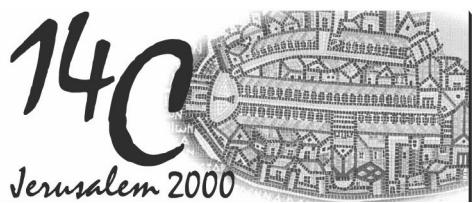


Radiocarbon

An International Journal of Cosmogenic Isotope Research

VOLUME 43 / NUMBER 2B / 2001



Part 2 of 3

**Proceedings of the
17th International
Radiocarbon Conference
June 18–23, 2000**

Conference Editors

Israel Carmi
Elisabetta Boaretto

Department of Geosciences
The University of Arizona
4717 East Fort Lowell Road
Tucson, Arizona 85712-1201 USA

ISSN: 0033-8222

RADIOCARBON

An International Journal of Cosmogenic Isotope Research

Editor: A J T JULL

Associate Editors: J WARREN BECK and GEORGE S BURR

Managing Editor: KIMBERLEY TANNER ELLIOTT

Assistant Editor: AGNIESZKA PRZYCHODZEN

Editorial Interns: JACKIE LIND and MARGARET BURNETT

Subscriptions and Sales Managers: KASHO SANTA CRUZ and KRISTA LINDSAY

Published by
Department of Geosciences
The University of Arizona

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

© 2001 by the Arizona Board of Regents on behalf of the University of Arizona.
All rights reserved.

Subscription rate (2002): \$160.00 (for institutions), \$80.00 (for individuals). Foreign postage is extra. A complete price list, including proceedings of international conferences, special publications and back issues, appears on the inside back cover of this issue. *Advertising rates* available on 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 concerning 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 now arranged in alphabetical order by country, and we include laboratories listed by code designation.

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

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*.

CONTENTS**VOLUME 43, NR 2A (Part 1 of 3)****DEDICATION**

<i>Elisabetta Boaretto</i>	xi
----------------------------------	----

FROM THE GUEST EDITOR

<i>Israel Carmi</i>	xiii
---------------------------	------

ACKNOWLEDGMENTSxv**LIST OF PARTICIPANTS**xvii**CONFERENCE PHOTO**xxvii**INTRODUCTION**

Future of the Past <i>R Hedges</i>	141
---	-----

I. BECOMING BETTER**A. The Machines**

Accelerator Mass Spectrometry at High Voltage Engineering Europa (HVEE) <i>A Gottdang, M Klein, D J W Mous</i>	149
---	-----

Cosmic Background Reduction in the Radiocarbon Measurements by Liquid Scintillation Spectrometry at the Underground Laboratory of Gran Sasso <i>Wolfgang Plastino, Lauri Kaihola, Paolo Bartolomei, Francesco Bella</i>	157
---	-----

Progress at the Seoul National University AMS Facility <i>J C Kim, J H Park, I C Kim, C Lee, M K Cheoun, J Kang, Y M Song</i>	163
--	-----

B. The Methods

Carbonate ^{14}C Background: Does It Have Multiple Personalities? <i>Marie-Josée Nadeau, Pieter M Grootes, Antje Voelker, Frank Bruhn, Alexander Duhr, Angelika Oriwall</i>	169
---	-----

Is Classical Acid-Alkali-Acid Treatment Responsible for Contamination? An Alternative Proposition <i>Christine Hatté, Jean Morvan, Claude Noury, Martine Paterne</i>	177
--	-----

Sample Preparation of Dissolved Organic Carbon in Groundwater for AMS ^{14}C Analysis <i>G S Burr, J M Thomas, D Reines, D Jeffrey, C Courtney, A J T Jull, T Lange</i>	183
---	-----

Radiocarbon Dating of Single Compounds Isolated from Pottery Cooking Vessel Residues <i>A W Stott, R Berstan, P Evershed, R E M Hedges, C Bronk Ramsey, M J Humm</i>	191
---	-----

Protocol Development for Purification and Characterization of Sub-Fossil Insect Chitin for Stable Isotopic Analysis and Radiocarbon Dating <i>G W L Hodgins, J L Thorpe, G R Coope, R E M Hedges</i>	199
--	-----

The Chemical and Enzymatic Hydrolysis of Archaeological Wood Cellulose and Monosaccharide Purification by High Ph Anion Exchange Chromatography for Compound-Specific Radiocarbon Dating <i>G W L Hodgins, T D Butters, C Bronk Ramsey, R E M Hedges</i>	209
Pretreatment of Iron Artifacts at SNU-AMS <i>M K Cheoun, J C Kim, J Kang, I C Kim, J H Park, Y M Song</i>	217
AMS Radiocarbon Dating of Ancient Iron Artifacts: A New Carbon Extraction Method in Use at LLNL <i>Andrea C Cook, Jeffrey Wadsworth, John R Southon</i>	221
Chemical Removal of Conservation Substances by “Soxhlet”-Type Extraction <i>Frank Bruhn, Alexander Duhr, Pieter M Grootes, Annette Mintrop, Marie-Josée Nadeau</i>	229
Radiocarbon Dating of Wood Using Different Pretreatment Procedures: Application to the Chronology of Rotoehu Ash, New Zealand <i>G M Santos, M I Bird, B Pillans, L K Fifield, B V Alloway, J Chappell, P A Hausladen, A Arneth</i>	239
Dating of Cremated Bones <i>J N Lanting, A T Aerts-Bijma, J van der Plicht</i>	249
Stepped-Combustion ^{14}C Dating of Sediment: A Comparison with Established Techniques <i>J McGeehin, G S Burr, A J T Jull, D Reines, J Gosse, P T Davis, D Muhs, J R Southon</i>	255
An Extraction System to Measure Carbon-14 Terrestrial Ages of Meteorites with a Tandetron AMS at Nagoya University <i>M Minami, T Nakamura</i>	263
An Improvement in Preparation of Mortar for Radiocarbon Dating <i>E Sonninen, H Jungner</i>	271
Progress in Radiocarbon Target Preparation at the Antares AMS Centre <i>Q Hua, G E Jacobsen, U Zoppi, E M Lawson, A A Williams, A M Smith, M J McGann</i>	275
Preparation of Graphite Targets in the Gliwice Radiocarbon Laboratory for AMS ^{14}C Dating <i>Justyna Czernik, Tomasz Goslar</i>	283
Automatic AMS Sample Combustion and CO ₂ Collection <i>A T Aerts-Bijma, J van der Plicht, H A J Meijer</i>	293
Development of a Semi-Automated System for Routine Preparation of Carbonate Samples <i>N Tisnérat-Laborde, J J Poupeau, J F Tannau, M Paterne</i>	299
PRIME Lab Sample Handling and Data Analysis for Accelerator-Based Biomedical Radiocarbon Analysis <i>Darren J Hillegonds, Rae Record, Frank A Rickey, Steve Badylak, George S Jackson, Abby Simmons-Byrd, David Elmore, Michael E Lipschutz</i>	305

II. GETTING MORE FROM THE DATA

A. Evaluation and Handling of Data

Converting AMS Data to Radiocarbon Values: Considerations and Conventions <i>A P McNichol, A J T Jull, G S Burr</i>	313
Is Comparability of ^{14}C Dates an Issue? A Status Report on the Fourth International Radiocarbon Intercomparison <i>C Bryant, I Carmi, G T Cook, S Gulliksen, D D Harkness, J Heinemeier, E McGee, P Naysmith, G Possnert, E M Scott, J van der Plicht, M van Strydonck</i>	321
A Database System for Geochemical, Isotope Hydrological, and Geochronological Laboratories <i>Axel Suckow, Ingolf Dumke</i>	325

B. Calibration

Searching Solar Periodicities in the Late Glacial Record of Atmospheric Radiocarbon <i>Tomasz Goslar, Nadine Tisnérat-Laborde, Martine Paterne</i>	339
“Transition Dating” – a Heuristic Mathematical Approach to the Collation of Radiocarbon Dates from Stratified Sequences <i>I Sharon</i>	345
Development of the Radiocarbon Calibration Program <i>Christopher Bronk Ramsey</i>	355
The Filling of Gaps in Geophysical Time Series by Artificial Neural Networks <i>V A Dergachev, A N Gorban, A A Rossiev, L M Karimova, E B Kuandykov, N G Makarenko, P Steier</i>	365
New Methods and Critical Aspects in Bayesian Mathematics for ^{14}C Calibration <i>Peter Steier, Werner Rom, Stephan Puchegger</i>	373

C. Wiggle Matching and Tree Rings

“Wiggle Matching” Radiocarbon Dates <i>C Bronk Ramsey, J van der Plicht, B Weninger</i>	381
^{14}C Wiggle-Match Dating in High-Resolution Sea-Level Research <i>O van de Plassche, R J Edwards, K van der Borg, A F M de Jong</i>	391
Radiocarbon and Dendrochronological Dating of Logboats from Poland <i>Anna Pazdur, Marek Krąpiec, Adam Michczyński, Waldemar Ossowski</i>	403
Dendrochronology and Radiocarbon Dating Methods in Archaeological Studies of Scythian Sites <i>V A Dergachev, S S Vasiliev, A A Sementsov, G I Zaitseva, K A Chugunov, I Ju Slusarenko</i>	417
^{14}C Wiggle Matching of the “Floating” Tree-Ring Chronology from the Altai Mountains, Southern Siberia: the Ulandryk-4 Case Study <i>I Y Slusarenko, J A Christen, L A Orlova, Y V Kuzmin, G S Burr</i>	425
Seasonal Fluctuation of Stable Carbon Isotopic Composition in Japanese Cypress Tree Rings from the Last Glacial Period—Possibility of Paleoenvironment Reconstruction <i>Hiroshi Aoki Takahashi, Hitoshi Yonenobu, Toshio Nakamura, Hideki Wada</i>	433
Solar Activity and Regional Climate <i>M G Ogurtsov, G E Kocharov, M Lindholm, M Eronen, Yu A Nagovitsyn</i>	439
Radiocarbon Measurements of Tree Rings from 14 ka Huon Pine <i>T Lange, M Barbetti, D J Donahue</i>	449

D. Reservoir Age

A Freshwater Diet-Derived ^{14}C Reservoir Effect at the Stone Age Sites in the Iron Gates Gorge <i>G T Cook, C Bonsall, R E M Hedges, K McSweeney, V Boronean, P B Pettitt</i>	453
A Marine Reservoir Correction Database and On-Line Interface <i>P J Reimer, R W Reimer</i>	461
Marine Radiocarbon Reservoir Effect in the Western North Pacific Observed in Archaeological Fauna <i>Minoru Yoneda, Masashi Hirota, Masao Uchida, Kazuhiro Uzawa, Atsushi Tanaka, Yasuyuki Shibata, Masatoshi Morita</i>	465
Northwest Pacific Marine Reservoir Correction Estimated from Annually Banded Coral from Ishigaki Island, Southern Japan <i>Shinichiro Hideshima, Eiji Matsumoto, Osamu Abe, Hiroyuki Kitagawa</i>	473

Radiocarbon Reservoir Correction Ages in the Peter the Great Gulf, Sea of Japan, and Eastern Coast of the Kunashir, Southern Kuriles (Northwestern Pacific)	477
<i>Yaroslav V Kuzmin, G S Burr, A J Timothy Jull</i>	477
ΔR Correction Values for the Northern Indian Ocean	483
<i>Koushik Dutta, Ravi Bhushan, B L K Somayajulu</i>	483
Preliminary Estimate of the Reservoir Age in the Lagoon of Venice	489
<i>U Zoppi, A Albani, A J Ammerman, Q Hua, E M Lawson, R Serandrei Barbero</i>	489

VOLUME 43, NR 2B (Part 2 of 3)

I. OUR 'DRY' ENVIRONMENT: ABOVE SEA LEVEL

A. Peat, Soil, Sediments, Speleothems

High-Resolution AMS ^{14}C Dating of Post-Bomb Peat Archives of Atmospheric Pollutants	495
<i>Michael E Goodsite, Werner Rom, Jan Heinemeier, Todd Lange, Suat Ooi, Peter G Appleby, William Shotyk, W O van der Knaap, Christian Lohse, Torben S Hansen</i>	495
A Recent History of ^{14}C , ^{137}Cs , ^{210}Pb , and ^{241}Am Accumulation at Two Irish Peat Bog Sites: an East Versus West Coast Comparison	517
<i>D Gallagher, E J McGee, P I Mitchell</i>	517
^{14}C Dating of Peat and $\delta^{18}\text{O}$ -δD in Ground Ice from Northwest Siberia	527
<i>Yurij K Vasil'chuk, Högne Jungner, Alla C Vasil'chuk</i>	527
Radiocarbon Dating of $\delta^{18}\text{O}$ -δD Plots in Late Pleistocene Ice-Wedges of the Duvanny Yar (Lower Kolyma River, Northern Yakutia)	541
<i>Yurij K Vasil'chuk, Alla C Vasil'chuk, Dieter Rank, Walter Kutschera, Jong-Chan Kim</i>	541
Paleoenvironment in Dae-Am San High Moor in the Korean Peninsula	555
<i>T Yoshioka, J-Y Lee, H A Takahashi, S-J Kang</i>	555
Further Attempts at Dating the Palynological Sequence of the Hula L07 Core, Upper Jordan Valley, Israel	561
<i>M Weinstein-Evron, J C Vogel, J Kronfeld</i>	561
Radiocarbon Studies of Peat Bogs: an Investigation of South Kamchatka Volcanoes and Upper Volga Archeological Sites	571
<i>N E Zaretskaia, V V Ponomareva, L D Sulerzhitsky, M G Zhilin</i>	571
New Data on Chronology of Landscape-Paleoclimatic Stages in Northwestern Russia During the Late Glacial and Holocene	581
<i>Kh A Arslanov, L A Savelieva, V A Klimanov, S B Chernov, F E Maksimov, T V Tertychnaya, D A Subetto</i>	581
Radiocarbon Dating of Total Soil Organic Matter and Humin Fraction and Its Comparison with ^{14}C Ages of Fossil Charcoal	595
<i>L C R Pessenda, S E M Gouveia, R Aravena</i>	595
Radiocarbon Age of Vertisols and Its Interpretation Using Data on Gilgai Complex in the North Caucasus	603
<i>Irina Kovda, Warren Lynn, Dewayne Williams, Olga Chichagova</i>	603
Development of Accurate and Reliable ^{14}C Chronologies for Loess Deposits: Application to the Loess Sequence of Nussloch (Rhine Valley, Germany)	611
<i>Christine Hatté, Luiz Carlos Pessenda, Andreas Lang, Martine Paterne</i>	611
Environmental and Climatic Change as Recorded in Geological Sediments from the Arid to Semi-Arid Zone of China	619
<i>Weijian Zhou, Wu Zhengkun, A J T Jull, G Burr, D D Donahue, Li Baosheng, J Head</i>	619

Chronology of Soil Evolution and Climatic Changes in the Dry Steppe Zone of the Northern Caucasus, Russia, During the 3rd Millennium BC <i>A L Alexandrovskiy, J van der Plicht, A B Belinskiy, O S Khokhlova</i>	629
Dating of Biodeposits of Oxalates at the Arc De Berà in Tarragona, Spain <i>J Girbal, J L Prada, R Rocabayera, M Argemí</i>	637
Late Holocene Climatic Change in the Balkans: Speleothem Isotopic Data from Serbia <i>Aleksander Kacanski, Israel Carmi, Aldo Shemesh, Joel Kronfeld, Ruth Yam, Akiva Flexer</i> ..	647
B. Vegetation	
Balance and Behavior of Carbon Dioxide at an Urban Forest Inferred from the Isotopic and Meteorological Approaches <i>Hiroshi Aoki Takahashi, Tetsuya Hiyama, Eiichi Konohira, Atsuhiko Takahashi, Naohiro Yoshida, Toshio Nakamura</i>	659
Distribution of ^{14}C and ^{13}C in Forest Soils of the Dinghushan Biosphere Reserve <i>Chengde Shen, Weixi Yi, Yanmin Sun, Changping Xing, Ying Yang, Chao Yuan, Zhian Li, Shaolin Peng, Zhisheng An, Tungsheng Liu</i>	671
Changes of ^{14}C Concentration in Modern Trees from Upper Silesia Region, Poland <i>Andrzej Z Rakowski, Sławomira Pawełczyk, Anna Pazdur</i>	679
A New ^{13}C Correction for Radiocarbon Samples from Elevated-CO ₂ Experiments <i>Margaret S Torn, John Southon</i>	691
Measurement of Radiocarbon Content in Leaves from Some Japanese Sites <i>Yasushi Muraki, Kimiaki Masuda, Kh A Arslanov, Hiroaki Toyoizumi, Masataka Kato, Yukiko Naruse, Takuya Murata, Tohru Nishiyama</i>	695
5.2–5.8 ka BP Paleoenvironment of the Southern Slope of Mount Raizan, Japan <i>Mitsuru Okuno, Shinji Nagaoka, Yoshitaka Hase, Yuichi Mori, Masahiko Konomatsu, Toshihiko Takahashi, Toshio Nakamura, Tamio Nishida</i>	703
C. Diet and Fauna	
Bomb Carbon as a Tracer of Dietary Carbon Sources in Omnivorous Mammals <i>Nancy Beavan-Athfield, Rodger J Sparks</i>	711
Bomb Radiocarbon Dating of Animal Tissues and Hair <i>Mebus A Geyh</i>	723
D. Cosmogenic	
In-Situ Cosmogenic ^{14}C : Production and Examples of its Unique Applications in Studies of Terrestrial and Extraterrestrial Processes <i>D Lal, A J T Jull</i>	731
Absolute Production of Radiocarbon and the Long-Term Trend of Atmospheric Radiocarbon <i>Tomasz Goslar</i>	743
In-Situ Radiocarbon Production by Neutrons and Muons in an Antarctic Blue Ice Field at Scharffenbergbotnen: A Status Report <i>K van der Borg, W J M van der Kemp, C Alderliesten, A F M de Jong, R A N Lamers, J Oerlemans, M Thomassen, R S W van de Wal</i>	751
Can We Use Cosmogenic Isotopes to Date Stone Artifacts? <i>Susan Ivy-Ochs, Raphael Wiist, Peter W Kubik, Hansjürgen Müller-Beck, Christian Schlüchter</i>	759

II. OUR 'WET' ENVIRONMENT

A. Hydrology

Radiocarbon Dating of Porewater – Correction for Diffusion and Diagenetic Processes <i>Orit Sivan, Barak Herut, Yoseph Yechieli, Boaz Lazar</i>	765
Radiocarbon in Seawater Intruding into the Israeli Mediterranean Coastal Aquifer <i>Y Yechieli, O Sivan, B Lazar, A Vengosh, D Ronen, B Herut</i>	773
Spatial Variations of Radiocarbon in the Coastal Aquifer of Israel—Indicators of Open and Closed Systems <i>Debbie Bruce, Gerald M Friedman, Aaron Kaufman, Yoseph Yechieli</i>	783
The Source of the Yarkon Springs, Israel <i>D Avisar, J Kronfeld, J Kolton, E Rosenthal, G Weinberger</i>	793

B. Lakes and their Sediments

Chronology of the Atmospheric Mercury in Lagoa da Pata Basin, Upper Rio Negro Region of Brazilian Amazon <i>G M Santos, R C Cordeiro, E V Silva Filho, B Turcq, L D Lacerda, L K Fifield, P R S Gomes, P A Hausladen, A Sifeddine, A L S Albuquerque</i>	801
The Varying Radiocarbon Activity of Some Recent Submerged Estonian Plants Grown in the Early 1990s <i>Ingrid U Olsson, Enn Kaup</i>	809
Calibration of Lacustrine Sediment Ages Using the Relationship between ^{14}C Levels in Lake Waters and in the Atmosphere: The Case of Lake Kinneret <i>Mariana Stiller, Aaron Kaufman, Israel Carmi, Genia Mintz</i>	821
Influence of the Bomb-Produced ^{14}C on the Radiocarbon Concentration in the Youngest Sediments of Lake Gościąż, Central Poland <i>Jacek Pawlyta, Anna Pazdur, Tomasz Goslar, Stanisław Hałas</i>	831

C. The Sea and its Sediments

A Time History of Pre- and Post-Bomb Radiocarbon in the Barents Sea Derived from Arctic-Norwegian Cod Otoliths <i>John M Kalish, Reidar Nydal, Kjell H Nedreaas, George S Burr, Gro L Eine</i>	843
Distribution of Radiocarbon in the Southwestern North Pacific <i>T Aramaki, T Mizushima, T Kuji, P P Povinec, O Togawa</i>	857
Transport of Sellafield-Derived ^{14}C from the Irish Sea through the North Channel <i>Pauline Gulliver, Gordon T Cook, Angus B MacKenzie, Philip Naysmith, Robert Anderson</i>	869
Radiocarbon in Seawater at Radioactive Waste Dumping Sites in the Northeast Atlantic and Northwest Pacific <i>P P Povinec, A J T Jull, G S Burr</i>	879
Radiocarbon Ages of Beach Rocks and Late Holocene Sea-Level Changes in the Southern Part of the Nansei Islands, Southwest of Japan <i>Kunio Omoto</i>	887
Coral Reef Evolution at the Leeward Side of Ishigaki Island, Southwest Japan <i>Hiroya Yamano, Osamu Abe, Hiroyuki Kitagawa, Etsuko Niu, Toshio Nakamura</i>	899
^{32}Si Dating of Marine Sediments from Bangladesh <i>U Morgenstern, M A Geyh, H R Kudrass, R G Ditchburn, I J Graham</i>	909
Absolute Dating of Recent Sediments in the Cyclone-influenced Shelf Area Off Bangladesh: Comparison of Gamma Spectrometric (^{137}Cs , ^{210}Pb , ^{228}Ra), Radiocarbon, and ^{32}Si Ages <i>Axel Suckow, Uwe Morgenstern, Herrmann-Rudolf Kudrass</i>	917

Radiocarbon Age Profiles and Size Dependency of Mixing in Northeast Atlantic Sediments <i>Louise Brown, Gordon T Cook, Angus B MacKenzie, John Thomson</i>	929
The Late Quaternary Sedimentary Record of Reykjanes Ridge, North Atlantic <i>M A Prins, S R Troelstra, R W Kruk, K van der Borg, A F M de Jong</i>	939
Compound-Specific Radiocarbon Ages of Fatty Acids in Marine Sediments from the Western North Pacific <i>Masao Uchida, Yasuyuki Shibata, Kimitaka Kawamura, Yuichiro Kumamoto, Minoru Yoneda, Ken'ichi Ohkushi, Naomi Harada, Masashi Hirota, Hitoshi Mukai, Atsushi Tanaka, Masashi Kusakabe, Masatoshi Morita</i>	949
Major Recent Tectonic Uplift in Iskenderun Bay, Turkey <i>H Koral, J Kronfeld, N Avsar, V Yanko, J C Vogel</i>	957
D. ARCHAEOLOGY	
The Kennewick Skeleton: Chronological and Biomolecular Contexts <i>R E Taylor, David Glenn Smith, John R Southon</i>	965
Radiocarbon AMS Dates for Paleolithic Cave Paintings <i>H Valladas, N Tisnérat-Labordé, H Cachier, M Arnold, F Bernaldo de Quirós, V Cabrera-Valdés, J Clottes, J Courtin, J J Fortea-Pérez, C González-Sainz, A Moure-Romanillo</i>	977
Radiocarbon as a Tool for Modeling the Diachronic Analysis of the Occupation Phases at the Velzeke Site (Belgium) <i>Mark Van Strydonck, Guy De Mulder, Johan Deschieter</i>	987
The Site of Verrebroek “Dok” and its Contribution to the Absolute Dating of the Mesolithic in the Low Countries <i>Mark J Y Van Strydonck, Philippe Crombé, Ann Maes</i>	997
Towards a Radiocarbon Chronology of the Late-Glacial: Sample Selection Strategies <i>M J C Walker, C Bryant, G R Coope, D D Harkness, J J Lowe, E M Scott</i>	1007
Age Determination of Fossil Bones from the Vindija Neanderthal Site in Croatia <i>Eva Maria Wild, Maja Paunovic, Gernot Rabeder, Ilse Steffan, Peter Steier</i>	1021
The Cave of Theopetra, Kalambaka: Radiocarbon Evidence for 50,000 Years of Human Presence <i>Yorgos Facorellis, Nina Kyparissi-Apostolika, Yannis Maniatis</i>	1029
The Copper Age in Northern Italy <i>U Zoppi, E Fulcheri, F M Gambari, Q Hua, E M Lawson, M Micheletti Cremasco, M Venturino Gambari</i>	1049
New Chronological Frame for the Young Neolithic Baden Culture in Central Europe (4th Millennium BC) <i>Eva Maria Wild, Peter Stadler, Mária Bondár, Susanne Draxler, Herwig Friesinger, Walter Kutschera, Alfred Priller, Werner Rom, Elisabeth Ruttkay, Peter Steier</i>	1057
Dating of Ancient Icons from Kiev Art Collections <i>N Kovalyukh, J van der Plicht, G Possnert, V Skripkin, L Chlenova</i>	1064
The Age of Upper Paleolithic Sites in the Middle Dnieper River Basin of Eastern Europe <i>Z A Abramova, G V Grigorieva, G I Zaitseva</i>	1077
A Chronology of the Scythian Antiquities of Eurasia Based on New Archaeological and ^{14}C Data <i>A Yu Alekseev, N A Bokovenko, Yu Boltrik, K A Chugunov, G Cook, V A Dergachev, N Kovalyukh, G Possnert, J van der Plicht, E M Scott, A Sementsov, V Skripkin, S Vasiliev, G Zaitseva</i>	1085

AMS Radiocarbon Dating of Tianma-Qucun Site in Shanxi, China <i>Zhiyu Guo, Kexin Liu, Xiangyang Lu, Hongji Ma, Kun Li, Jinglin Yuan, Sixun Yuan, Xiaohong Wu, Xu Liu</i>	1109
New Radiocarbon Dates of the North Asian Steppe Zone and its Consequences for the Chronology <i>Jochen Görsdorf, Hermann Parzinger, Anatoli Nagler</i>	1115
Radiocarbon Chronology of the Earliest Neolithic Sites in East Asia <i>Yaroslav V Kuzmin, Charles T Keally</i>	1121
Radiocarbon Dating of Charred Residues on the Earliest Pottery in Japan <i>Toshio Nakamura, Yasuhiro Taniguchi, Sei'ichiro Tsuji, Hirotaka Oda</i>	1129
Radiocarbon Dating of Human Occupation of Australia Prior to 40 ka BP – Successes and Pitfalls <i>L K Fifield</i>	1139

VOLUME 43, NR 3 (Part 3 of 3)

NEAR EAST CHRONOLOGY: ARCHAEOLOGY AND ENVIRONMENT

Near East Chronology: Towards an Integrated ^{14}C Time Foundation

<i>Hendrik J Bruins</i>	1147
-----------------------------------	------

Articles

Radiocarbon Dating in Near-Eastern Contexts: Confusion and Quality Control <i>Johannes van der Plicht, Hendrik J Bruins</i>	1155
New Dates from Submerged Late Pleistocene Sediments in the Southern Sea of Galilee, Israel <i>D Nadel, S Belitzky, E Boaretto, I Carmi, J Heinemeier, E Werker, S Marco</i>	1167
Radiocarbon Chronology of the Holocene Dead Sea: Attempting a Regional Correlation <i>Amos Frumkin, Galit Kadan, Yehouda Enzel, Yehuda Eyal</i>	1179
Proto-Neolithic and Neolithic Cultures in the Middle East—the Birth of Agriculture, Livestock Raising, and Ceramics: a Calibrated ^{14}C Chronology 12,500–5500 cal BC <i>O Aurenche, P Galet, E Régagnon-Caroline, J Évin</i>	1191
Settlement Patterns in the Southern Levant Deserts During the 6th–3rd Millennia BC: a Revision Based on ^{14}C Dating <i>Uzi Avner, Israel Carmi</i>	1203
The Chronology of the Ghassulian Chalcolithic Period in the Southern Levant: New ^{14}C Determinations from Teleilat Ghassul, Jordan <i>Stephen Bourke, Ewan Lawson, Jaimie Lovell, Quan Hua, Ugo Zoppi, Michael Barbetti</i>	1217
The Chalcolithic Radiocarbon Record and Its Use in Southern Levantine Archaeology <i>Margie Burton, Thomas E Levy</i>	1223
New Radiocarbon Dates for the Reed Mat from the Cave of the Treasure, Israel <i>Gerald E Aardsma</i>	1247
Towards an AMS Radiocarbon Chronology of Predynastic Egyptian Ceramics <i>Stephen H Savage</i>	1255
Proto-, Early Dynastic Egypt, and Early Bronze I-II II of the Southern Levant: Some Uneasy ^{14}C Correlations <i>Eliot Braun</i>	1279
Radiocarbon Dates of Old and Middle Kingdom Monuments in Egypt <i>Georges Bonani, Herbert Haas, Zahi Hawass, Mark Lehner, Shawki Nakhla, John Nolan, Robert Wenke, Willy Wölfli</i>	1297

Radiocarbon Challenges Archaeo-Historical Time Frameworks in the Near East: the Early Bronze Age of Jericho in Relation to Egypt Hendrik J Bruins, Johannes van der Plicht	1321
Radiocarbon Dates from Iron Age Strata at Tel Beth Shean and Tel Rehov Amihai Mazar, Israel Carmi	1333
Early Iron Age Radiometric Dates from Tel Dor: Preliminary Implications for Phoenicia and Beyond Ayelet Gilboa, Ilan Sharon	1343
Excavations at Ma'layba and Sabir, Republic of Yemen: Radiocarbon Datings in the Period 1900 to 800 cal BC Jochen Görsdorf, Burkhardt Vogt	1353
Radiocarbon Datings from the Almaqah Temple of Bar'an, Ma'rib, Republic of Yemen: Approximately 800 cal BC to 600 cal AD Jochen Görsdorf, Burkhardt Vogt	1363
Precision of Calibrated Radiocarbon Ages of Historic Earthquakes in the Dead Sea Basin Revital Ken-Tor, Mordechai Stein, Yehouda Enzel, Amotz Agnon, Shmuel Marco, Jorg F W Negendank	1371
Load Structure Seismites in the Dead Sea Area, Israel: Chronological Benchmarking with ¹⁴ C Dating D Bowman, H J Bruins, J van der Plicht	1383
BUSINESS MEETING REPORT	1391
RADIOCARBON UPDATES	1393
LIST OF LABORATORIES	1395
AUTHOR INDEX	1419
SUBJECT INDEX	1427

EDITORIAL BOARD

EDOUARD BARD	<i>Aix-en-Provence, France</i>
CHRISTOPHER BRONK RAMSEY	<i>Oxford, England</i>
OWEN K DAVIS	<i>Tucson, Arizona, USA</i>
ELLEN R M DRUFFEL	<i>Irvine, California, USA</i>
PIETER GROOTES	<i>Kiel, Germany</i>
YAROSLAV KUZMIN	<i>Vladivostok, Russia</i>
STEVEN W LEAVITT	<i>Tucson, Arizona, USA</i>
TOSHIO NAKAMURA	<i>Nagoya, Japan</i>
ANN P McNICHOL	<i>Woods Hole, Massachusetts, USA</i>
PAVEL POVINEC	<i>Bratislava, Slovakia Monaco</i>
MICHAEL B SCHIFFER	<i>Tucson, Arizona, USA</i>
E MARIAN SCOTT	<i>Glasgow, Scotland</i>
RODGER SPARKS	<i>Lower Hutt, New Zealand</i>
JOHANNES VAN DER PLICHT	<i>Groningen, The Netherlands</i>
JOHN S VOGEL	<i>Livermore, California, USA</i>
WEIJIAN ZHOU	<i>Xi'an, China</i>