atmospheric Radiocarbon in the Mexico City Metropolitan Area <i>Laura Beramendi-Orosco, Galia Gonzalez-Hernandez, Adriana Martinez-Jurado, Angeles Martinez-Reyes, Alfonso Garcia-Samano, Jose Villanueva-Diaz, Francisco Javier Santos-Arevalo, Isabel Gomez-Martinez, Omar Amador-Muñoz</i> | 363 |
|---|-----|

| | |
|--|-----|
| High-Precision Atmospheric ¹⁴ CO ₂ Measurement at the Rafter Radiocarbon Laboratory <i>Jocelyn C Turnbull, Albert Zondervan, Johannes Kaiser, Margaret Norris, Jenny Dahl, Troy Baisden, Scott Lehman</i> | 377 |
|--|-----|

| | |
|---|-----|
| Seasonal Variations of Radiocarbon Content in Plant Leaves in a ¹⁴ C-Depleted Area <i>Rana Baydoun, Omar El Samad, Bilal Nsouli, Ghassan Younes</i> | 389 |
|---|-----|

¹⁴C and Stable Isotopes in Terrestrial and Freshwater Environments

| | |
|---|-----|
| Variations in the Isotopic Composition of Dissolved Inorganic Carbon in the Unsaturated Zone of a Semi-Arid Region <i>I Carmi, D Yakir, Y Yechieli, J Kronfeld, M Stiller</i> | 397 |
|---|-----|

| | |
|--|-----|
| Young, Old, and Weathered Carbon—Part 1: Using Radiocarbon and Stable Isotopes to Identify Carbon Sources in an Alkaline, Humic Lake <i>Evelyn M Keaveney, Paula J Reimer, Robert H Foy</i> | 407 |
| Young, Old, and Weathered Carbon—Part 2: Using Radiocarbon and Stable Isotopes to Identify Terrestrial Carbon Support of the Food Web in an Alkaline, Humic Lake <i>Evelyn M Keaveney, Paula J Reimer, Robert H Foy</i> | 425 |
| Sources of Dissolved Inorganic Carbon in Two Small Streams with Different Bedrock Geology: Insights from Carbon Isotopes <i>Naoto F Ishikawa, Ichiro Tayasu, Masako Yamane, Yusuke Yokoyama, Saburo Sakai, Naohiko Ohkouchi</i> | 439 |
| Oceanographic Variability Using ¹⁴C, Stable Isotopes, and Other Geochemical Tracers | |
| Marine Radiocarbon Reservoir Values in Southern California Estuaries: Interspecies, Latitudinal, and Interannual Variability <i>James R Holmquist, Laura Reynolds, Lauren N Brown, John R Southon, Alexander R Simms, Glen M MacDonald</i> | 449 |
| Potential Use of Archaeological Snail Shells for the Calculation of Local Marine Reservoir Effect <i>Carla Carvalho, Kita Macario, Maria Isabela De Oliveira, Fabiana Oliveira, Ingrid Chanca, Eduardo Alves, Rosa Souza, Orangel Aguilera, Katerina Douka</i> | 459 |
| ¹⁴C and Stable Isotopes in Marine Environments | |
| ¹⁴ C Variations in Pre-Bomb Nearshore Habitats of the Florida Panhandle, USA <i>Carla S Hadden, Alexander Cherkinsky</i> | 469 |
| Δ ¹⁴ C and δ ¹³ C Variations in Organic Fractions of Baltic Sea Sediments <i>Galina Lujanienė, Jonas Mažeika, Hong-Chun Li, Rimantas Petrošius, Rūta Barisevičiūtė, Kęstutis Jokšas, Nijolė Remeikaitė-Nikienė, Vitalijus Malejevas, Galina Garnaga, Algirdas Stankevičius, Ieva Kulakauskaitė, Pavel P Povinec</i> | 481 |
| Sea Surface Radiocarbon Reservoir Age Changes in the Aegean Sea from about 11,200 BP to Present <i>Yorgos Facorellis, Evi Vardala-Theodorou</i> | 493 |