

## INTRODUCTION

Dear readers,

We are pleased to present Part 1 of 2 of the Proceedings of the Second International Conference on Radiocarbon in the Environment (RE-II). The conference was held July 3–7, 2017, in the Great Forest Park in Debrecen, Hungary. The Debrecen conference followed the initial conference (RE-I) held in Belfast in 2014. We feel RE-II was a very successful follow-up to the Belfast meeting. We hosted about 120 participants, 55 oral presentations, and 60 poster presentations. The success of the first two conferences has shown that Radiocarbon in the Environment is now well established as an important international meeting on radiocarbon and its uses in environmental studies.

The radiocarbon field of research is very broad and it was our goal to continue the original idea of the Belfast meeting, which was to bring together those using radiocarbon to investigate our present-day and past environments. We were grateful for fruitful discussions and informative presentations by colleagues from around the world. We heard from an international group of researchers regarding interactions affecting the natural levels of radiocarbon, bomb and enriched radiocarbon, in addition to stable isotopes. These studies have applications to ecological and environmental investigations, from atmospheric and oceanographic studies to carbon dynamics in freshwater and terrestrial soils. As we had hoped, RE-II proved to be an excellent forum to introduce new studies and data while developing and strengthening connections among researchers.

We are grateful for the opportunity to meet with a diverse, international group of researchers in Debrecen. We would especially like to thank the invited speakers, who provided thoughtful and informative overviews of various topics of interest to all participants. We would also like to thank our sponsors and others who helped to promote the meeting, without whose support this conference would have been much more difficult. Finally, we would like to thank the many participants for joining us in beautiful Debrecen to share their research and ideas! We hope everyone enjoyed the relaxed environment of Debrecen and took home many good memories of their time there. We hope to see everyone again in 2020 at RE-III in Gliwice, Poland, hosted by Silesian University of Technology, Gliwice Absolute Dating Methods Centre (GADAM).

On behalf of the Organizing Committee,

Dr. Mihály Molnár  
Conference chair

Prof. A.J. Timothy Jull  
Conference co-chair

Katalin Hubay  
Conference secretary

## **SCIENTIFIC COMMITTEE**

Allen Andrews (NOAA FSC, Honolulu, Hawaii, USA)  
Lucio Calcagnile (CEDAD, Lecce, Italy)  
Alex Cherkinsky (University of Georgia, USA)  
Gordon Cook (SUERC, East Kilbride, UK)  
Ellen R.M. Druffel (UC, Irvine, California, USA)  
Irka Hajdas (ETHZ, Zürich, Switzerland)  
Christine Hatté (LSCE, Gif-sur-Yvette, France)  
Nada Horvatincinc (RBI Zagreb, Croatia)  
Quan Hua (ANSTO, Sydney, Australia)  
A.J. Timothy Jull (University of Arizona, Tucson, Arizona, USA)  
Guaciara Macedo dos Santos (UC, Irvine, California, USA)  
Ann McNichol (Woods Hole Oceanographic Institution, USA)  
Mihály Molnár (HEKAL, Debrecen, Hungary)  
Anna Pazdur (SUT, Gliwice, Poland)  
Pavel Povinec (CUB, Bratislava, Slovakia)  
Gianluca Quarta (CEDAD, Lecce, Italy)  
Paula Reimer (QUB, Belfast, Ireland)  
Brad E. Rosenheim (Tulane Univ., New Orleans, Louisiana, USA)  
Ivo Svetlik (NPI, Prague, Czech Republic)  
Lukas Wacker (ETHZ, Zürich, Switzerland)  
Eva Maria Wild (VERA, Wien, Austria)  
Xiaomei Xu (UC, Irvine, California, USA)

## **ORGANIZING COMMITTEE**

Dr. Mihály Molnár, conference chair  
Prof. A.J. Timothy Jull, conference co-chair  
Katalin Hubay, conference secretary  
Dr. László Rinyu  
Dr. Róbert Janovics  
Dr. László Palcsu  
Dr. Zsófia Kertész  
István Major  
Mihály Veres (CEO, Isotoptech Zrt)

**SPONSORS**

Hungarian Academy of Sciences (Magyar Tudományos Akadémia), [www.mta.hu](http://www.mta.hu)



Isotoptech Zrt., [www.isotoptech.com](http://www.isotoptech.com)



University of Arizona AMS Lab, [www.ams.arizona.edu](http://www.ams.arizona.edu)



*Radiocarbon* journal, [www.radiocarbon.org](http://www.radiocarbon.org)



Cambridge University Press, [www.cambridge.org](http://www.cambridge.org)



Centre for Climate, the Environment, and Chronology, [www.chrono.qub.ac.uk](http://www.chrono.qub.ac.uk)



Ionplus, [www.ionplus.ch](http://www.ionplus.ch)



National Electrostatics Corp., [www.pelletron.com](http://www.pelletron.com)



Institute for Nuclear Research (Atomki), Hungarian  
Academy of Sciences [www.atomki.mta.hu](http://www.atomki.mta.hu)



Isotope Climatology and Environmental Research  
Centre (ICER), Atomki HAS [www.atomki.mta.hu/iker](http://www.atomki.mta.hu/iker)



## CONFERENCE PHOTOS



RE-II Conference Chairs Mihály Molnár and Tim Jull with Conference Secretary Katalin Hubay.



Night view from the conference gala dinner.



Conference Chair Mihály Molnár opens the conference dinner.  
Behind him is the Debrecen Dixieland Jazz Band.



Conference gala dinner in the Aula of Debrecen University.



The conference trip to Hortobágy Puszta included a horse-drawn coach tour.



Attendees take part in a bird-watching tour during the outing to Hortobágy Puszta.





Professors and students got a chance to ride horses during the Hortobágy Puszta outing.



Lab tour of HEKAL AMS Facility (Debrecen, Hungary).



Poster session of the RE-II conference.



Oral session of the RE-II conference.



Student's prize ceremony at the RE-II conference.



Conference wine tour of Tokaj city.



Dinner after the wine tour.



Conference participants outside the venue, Aquaticum Debrecen Termál & Wellness Hotel. All photos by Botond Búró.

## CONFERENCE PARTICIPANTS

<b>Name</b>	<b>Surname</b>	<b>Institution/Country</b>
Alexander	Alexandrovskiy	Institute of Geography RAS, Moscow, Russia
Allen H.	Andrews	NOAA Fisheries, Honolulu, Hawaii, USA
Jadranka	Barešić	Ruder Bošković Institute, Zagreb, Croatia
Rana	Baydoun	LAEC, Beirut, Lebanon
Veronika	Brychova	NPI ASCR, Prague, Czech Republic
Botond	Buró	ICER, MTA Atomki, Debrecen, Hungary
Lucio	Calcagnile	CEDAD, University of Salento, Italy
Israel	Carmi	Tel Aviv University, Tel-Aviv, Izrael
Carla	Carvalho	Fluminense Federal University, Brazil
Ingrid Silva	Chanca	Physics Institute, RJ, Brazil
Yury G.	Chendev	Belgorod State University, Belgorod, Russia
Alexander	Cherkinsky	University of Georgia, Athens, GA, USA
József	Deák	ICER, MTA Atomki, Debrecen, Hungary
Satya	Dev	Aarhus University, Aarhus, Denmark
Ekaterina	Dolgova	Institute of Geography RAS, Moscow, Russia
Zsolt	Dombrádi	MTA Atomki, Debrecen, Hungary
Weimiao	Dong	Fudan University, Shanghai, China
Ellen R.M.	Druffel	University of California, Irvine, USA
Jean-Pascal	Dumoulin	CEA-CNRS-UVSQ, Gif-sur-Yvette, France
Tibor	Dunai	University of Cologne, Cologne, Germany
Yael	Ehrlich	Weizmann Institute of Science, Rehovot, Israel
Christophe	Epic	University of Bern, Bern, Switzerland
Žilvinas	Ežerinskis	Center for Physical Sciences and Technology, Vilnius, Lithuania.
Stewart	Fallon	Australian National University, Canberra, Australia
Ronny	Friedrich	Curt-Engelhorn-Center Archaeometrie, Mannheim, Germany
István	Futó	ICER, MTA Atomki, Debrecen, Hungary
Oana	Gaza	National Institute for Physics and Nuclear Engineering, Bucharest, Romania
Sándor	Gulyás	University of Szeged, Szeged, Hungary
Carla S.	Hadden	University of Georgia, Athens, USA
Irka	Hajdas	ETH, Zürich, Zürich, Switzerland
Samuel	Hammer	Heidelberg University, Heidelberg, Germany
Petr	Hanlos	Fakultní nemocnice Ostrava, Czech Republic
Ulrich M.	Hanke	University of Zürich, Zürich, Switzerland
Christine	Hatté	CEA-CNRS-UVSQ, Gif-sur-Yvette, France
Ladislava	Horácková	Masaryk University, Brno, Czech Republic
Nada	Horvatincic	Rudjer Boskovic Institute, Zagreb, Croatia
Quan	Hua	ANSTO, NSW, Australia
Katalin	Hubay	ICER, MTA Atomki, Debrecen, Hungary
Róbert	Janovics	Isotoptech Zrt- MTA Atomki, Debrecen, Hungary
A. J. Timothy	Jull	ICER, MTA Atomki, Debrecen, Hungary
Jakub	Kaizer	Comenius University, Bratislava, Slovakia
Evelyn M.	Keaveney	Queen's University Belfast, U.K.
Zoltán	Kern	MTA CSFK, Budapest, Hungary
Titanilla	Kertész	ICER, MTA Atomki, Debrecen, Hungary
Zsófia	Kertész	Lab. of Ion Beam Physics, MTA Atomki, Debrecen, Hungary
Ivan	Kontuľ	Comenius University, Bratislava, Slovak Republic
Marek	Krapiec	AGH University of Science and Technology, Krakow, Poland
Joel	Kronfeld	Tel Aviv University, Tel-Aviv, Israel
Walter	Kutschera	University of Vienna, Vienna, Austria
Enikő	Lázár	University of Szeged, Szeged, Hungary
Galina	Lujanieni	SRI Center for Physical Sciences and Technology, Vilnius, Lithuania

<b>Name</b>	<b>Surname</b>	<b>Institution/Country</b>
Kita	Macario	LAC-UFF, Rio de Janeiro, Brazil
István	Major	Isotoptech ZRt.-MTA Atomki, Debrecen, Hungary
Włodzimierz	Margielewski	Institute of Nature Conservation, PAS, Krakow, Poland
Cameron P.	Mcintyre	AMS laboratory, SUERC, East Kilbride, UK
Danuta J.	Michczyńska	Silesian University of Technology, Gliwice, Poland
Adam	Michczyński	Silesian University of Technology, Gliwice, Poland
Dávid	Molnár	University of Szeged, Szeged, Hungary
Mihály	Molnár	ICER, MTA Atomki, Debrecen, Hungary
Anita	Molnár	ICER, MTA Atomki, Debrecen, Hungary
Fabiana	Monteiro de Oliveira	Lab. de Radiocarbono, Rio de Janeiro, Brazil
Sabrina	Nielsen	Aarhus University, Aarhus, Denmark
Makoto	Noguchi	Okayama University of Science, Okayama, Japan
Mitsuru	Okuno	Fukuoka University, Fukuoka, Japan
Jesper	Olsen	Aarhus University, Aarhus, Denmark
Gergely	Orsovszki	ICER, MTA Atomki, Debrecen, Hungary
László	Palcsu	ICER, MTA Atomki, Debrecen, Hungary
Vesa	Palonen	University of Helsinki, Helsinki, Finland
Anna	Pazdur	Silesian University of Technology, Gliwice, Poland
Natalia	Piotrowska	Silesian University of Technology, Gliwice, Poland
Edwig	Pons-Branchu	UMR CEA/CNRS/UVSQ, Gif-sur-Yvette, France
Pavel P.	Povinec	Comenius University, Bratislava, Slovakia
Katherine	Pugsley	University of Bristol, UK
Gianluca	Quarta	CEDAD, University of Salento, Italy
Andrzej Z.	Rakowski	AGH University of Science and Technology, Krakow, Poland
Ron	Reimer	14CHRONO Centre, Belfast, UK
László	Rinyu	ICER, MTA Atomki, Debrecen, Hungary
Blanca	Rodriguez	University of California, Irvine, USA
Guaciara M.	Santos	University of California, Irvine, USA
Tiberiu Bogdan	Sava	IFIN-HH, Bucharest, Romania
Matar	Sene	Cheikh Anta DIOP University, Dakar, Senegal
Barbara	Sensuła	Silesian University of Technology, Gliwice, Poland
Vladimir	Shatravin	Tien Shan High Mountain Scientific Center, Kyrgyz Republic
Nikolai	Sherbakov	Bashkir State Pedagog. Univ. Ufa, Russia
Carlos A.	Sierra	Max Planck Institute for Biogeochemistry, Jena, Germany
Pavel	Šimek	NPI AS CR, Prague, Czech Republic
György	Sipos	University of Szeged, Szeged, Hungary
Richard	Staff	University of Glasgow, Glasgow, UK
Pál	Sümegei	University of Szeged, Szeged, Hungary
Helene L.	Svarva	The National Laboratory for Age Determination, Trondheim, Norway
Ivo	Svetlik	NPI AS CR, Prague, Czech Republic
Hans-Arno	Synal	ETH Zürich, Zürich, Switzerland
Tibor	Szabó	University of Szeged, Szeged, Hungary
Éva	Szendrey	EKHO'94 Kft Organiser, Debrecen, Hungary
Szendi	Szendrey	EKHO'94 Kft Organiser, Debrecen, Hungary
Szilvia	Szendrey	EKHO'94 Kft Organiser, Debrecen, Hungary
Soenke	Szidat	University of Bern, Bern, Switzerland
Gábor	Szilágyi	University of Szeged, Szeged, Hungary
Zoltán	Szoboszlai	Lab. of Ion Beam Physics, MTA Atomki, Debrecen, Hungary
Réka	Tapody	University of Szeged, Szeged, Hungary
Marjan	Temovski	ICER, MTA Atomki, Debrecen, Hungary
Nadine	Tisnérat-Laborde	CEA-CNRS-UVSQ, Gif-sur-Yvette, France
Eszter	Tombor	ICER, MTA Atomki, Debrecen, Hungary

<b>Name</b>	<b>Surname</b>	<b>Institution/Country</b>
Fujiki	Toshiyuki	Okayama University of Science, Okayama, Japan
Csaba Albert	Tóth	University of Debrecen, Debrecen, Hungary
Tünde	Törőcsik	University of Szeged, Szeged, Hungary
Tamara	Tuzova	Lab. of High Mountain Lakes, Bishkek, Kyrgyz Republic
Tamás	Varga	Isotoptech Zrt.,- MTA Atomki, Debrecen, Hungary
Mihály	Veres	Isotoptech ZRt., Debrecen, Hungary
Sergio	Vitale	Institute for Coastal Marine Environment, Mazara del Vallo, Italy
Matthias	Vonwiller	University of Bern, Bern, Switzerland
Lukas	Wacker	ETH-Zürich, Zürich, Switzerland
Elizabeth	Wiggins	University of California, Irvine, USA
Eva Maria	Wild	University of Vienna, Vienna, Austria
Xiaomei	Xu	University of California, Irvine, USA
Christiane	Yeman	ETH Zürich, Zürich, Switzerland
Andrey	Yurtaev	Tyumen State University, Tyumen, Russia
Elya	Zazovskaya	Institute of Geography RAS, Moscow, Russia
Giulia	Zazzeri	Imperial College London, UK
Aifeng	Zhou	University Lanzhou, China