

## Foreword: Crossing New Frontiers

The local organising committee (LOC), together with members of the executive committee of the International Focus Group on Tephrochronology and Volcanism (INTAV), warmly welcome you to this international field conference on tephrochronology, “Tephra Hunt in Transylvania”, set in the wonderful landscapes of the south Carpathian Mountains in Moieciu de Sus, Romania, from 24 June to 1 July, 2018. We are pleased and inspired to see so many here – thank you all for coming.

The central theme for the conference, “Crossing New Frontiers”, was chosen for a number of reasons. Firstly, we wanted to bring participants with a strong interest in tephra studies to a region in central-eastern Europe, somewhat off the beaten track but with much to offer, and to see a most interesting array of proximal (local) volcanic and pyroclastic deposits (e.g., Karátson et al., 2017) as well as distal tephtras derived from beyond Romania, typically preserved in extensive loess deposits. Ultra-distal cryptotephra deposits from Iceland have recently been discovered in the area as well (Kearney et al., 2018). Secondly, we were keen to encourage both established and emerging generations of tephrochronologists to come together from many countries, crossing many borders to get to Romania, to help support one another, to experience and learn from multiple points of view, and to network. Thirdly, the remarkable rise of modern, systematic cryptotephra studies (e.g., Davies, 2015; Lane et al., 2017), kicked off by the seminal paper published in 1989 by Andrew Dugmore (Dugmore, 1989), has seen new techniques and applications emerging within the science of tephrochronology to cater for the demanding, forensic-like requirements of cryptotephra studies, such as the development of new protocols for the efficacious analysis of glass microshards and growing applications of new technologies including ITRAX core scanning and medical CT imaging. These techniques are also useful for studies on visible tephtras. The conference thus provides the perfect opportunity to showcase the exciting advances being made in the discipline of tephrochronology by crossing new frontiers in knowledge and understanding. Fourthly, the conference follows a succession of international meetings focussed on tephrochronology that stretches back nearly 60 years to 1961 when a group comprising Masao Minato, Kunio Kobayashi, and Sohei Kaizuka of Japan made the successful proposal to establish the first ‘Commission on Tephrochronology’ (COT) at the INQUA Congress in Warsaw, Poland, in September 1961, initially led by Prof. Kobayashi (Kobayashi, 1965). Our meeting in Romania thus crosses the frontiers of time by building on the work of those who have gone before and the realisation that the most effective study of tephtras requires a collective and global approach. Finally, one of the joys of science, and tephrochronology and volcanic studies in particular, is the opportunity to meet like-minded colleagues and keen students in the field where formalities and reserve seem to dissipate in the face of shared interests, friendly discussions at the outcrop, and in meeting new people and cultures whilst being graciously hosted in new countries.

This week’s conference has its origins with an email sent to David Lowe on 3 October 2016 in which Daniel Veres asked if INTAV, through the EXTRAS project, would be interested in supporting a two-day meeting in Romania or Serbia in 2017 “focusing on tephra as chronostratigraphic markers in loess”. Daniel wrote: “*We have fantastic loess records there along the Danube, studied at really high-resolution and we found also many tephra layers – beside the widespread CI/Y5 tephra, for most of the rest there are serious issues in getting reliable chemical data (due to alteration mainly). Thus, I am thinking of a dedicated workshop in which we could actually set out protocols that could be employed successfully in providing reliable marker horizons for loess records that would allow direct comparisons with marine records nearby*”. The INTAV committee had, coincidentally, scheduled a Skype session about 24 hours later to discuss possible venues for an international tephra meeting, very aware that more than six years had elapsed since the memorable tephra meeting held in Kirishima in southern Japan in May, 2010. Daniel was swiftly asked if he would consider convening a full tephra meeting in Romania in 2018, rather than in 2017, to allow more time for it to be well organised, to garner as much support as possible from the global tephra community including emphasis on early career researchers and students, and to try to raise financial backing for the event.

Much water has flowed under the bridge since then, but the outcome of that portentous October email is now upon us: a week-long conference in a stunning venue where tephrochronology and volcanology will feature in an exhilarating programme of 42 oral papers, 53 poster papers, seven invited keynote papers, and a special evening public lecture introducing us to the local geology and volcanism and its products (i.e., 103 presentations in all). In addition to a hands-on Bayesian age-

modelling workshop, and in keeping with the long tradition of inter-INQUA conferences having a central field component, we look forward also to four days in the field on excursions that offer something for everyone: a one-day mid-conference trip, available for all participants, and a three-day post-conference trip (for which around 32 participants have signed up). Oral presentations will be 15 minutes in duration, with 12 minutes for speaking and 3 minutes for discussion. Keynote presentations are 30 minutes in total duration. Following the COT-INTAV tradition, only one session of oral papers is being run so that participants can take in all the talks. In addition, we have placed equal value on poster papers, with all posters being displayed for the entirety of the conference; presenters have been scheduled for one of three poster sessions so that they can also see and discuss posters other than their own during the other sessions.

Of course, presenting the papers is only half the journey: we are pleased to advise that there has been strong support for a tephra-focussed special volume of papers from the meeting to be published in *Quaternary International*. Previous conferences have generated such volumes, with papers from the Kirishima meeting in Lowe et al. (2011) being among the most-downloaded and highly-regarded for the journal. As well as gaining enhanced exposure for the papers by publishing in a collective tephra volume, the royalties from *Quaternary International* (owned by INQUA) are ploughed back into the Quaternary community through grants to projects or associated events, such as for this conference, and for the skills-based workshop held in Portland, USA, in August 2017. More information about the process of submitting a paper to the special volume, and the names of the guest editors, will be provided during the conference. It is likely that the deadline for the submission of papers will be 31 December 2018.

At the time of writing, 94 participants have registered for the meeting, representing 21 countries, and including 22 students (17 undertaking PhDs). This number of participants is a record, the previous high being 74 participants at Kirishima in 2010. The greatest numbers are from the UK (24), Germany (14), Romania (7) and the USA (5) with up to four representatives from each of Denmark, Russia, Norway, Sweden, Canada, Italy, Switzerland, Turkey, Japan, China, Poland, India, Serbia, Hungary, Singapore, Iceland, and New Zealand. We are especially grateful to the seven keynote speakers who have come from far and wide to provide cornerstone presentations for each of the seven oral sessions: **Sabine Wulf** (UK), **Michael Sigl** (Switzerland), **David Karátson** (Hungary), **Caroline Bouvet de la Maisonneuve** (Singapore), **Maarten Blaauw** (UK), **John Westgate** (Canada), and **Vera Ponomareva** (Russia). Maarten is kindly running the age-modelling workshop as well as giving his keynote paper. We unapologetically single out John Westgate for special mention and thanks. John has been involved with COT (now INTAV) since 1965 in multiple roles, including publishing the first global bibliography on tephrochronology that had its roots in a COT meeting in Tokyo, 1964 (Westgate and Gold, 1974), and he helped revitalise COT by forming and leading the Inter-Congress Committee on Tephrochronology from 1987 to 1991 (see Froese et al., 2008). In 1969 John published the first paper (with D.G.W. Smith) documenting how the analysis of glass by the electron microprobe could be used to characterise tephras, using as few as three elements/oxides, to facilitate their correlation over long distances in northwestern North America – a paper we think worthy of commemoration fifty years later. Steve Kuehn is thanked for his catalytic role in discussions around the ongoing development of a global database for tephra studies, an activity he has been working towards for some years now on behalf of INTAV and EXTRAS including at the INTAV-IAVCEI workshop held in Portland last year.

Our gratitude extends also to Daniel Veres for agreeing to undertake the very substantial work and responsibility required to convene the conference, and to Ulrich Hambach who, with support from Daniel, developed and ran the website for the second circular (including conference registration and abstract submission). Secondly, we thank the leaders and organisers of the field trips, which always involve considerable time and effort to prepare and enact: Ioan Seghedi (Romania), Alexandru Szakács (Romania), and Zoltán Pécskay (Hungary), who additionally provide the public lecture on Monday evening summarizing their career-long research on tackling the time evolution of Carpathian volcanism and geodynamic processes at play in the region (e.g., Seghedi et al., 2004), Ulrich Hambach (Germany), David Karátson (Hungary), and Daniel Veres (Romania). Staff of the venue, [Resort 'Cheile Gradistei' Fundata](#), have been very supportive of the conference from the outset and we appreciate and thank them, and others involved, in providing us with accommodation, meals, refreshments, and entertainment, and for hosting us so well. The student and ECR helpers, Aritina

Haliuc, Akos Botezatu, Anca Avram, Viorica Tecsa, and Madalina Groza, who met many of the participants on arrival at Bucharest, and who are helping with technical support during the conference, are thanked, as are those chairing the sessions and judging the student presentations.

The conference has been supported financially primarily by the Stratigraphy and Chronology Commission (SACCOM) (in which INTAV is one of a number of focus groups) of INQUA, being awarded €4600 (grant 1710P) to support 19 ECRs and students. This support was provided to support the objectives of INTAV's EXTRAS project: *EXTending tephRAS as a global geoscientific research tool stratigraphically, spatially, analytically, and temporally*. Additional financial support was provided by Babes-Bolyai University, Cluj-Napoca, Romania, through the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme ERC-2015-STG (grant agreement 678106; PI, A. Timar-Gabor) and the Department of Physical Geography, Eötvös Lorand University, Budapest, Hungary (PI, D. Karátson). We also acknowledge administrative and logistical support from the Romanian Academy (Cluj-Napoca Branch), Institute of Speleology, Romanian Academy, and BayCEER, University of Bayreuth, Germany (which hosted the second circular website). The University of Waikato, Hamilton, New Zealand, provided funds for the student awards for 'best oral' and 'best poster' papers, with cartographic support from Betty-Ann Kamp. Considerable in-kind support has been provided by institutions in Romania and Germany, and by the home institutions of the members of the LOC and INTAV executive (listed below), who have worked together to organise the conference.

#### LOC

- Daniel Veres (daniel.veres@ubbcluj.ro; dsveres@gmail.com), Romanian Academy, Institute of Speleology and Babes-Bolyai University, Romania (chair/convener)
- Ulrich Hambach (ulrich.hambach@uni-bayreuth.de), University of Bayreuth, Germany
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#### INTAV executive committee

- Britta Jensen (bjjensen@ualberta.ca), University of Alberta, Canada
- Peter Abbott (peter.abbott@geo.unibe.ch), University of Bern, Switzerland
- Takehiko Suzuki (suzukit@tmu.ac.jp), Tokyo Metropolitan University, Japan
- Siwan Davies (siwan.davies@swansea.ac.uk UK), Swansea University, Wales, UK (Siwan was co-opted into the committee in August, 2017, following Vicky Smith's resignation)
- David Lowe ([david.lowe@waikato.ac.nz](mailto:david.lowe@waikato.ac.nz)), University of Waikato, New Zealand
- Victoria Smith (University of Oxford, UK) (Vicki was involved in early conference preparations before resigning from the INTAV committee in 2017).

#### Future of global tephrochronology and potential role of INTAV

A very important session during the conference on the last day will be to discuss the future activities of INTAV and how these may best be implemented to satisfy the needs of the global tephra community. The INTAV committee is aware that our time as a formal international focus group (IFG) within SACCOM is ending under the current rules because we have been operating as an IFG since 2007 via the INTREPID and EXTRAS projects (normally IFGs operate for a maximum of eight years in INQUA). Our collaborations within INQUA, and support from the INQUA executive and SACCOM presidents in this period, have been greatly appreciated, INTAV has been active and productive, and much goodwill is very much evident today within the tephra community with regard to working closely with INQUA. Nevertheless, the president of the INQUA Executive Committee, Allan Ashworth (USA), noted in the latest *Quaternary Perspectives* newsletter (March 2018) that although INQUA funds IFGs, projects, and skills activities during inter-congress years, *“the current structure has become too structured, too complex, too misunderstood, and needs to be simplified to allow for more flexibility. Good agreement was reached [in a meeting this year] in Beijing to present the International Council (IC) in Dublin [in 2019] with a proposal for the future which will simplify*

*the process of making awards. This was also part of a larger discussion about the [five] commissions, which have now been in existence for 15 years. A review of the commissions will be undertaken in the coming year and will help shape discussion about their future with the IC.”*

Therefore the INTAV meeting scheduled for the final session of the conference is potentially far-reaching and participants are asked to consider and be prepared to respond to a series of questions as follows:

- (1) Do you see a future for INTAV, or a similar group mainly comprising tephra specialists globally?
- (2) What are its aims?
- (3) How do we best meet those aims (assuming the response to (1) is positive), including through:
  - (a) renewed association with INQUA (<https://www.inqua.org/>) in some way; or
  - (b) as a stand-alone organisation such as INTIMATE; or
  - (c) as a stand-alone new international society or association; or
  - (d) by 'intensification' of the INTAV role by possibly attempting to gain financial support from, for example, European Union COST funding, and to work on annual workshops/meetings towards specified research objectives that relate to the funding; or
  - (e) to form a new group within an organisations other than INQUA such as the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) (<http://www.iugg.org/associations/iavcei.php>). IAVCEI is one of eight semi-autonomous associations under the umbrella of the International Union of Geology and Geodesy (IUGG) (<http://www.iugg.org/>), which is at comparable 'rank' to INQUA, and (like INQUA) is one of ~30 scientific unions presently grouped within the International Council for Science (ICSU). IAVCEI currently hosts 14 commissions including, for example, “Cities on Volcanoes”, “Statistics in Volcanology”, Tephra Hazard Modelling”, “Collapse Calderas”, “Volcanic Lakes”, and “Volcanic Hazards and Risk”.

Each of these commissions normally hosts a stand-alone meeting (such as the “Cities on Volcanoes” meeting in Napoli, Italy, in September 2018), or an equivalent activity such as a targeted workshop every four years, and is run by an elected committee – not much different from the way INTAV has been run since 2007. Including 1990, COT-INTAV has hosted six inter-INQUA conferences, and has been involved with a number of workshops as well, and so an average frequency of four-yearly meetings has been met, more or less. IAVCEI hosts a full congress meeting every four years (the next being held in Rotorua, New Zealand, in February, 2021). Membership of IAVCEI requires a fee payable annually or four-yearly by individuals. Based on preliminary discussions with some of the leaders of these commissions, potentially a new “Commission on Tephrochronology” would be feasible within IAVCEI. Such an association would not preclude members from taking part in INQUA congresses, nor preclude them proposing and convening tephra-based sessions as is being done by INTIMATE, for example, for the full INQUA Congress in Dublin.

- (4) Would you as a member of INTAV be available to undertake a leadership role in INTAV or successor organisation to help it meet its (newly defined) aim and objectives?

The aim of COT in 1961 was expressed simply by Kobayashi (1965): “*To advance the progress of the method of tephrochronology and Quaternary research based on tephrochronology*”. This aim is embedded in the more expansive aims of the EXTRAS project: to help improve and develop new methodologies of tephrochronology to support and facilitate many Quaternary research initiatives ranging from paleoenvironmental reconstruction to archaeology, as well as geochronological and volcanological applications (see <http://www.comp.tmu.ac.jp/tephra/intavtmu/link.html>).

We wish all participants a most enjoyable, interesting, and informative field conference here in Transylvania, and a safe journey home.

*Members of the LOC and INTAV executive committee, 1 June 2018*

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