

Quaternary Perspectives



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INQUA-PAGES Conference for Early-Career Researchers

Impacts of sea-level rise from past to present

26-29 August 2018, Utrecht, the Netherlands

This [conference](#) aims to facilitate scientific exchange between early-career researchers (ECRs) from a broad range of disciplines working with sea-level change. The conference will include two days of oral and poster presentations by ECRs, invited keynote lectures, a one day field excursion to the Rhine delta and Holland coastal plain with a conference dinner, and a public 'Science and Society' evening session. The conference is open to ECRs who have obtained or expect to obtain their Ph.D. in 2010 or later.

Sessions:

- 1) Past sea-level changes: Sea-level histories from the Late Quaternary to present day: trends, components and reconstruction techniques (Keynote speaker Roland W. Gehrels, ECR speaker Nicole Khan)
- 2) Submerged landscapes: Drowned continental shelves: past human responses to environmental changes (Keynote speaker Fraser Sturt, ECR speaker Claire Mellett)
- 3) Recent and future sea-level changes: 20th century sea-level change (models and observations), contributions to sea-level change, future projections (21st century and beyond) (Keynote speaker Marta Marcos, ECR speaker Roelof Rietbroek)
- 4) Mitigation, adaptation and coastal impacts: Coastal management, planning, subsidence, extreme sea levels, waves, impacts and adaptation (Keynote speaker Carles Ibáñez, ECR speaker Sanne Muis)

On the 28th of August the participants will attend the field trip 'Delta and Coast'.

INQUA President's Report

The annual INQUA Executive meeting was hosted in March of this year by Zhengtang Guo and his colleagues at the Institute of Geology and Geophysics of the Chinese Academy of Sciences in Beijing. Associate professors Chenxi Xu and Wenling An, and postdocs Xiaolin Ren and Wenchao Zhang, provided travel and accommodation support. A team of graduate students, Ms Bin Hu, Ms. Yu Fu, Mr Fan Yang, Ms Pei Li, Ms Wenqui Jiang, Mr Yang Fu, Mr Xinbo Gao, Ms Yunxia Jia, Mr Zhilin He, Ms Junyan Geng, and Ms Jie Yu assisted commendably with day-to-day activities.

Part of the meeting was dedicated to learning more about the activities of the Chinese Association for Quaternary Research (CHQUA) in a session organized by President Zhengtang Guo and Secretary General Jule Xiao. At the meeting, representatives of the 15 commissions of CHQUA highlighted the current activities in their disciplines and in so doing demonstrated that Quaternary research in China is well-supported, relevant, and of the highest quality. Presenters at the meeting were: Liping Zhou (Stratigraphy and Chronology), Tao Deng (Biological Evolution and the Environment), Xing Gao (Human Evolution and Environmental Archaeology), Bin Xue (Ecosystem Evolution), Shucheng Xie (Biogeochemical Cycles), Xiaomin Fang (Tectonics and Climate), Huaya Lu (Interglacial Climate and the Environment), Youbin Sun (Abrupt Climate Changes), Xiuqi Fang (Historical Climate Changes), Xiaodong Liu (Paleoclimate Modeling), Baotian Pan (Geomorphological Evolution and the Environment), Yongjin Wang (Karst and the Environment), Shouye Yang (Coastal and Marine processes), Cunde Xiao (Polar Quaternary), and Zhiqing Li (Applied Quaternary).

At the INQUA business meeting, INQUA Treasurer Freek Busschers (The Netherlands), who has replaced Maria Rita Palombo (Italy), reported that INQUA's finances are in good condition, helped in part by a rebound of royalties from Quaternary International. For 2018, 23 awards were made for a total of €105,000, spread more or less equally between the commissions. They involve meetings and workshops on each of the continents except Antarctica.

Currently, during inter-congress years, INQUA funds International Focus Groups (IFGs), Projects, and Skills activities. The consensus in the Executive is that 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 Beijing to present the International Council (IC) in Dublin with a proposal for the future which will simplify the process of making awards. This was also part of a larger discussion about the 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.

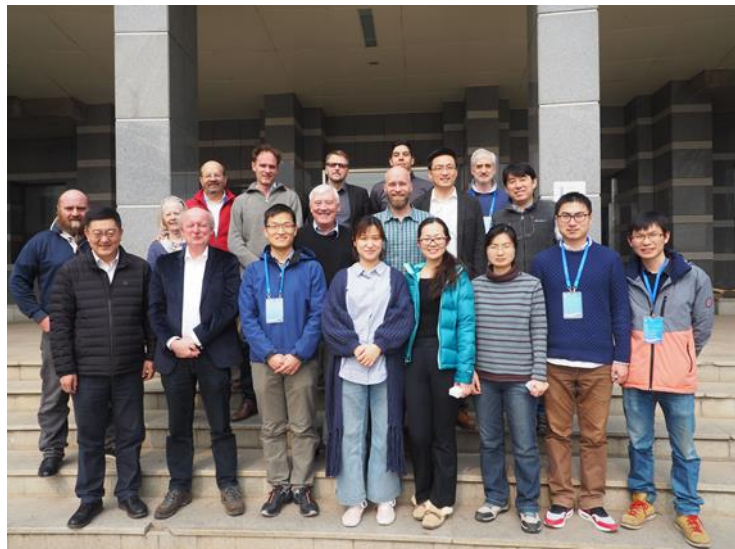


Fig. 1. Participants of the meeting and hosts in front of the Institute of Geology and Geophysics of the Chinese Academy of Sciences in Beijing.

I am pleased to report that significant progress has been made in registering INQUA as a legal entity. In today's world there is significantly more scrutiny of international organisations and their finances. As it currently stands, INQUA has no legal protection. The vehicle being used to bring about legal protection is the formation of the INQUA Foundation. This was proposed by attorneys from the Van Doorne law company, Amsterdam, as being the easiest and cheapest way to make INQUA a registered organisation in the eyes of the law. Before continuing with the legal process, the INQUA Exec will be seeking approval from the IC in the months ahead. In addition to registration, there are other benefits from the formation of the INQUA Foundation. INQUA banking will become considerably easier than it currently is; the bank is currently in Louvain-La-Neuve, Belgium, not the easiest location for the Treasurer and President to travel to as required by Belgian banking laws. Once INQUA becomes a legal entity, the bank will be able to be moved to Amsterdam, a much more convenient location for INQUA officers to travel to. Most importantly, however, individuals and corporations will, in the future, be able to make tax-free contributions to support the activities of INQUA projects. The Foundation will have the tax privileges of a non-profit organisation.

After talking about the need for INQUA to improve its web presence, we finally have a new [site](#) thanks to a lot of hard work from Brian Chase, Secretary-General, and Eduardo Alarcón, chair of the ECR Committee. One of the new features is that it provides a single place where all commission activities can be highlighted. I especially like the 'Latest News' and 'Upcoming Meetings' sections which enable me, at a glance, to catch up on what's happening in the Quaternary world. For the new pages to continue to be successful, we will need your assistance in providing content.

Min-Te Chen, Editor-In-Chief of Quaternary International, presented a report in Beijing of the current status of journal activities. Quaternary International is jointly owned by INQUA and Elsevier. Min-Te reported that he and his team of five associate editors: Asfawossen Asrat (Ethiopia), Zhonghui Liu (China), Barbara Mauz (UK), Alessandra Negri (Italy), and Florent Rivals (Spain), have worked their way through the large backlog of special issues that had accumulated and are now looking forward to charting a course for the journal in the future. The impact factor is increasing and is currently 2.19. All in all the

journal is becoming a much more desirable place to publish and that trend should increase in the years ahead.

One development that I am especially pleased with is that INQUA and PAGES have agreed to co-sponsor an ECR conference "Impacts of sea-level rise from past to future (iSLR18)", in Utrecht, The Netherlands, from 26-29 August 2018. Marie-France Loutre (PAGES), Thijs van Kolfschoten, and Freek Busschers (INQUA) have been instrumental in providing their knowledge and assistance, together with that of their organisations, the University of Utrecht and the Geological Survey of the Netherlands, to help organise the conference. For young scientists still wanting to participate in this conference contact Eduardo Alarcón, chair of the INQUA ECR Committee (edualarcong@gmail.com). I would like to think that this could be the first of a series of inter-congress meetings jointly funded by INQUA and PAGES on topics that are socially relevant and likely to bring greater visibility to both organisations.

An on-going issue that continues to demand attention is national membership dues. Funding agencies in many countries are receiving less funds and are requesting more accountability in the way that INQUA is using those funds. We have started to collect data on the involvement of scientists in the projects that we fund for the purpose of providing donors more targeted information. Zhengtang Guo, VP, made a presentation in Beijing of a report that he had prepared with Ashok Singvhi, VP, who unfortunately was unable to attend because of an injury. By the time of the INQUA Congress, there will have been no increases in annual fees for eight years. There was a good agreement in the Exec that annual fee increases need to be moved to an automated process, much like the ones used by sister unions IUGS and IUGG which use Consumer Price Index (CPI) and other inflation indices. There was less agreement on what to do about fee-banding. Generally, the Executive would like to see band levels at which nations pay fees remain voluntary. A sub-committee of national members has been convened and they will assist in the formulation of a proposal to the IC during the Dublin congress.

As a final request, it is very important to support our INQUA colleagues (Irish Quaternary Association) by spreading the news about the XX INQUA Congress in Dublin, Ireland, 25 -31 July, 2019. Up to date information about the Congress can be found on the INQUA web page.

Allan Ashworth
March 2018

XX INQUA 2019

Follow us on Twitter: @INQUADUB19

Like us on Facebook: INQUA 2019 Dublin Ireland

Preparations for the 20th INQUA Congress in Ireland are now well-advanced, from field trips to the Scientific Programme to social events and Congress outreach activities. A sample of the progress made can be gained from visiting the [webpage](#), where it is easy to sign up for a congress E-newsletter to stay informed and learn more about the exciting Congress programme.

Ireland, INQUA and Dublin welcomes INQUA 2019!

Dublin is a friendly, welcoming and very accessible, modern international European capital, with easy access via Dublin and Belfast International Airports. (Dublin airport serves direct flights from 190 destinations in over 40 countries) and Dublin is also easily reached by ferry from ports in the UK. The [Convention Centre Dublin](#) is a purpose-built, multi-award winning conference venue located at the heart of Dublin city. The CCD offers all delegates the highest standards of comfort and accessibility, and will provide superb and well-equipped surroundings for INQUA 2019 scientific sessions. Our Congress will be the sole event hosted at the time, so we are ensured a highly intimate and cohesive Congress experience. Other historic locations such as Trinity College Dublin, Dublin Castle and the Guinness's St James' Gate are within easy walking distance to the CCD, and will offer exciting and varied venues for additional Congress events and meetings. A wide range of

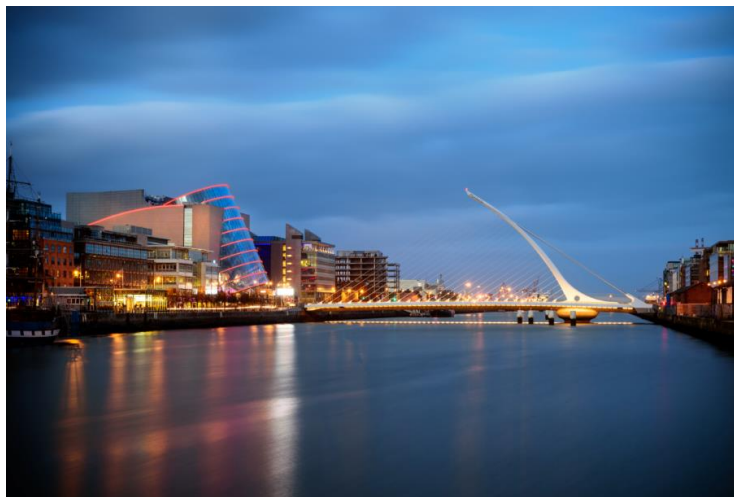


Fig. 2. The Convention Centre on Dublin's Quays.

accommodation options from hostel, airbnb to hotels and university sites are available in Dublin City.

The Congress opens with a famous Irish ice-breaker on Wednesday the 25th July, with the formal opening ceremony on Thursday 26th to be addressed by Ms Mary Robinson. Mary Robinson was the first female President of Ireland from December 1990 to September 1997 and has served as the United Nations High Commissioner for Human Rights from 1997 to 2002. She was awarded Amnesty International's [Ambassador of Conscience Award](#) for her work promoting human rights in 2004 and has set up The Mary Robinson Foundation – Climate Justice to tackle global climate change related issues.

As of writing this piece we have received >180 offers of sessions covering a broad and comprehensive range of Quaternary research. Colleagues from more than 32 different countries have proposed these sessions which ensures that this will be a truly international congress. There will be six plenaries, given by leading Quaternary scientists from around the world, spanning the range of Quaternary research. Additionally, we are planning a range of other scientific activities, including cross-Congress talks on topics of special interest, workshops, ERC activities, and more!

Pre- and post-Congress [field excursions](#) will visit many beautiful parts of the island of Ireland (and even some offshore islands!) as well as iconic areas of nearby Scotland and England. The excursions are designed to include as many sites of Quaternary scientific interest as possible and will be accompanied by printed fieldguides.



Fig. 3. Glendalough in the Wicklow Mountains – a glacial trough.

Ferry and airline connections make many alternative touring options available to our delegates and their families so they can either attend our bespoke technical INQUA excursions or make their own arrangements – we would be happy to advise delegates taking the latter option and there are many professionally designed sources of information regarding potential Irish tourist, heritage and scenic places to visit e.g. [The Wild Atlantic Way](#), [Ireland's Ancient East](#), [The Copper Coast Geopark](#).

Sunday the 28th July is reserved for Mid-Congress tours. Delegates can either book one of the many [tours](#) that the Congress organisers have prepared or choose from many family-friendly tours that are offered by [private companies and suppliers](#) within Dublin itself. INQUA2019 Mid-Congress excursions are available to many nearby locations and to those further afield.

Visits will include the World Heritage site [Brú na Bóinne](#). The foothills of the extensively glaciated Wicklow Uplands are a mere 10km from central Dublin, so organising self-led or commercial visits to the scenic mountain area is very easy. As a taster, delegates can view 'Wicklow in the Grip of an Ice Age', one of the many self guided resources of possible interest on the ['County Wicklow Heritage'](#) website.



Fig. 4. The Twelve Bens, Connemara, Co. Galway.

INQUA2019 Social Events

The Congress party will be held on Tuesday 30 in the ['Guinness Storehouse'](#). The entire building (but not the brewery itself!) is booked for the evening for INQUA's participants, and the venue is amongst the premiere Irish heritage/tourism attractions. The ticket price will include dinner, traditional music, a DJ, a self-guided tour of the exhibitions, and courses on how to pull the elusive "perfect pint of Guinness".

INQUA2019 Registration Dates

Call for Abstracts at the end of May 2018 and Registration goes live in late September 2018, but at this stage we encourage you to save the Congress dates in your diary (25 - 31 July 2019 + generally 3-4 days either side if planning to partake in an excursion) to ensure that you do not miss any of the Congress.

The Irish Quaternary Association looks forward to seeing all our sister Associations in Dublin!

The INQUA Distinguished Service Medal

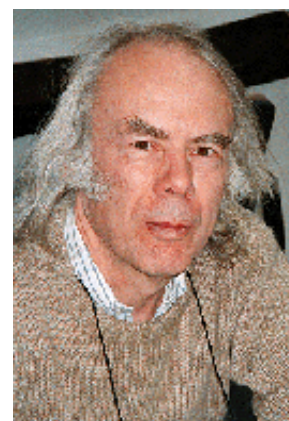
The INQUA Distinguished Service Medal is awarded to individuals with a recognized record of sustained and outstanding contributions to the maintenance or development of INQUA's important functions (e.g. organization, operations, outputs, publicity). It is envisaged that candidates will have completed their service to INQUA at the time of their nomination.

Nominations are invited for the 2019 Award of the INQUA Distinguished Service Medal. The process for nomination and evaluation can be found on the [nomination form](#).

Closing date for receipt of nominations is 28 September 2018

The Sir Nicholas Shackleton Medal for outstanding young Quaternary scientists

Professor Sir Nicholas Shackleton –or 'Nick' as he preferred to be called- was one of the foremost Quaternary scientists in the world, his scientific legacy is in no need of elaboration. In recognition of his pivotal contributions to palaeoceanography and the verification of the global importance of Milankovitch cycles, Nick was elected to the Royal Society in 1985 and knighted by the Queen in 1998. The many prizes and citations he was accorded include the Crafoord Prize (1995), the Wollaston Medal (1996), the Milankovitch Medal (1999), Foreign Associate-ship of the U.S. Academy of Sciences (2000), the Vetlesen Prize (2004) and the Blue Planet Prize (2005). In measure of his prestige, his image was selected as one of 10 to adorn a commemorative stamp collection (UK Royal Mail) which celebrated the 350th anniversary of the Royal Society, the world's oldest continuous science academy. Nick served as President of INQUA from 1999 to 2003.



One of Nick's most endearing qualities was his enthusiastic embracement of international collaboration and co-operation. This extended to unselfish mentoring and encouragement of young scientists, both at his home institution, Cambridge University, and elsewhere. It is for this reason that the Sir Nicholas Shackleton medal is dedicated to rewarding the achievements of outstanding young Quaternary scientists.

Nominations are invited for the 2019 Award of the Sir Nicholas Shackleton Medal, which is awarded to an early-career scientist, who will normally be less than 40 years of age or, if older, within 8 years of completing their first PhD project. Candidates may be working in any branch of Quaternary science. The process for nomination and evaluation can be found on the [nomination form](#).

Closing date for receipt of nominations is 28 September 2018

The Liu Tungsheng Distinguished Career Medal for outstanding contributions to Quaternary science

INQUA invites nominations for the Liu Tungsheng Distinguished Career Medal, first awarded in 2011, which recognizes outstanding service to the international community in Quaternary science. The medal will be awarded at the INQUA Congress to be held at Dublin, Ireland, in 2019.

Professor Liu, a former member of the Chinese Academy of Sciences and research professor at the Institute of Geology and Geophysics, Beijing, China, made outstanding contributions to Quaternary paleoenvironmental research, particularly with respect to Chinese loess sequences. The many prizes and citations he was accorded include the Chen Jiageng Award for Natural Sciences (1989), China Green Prize of Environmental Science and Technology (1993), Ho Leung Ho Lee Prize in Earth Sciences (1995), the Tyler Award (2002), and the National Natural Science Prize of China (2006). He was elected as a fellow of the Third World Academy of Sciences (1991), named as an academican of the International Eurasian Academy of Sciences (1995) and as the Laureate of the National Supreme Award of Science and Technology of China (2006). In recognition of the latter honour a postage stamp and first-day cover were issued in his name.



He had a long record of service promoting Quaternary research and provided significant leadership to national and international Quaternary organizations. He was Honorary President of the Chinese Association for Quaternary Research (CHQUA), founding member of the International Geosphere and Biosphere Programme (IGBP) of Past Global Changes (PAGES), and the former president of INQUA from 1995-1999.

The Liu Tungsheng Distinguished Career Medal will be awarded to a senior Quaternary scientist who has made numerous, distinguished, and significant contributions that have clearly advanced Quaternary science through service to the international community.

Nominations are invited for the 2019 Award of the Liu Tungsheng Distinguished Career Medal. Candidates may be working in any branch of Quaternary science. The process for nomination and evaluation can be found on the [nomination form](#).

Closing date for receipt of nominations is 28 September 2018

Coastal and Marine Processes

CMP REPORT 2018

CMP has continued to develop the model presented to the incoming executive in Nagoya consisting of one IFG and supporting projects. In general this has proven to be a very successful model that is developing strong links within the CMP research community and developing strong mentorship for ERC and integration of RDC. This has laid a strong foundation for continuing CMP activities beyond Dublin 2019.

1301F PALSEA2: PALeo-constraints on SEA-level rise 2

Project Leaders: Jacqueline Austermann (Columbia University, USA), Natasha Barlow (University of Leeds, UK), Jeremy Shakun (Boston College, MA, US), Alessio Rovere (University of Bremen, Germany)

PALSEA2 is a collaborative group with the overarching goal of assessing the ice-sheet and sea-level processes that led to past intervals of sea-level change, which will inform projections of future sea-level rise. Under this broad umbrella, the IFG focuses more closely on these processes when they occur around present-day sea level on societally relevant timescales. PALSEA2 has two main objectives that address its overarching goal:

1. Document and synthesize data on rates, sources, and budgets of sea-level variability during Quaternary/Pliocene warm periods and assess the ability of models to simulate these observations.
2. Estimate the sea-level/ice-sheet response times (and governing processes) to past warm climates, and use this data-driven information to assess and improve future sea-level-rise projections, thus bridging the gap between paleo and historical observations and future predictions.

Results from these two objectives are then used to provide upper bounds on the amount of future sea-level rise in response to anthropogenic climate change and to refine estimates of sea-level rise by the end of this century. As part of the five year plan of PALSEA2, the phase 5 meeting on "Phasing of

sea-level and ice-sheet responses to climate change and the processes/timescales that govern these responses" was held on the Yucatan Peninsula, Mexico. The meeting consisted of senior scientists as well as early-career researchers, who received grants from this INQUA project to participate in the phase 5 meeting. Such support is highly valuable since resources for ECRs are often limited, yet connecting to the community and presenting new research is paramount. The meeting focused on developing and finalizing publications, databases, and software that synthesize the results and products from previous years. A second goal was to identify knowledge gaps and community needs to target in future work. Several field trips through interglacial reef complexes on the peninsula provided excellent opportunity to demonstrate field methods and visualize different last interglacial sea level stages.

1601P HOLOCENE relative SEA level (HOLSEA)

Project Leaders: Nicole Khan (NTU, USA), Benjamin Horton (Rutgers University, USA), Robert Kopp (Rutgers University, USA), Erica Ashe (Rutgers University, USA)

Determining the rates, mechanisms and geographic variability of sea-level change is a priority science question for the next decade of ocean research. The overarching goal of the Geographic variability of HOLOCENE relative SEA level (HOLSEA) working group is to produce a global synthesis of Holocene relative sea-level data to (1) estimate the magnitudes and rates of global mean sea-level (GMSL) change during the Holocene based on proxy data, and (2) identify trends in spatial variability and better understand the processes responsible for geographic differences in relative sea-level change. Following the first meeting in Mt Hood, Oregon last year, the second HOLSEA meeting was held in conjunction with the IGCP639/INQUA1701P "Sea-level change from minutes to millennia" meeting held in St Lucia, South Africa on Sept 18, 2017 and was attended by 42 researchers from 18 different countries. At the meeting, the preliminary global database was presented, and approaches to standardization and archiving of the data and

modeling applications of the sea-level database were discussed. A special issue presenting the standardized global sea-level database has been accepted by Quaternary Science Reviews and is expected to be published during 2018. All data will be archived with NOAA National Centers for Environmental Information (NCEI) and a separate online database will be constructed for users to freely access. The group leaders are planning to hold workshops in tandem with the IGCP639 ("Sea Level Change from Minutes to Millennia") meeting in southern Italy scheduled for late September 17-23 with a focus on glacial-isostatic adjustment modelling, and a second workshop during the PALSEA meeting held in New Jersey, USA with the aim of addressing key gaps in the database and working towards integrating older sea-level data archives. Overall, the efforts of this working group will increase our understanding of the driving mechanisms of sea-level change, enhance predictions of 21st century sea-level rise, and provide a vital contribution to the assessment of natural hazards with respect to sea-level rise and coastal response.

1701P Late Quaternary records of coastal inundation due to earth surface deformation, tsunami, and storms

Project Leaders: Simon Engelhart (University of Rhode Island, USA), Vanessa Heyvaert (Geological Survey of Belgium, Belgium), Daniel Melnick (Universidad Austral de Chile, Chile), Fengling Yu (Xiamen University, China)

Coastal communities are increasingly under threat from a variety of natural hazards, including storm induced coastal erosion, flooding from storms and tsunami, instantaneous land-level changes associated with co-seismic activity and longer-term subsidence and sea ingress associated with both tectonic and human-induced processes. Short-term measurements from instrumental and historical records provide a fleeting glimpse at the hazard posed by instantaneous (seconds to hours) sea-level changes and, therefore, must be placed within a long-term context that only geological and archaeological records can provide.

This project aims to provide a platform for the development of integrated records of sea-level changes involving the incorporation of instrumental, historical, archaeological, and geological records. This will be achieved through taking: 1) inter-disciplinary perspectives with a particular focus on integrating researchers who are ECR and DCR; 2) facilitating knowledge transfer between established research communities and nations currently underrepresented in the field; and 3) developing products such as databases that can be used by multiple specialties investigating coastal hazards. INQUA project CMP1701P started to achieve these goals through the first annual meeting held in St Lucia, South Africa in September 2017. This meeting was held in conjunction with the IGCP Project 639 meeting “Sea level changes from minutes to millennia” and INQUA project CMP1601P “HOLSEA”. The project published four contributions during 2017.

1603P MOPP-MEDFLOOD, Modelling Paleo Processes

Project Leaders: Matteo Vacchi (University of Exeter, UK), Alessio Rovere (MARUM and ZMT, University of Bremen, Germany), Sara Biolchi (University of Trieste), Gianfranco Scicchitano (Studio Geologi Associati, Catania)

The main goals of MOPP are to grow the scientific community and scope of the original MEDFLOOD by adding researchers from the coastal processes fields which will allow for the modelling of paleo events (such as storms and tsunamis) during different sea levels as well as analyze the complex human-environment interaction in the past (historical and pre-historical) by modelling the paleo dynamics of coastal areas. MOPP will also look to expand the geographic focus of MEDFLOOD from the Mediterranean to a more global scale.

Craig Sloss,
The President of the CMP Commission

1301F PALSEA2: PALEO-constraints on SEA-level rise 2

Project Leaders: Jacqueline Austermann (Columbia University, USA), Natasha Barlow (University of Leeds, UK), Jeremy Shakun (Boston College, MA, US), Alessio Rovere (University of Bremen, Germany)

PALSEA2 Workshop, Phasing of ice-sheet and sea-level responses to past climate change, Playa del Carmen, Quintana Roo, Mexico, 6 – 9 November, 2017

Authors: Jeremy D. Shakun¹, Michael R. Sandstrom², Alexandra Skrivaneck³

¹Boston College, USA; ²Lamont-Doherty Earth Observatory, Columbia University, USA;

³University of Florida, USA

The exquisitely exposed Last Interglacial (LIG) fossil coral reefs in the Yucatan Peninsula, Mexico, served as the backdrop for the fifth and final meeting of the PALSEA2 (PALEO constraints on SEA level rise 2) working group (Fig.1). The workshop highlighted current research on ice-sheet and sea-level changes, addressed critical gaps in field observations, and assessed the current knowledge regarding causes, rates, and mechanisms of sea-level and ice-sheet dynamics during past warm periods.

The five-day program included twenty-nine presentations, several group discussions, a poster session, and field excursions to fossil reefs at Xcaret and limestone caves at Rio Secreto. A major theme was the need to combine existing paleo sea-level and ice-sheet databases into a centralized global compilation with a streamlined user interface. Standardizing, interpreting, and assessing the quality of field data were discussed as key components for integration and application by the modeling community. For example, participants considered how sample elevation does not necessarily equate to relative paleo sea level, and the need for clear, systematic descriptions explaining interpretations in paleo databases. Talks explored complications of interpreting sea level from fossil reefs, where accretion is often determined by storm deposition of coral rubble.

Participants also examined the quantification of uncertainty due to glacial isostatic adjustment (GIA) on global sea-level signals in order to reconcile peak LIG sea-level reconstructions. Discussions focused on GIA uncertainty stemming from ice-sheet configurations and 3D earth-model parameters, as well as the need for additional paleo sea-level data. Suggestions included targeting near-to-intermediate field regions sensitive to GIA, such as the Bahamas, to limit possible ice-sheet configurations, developing adjoint framework methods to efficiently estimate GIA-model parameters, and applying 3D GIA earth models to investigate model error associated with lateral viscosity variations.

Presentations emphasized the importance of understanding glacial ice-sheet volume and spatial extent prior to the last glacial cycle, which determines GIA effects on LIG sites. New cosmogenic nuclide and sediment provenance techniques have the potential to constrain these glacial ice extents over million-year timescales to orbital timescales, respectively.

Dynamic topography due to mantle convection could have significant effects on the elevation of paleo sea-level indicators, but has substantial vertical uncertainty, leading participants to recommend that larger uncertainty bounds be placed on the current assessment of the peak LIG highstand at 6–9 meters above present global sea level (Dutton et al. 2015). This assessment is consistent with a new, far-field LIG peak sea-level reconstruction from fossil reefs exposed in the Seychelles. Resolving sub-millennial sea-level excursions from LIG deposits remains difficult considering the vertical uncertainties and complex effects of post-depositional alteration on the interpretation of coral ages. The workshop



Fig. 5. Last Interglacial fossil reefs at Xcaret.

highlighted new developments regarding the potential for stable oxygen isotope records from polar ice cores to provide additional constraints on the timing and rate of LIG ice-sheet variability.

Pliocene sea level remains a topic of interest as atmospheric CO₂ concentrations were similar to modern values, but constraining global sea level from paleo-shoreline observations and marine geochemical proxies is challenging in light of dynamic topography and diagenesis. Mid-Pliocene sea-level fluctuations recorded offshore of New Zealand offer insight into the pacing and magnitude of ice-sheet variations during this warm period.

Lastly, reconstructions of Holocene ice-sheet stability continue to be refined via multi-proxy and data-model comparisons as well as the detailed study of coral microatolls. A recent compilation of late-Holocene relative sea-level data and advances in statistical modeling of relative sea-level indicators can support the investigation of factors influencing Holocene sea-level change.

Long-term objectives include improving consistency across the various scientific disciplines in terms of quantifying model accuracy and uncertainty, and endorsing transparency and open source records for modeling and data acquisitions.

We thank PALSEA2 workshop organizers, namely, Andrea Dutton, Anders Carlson, Glenn Milne, Antony Long and Paul Blanchon, and the funding organizations: Past Global Changes (PAGES) and the International Union for Quaternary Research (INQUA).

References

Dutton, A., A. E. Carlson, A. J. Long, G. A. Milne, P. U. Clark, R. DeConto, B. P. Horton, S. Rahmstorf, and M. E. Raymo (2015), Sea-level rise due to polar ice-sheet mass loss during past warm periods, *Science*, 349, doi: 10.1126/science.aaa4019.

Humans and Biosphere

IFG 1604F: METHOD Modelling Environment dynamics and Hominin Dispersals around the Mid-Pleistocene Revolution

Leaders: Jesús Rodríguez, Ana Mateos (CENIEH, Spain); Christine Hertler (Senckenberg Forschungsinstitut, Germany); Maria Rita Palombo (Sapienza Università di Roma, Italy)

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Training Lab ABM-Agent-based Modelling

Authors: Christine Hertler¹, Ericson Hölzchen¹, Ana Mateos², Jesús Rodríguez².

¹Senckenberg Forschungsinstitut, Germany;

²CENIEH, Spain

The Agent-based Modelling (ABM) Training Lab was held in Frankfurt, Germany from April 14th to 17th, 2018. The focus of the Training Lab was on one hand to provide the participants with a basic understanding on simulation methodology, and on the other hand working on ABM projects on human and non-human interactions during the Mid-Pleistocene Transition. The international group of participants contributed a variety of disciplinary perspectives including biology, paleontology, archaeology, bioinformatics, and computer science.

Following brief introductions of the scientific scope of the METHOD IFG and its history, training in simulation methodology was conducted by Jan Ole Berndt, Colja Becker and Daniel Lebherz, computer scientists from the University of Trier specialized in methodologies of simulation and agent-based modelling. In his talk, Jan Ole Berndt presented the steps required to systematically conduct simulation experiments. In addition, Colja Becker and Daniel Lebherz guided the participants through practical exercises on a preconfigured NetLogo model.

The following two days were devoted to joint work on ABMs developed within the framework of the METHOD IFG. The “MPR Hominin Dispersal ABM” was presented by Ericson Hölzchen. He provided an overview on the development history and the recent changes in the model. Subsequently, the participants worked on further improvements of the model, which included the improvement of the agent behavior, environment model and defining criteria for validation. The third day was dedicated to the simulation of squirrels. Lutz Maul gave a general introduction on small mammal behavior and ecology with a focus on ground squirrels and voles. Afterwards, Lilia Popova discussed the dispersal of ground squirrels in the region around the Volga and the Dniester River. The subsequent discussion focused on climate and topographic barriers as well as interspecific interaction among species of ground squirrels. Rivers play a particularly crucial role as potential barriers in the dispersal of ground squirrels. Following the talks, Ericson Hölzchen presented the “Squirrels ABM”, representing a basic agent-based model on squirrel movement across randomly generated landscapes distinguishing between rivers and plain land. On the basis of the talks and the model, the participants outlined a conceptual agent-based model with a focus on the Volga/Dniester region to address the question of squirrel dispersal and interspecific interaction.

As an addition, and providing perspectives for future developments, we were introduced to a series of scientific problems that may be or are already studied by means of ABMs or other simulation based approaches. Benjamin Davies, from the University of Auckland, presented an explorative agent-based model to simulate the transport of artifacts and the emergence of archaeological assemblages. Another talk was given by Marie-Hélène Moncel Partage, who works on the distribution and spread of Acheulean technology across Europe. She is presently evaluating the origin of the European Acheulean. William Archer, from the Max Planck Institute for Evolutionary Anthropology in Leipzig, suggested to design an Agent-Based-Model for the exchange of resources including cultural objects among hunter-gatherer-groups in order to support interpretations of the spatial structure and



Fig. 6. Participants of the ABM Training Lab, held in Senckenberg Museum at Frankfurt.

composition of archaeological assemblages. Yul Altolaguirre, presently working on his doctoral thesis in the ROCEEH group, presented a project on the reconstruction of the paleoenvironment in the Baza Basin (Spain). His reconstructions are based on pollen spectra. A potential ABM application should simulate settlement patterns around the basin. The meeting was concluded by a “model problem market”, where these model projects were translated into an agent-based modeling framework. In sum, the training lab provided a fruitful exchange between modellers and experts on particular research foci, and illustrated the potential of ABMs. The outcomes were further improvements to existing models, as well as conceptual models for future projects on human and non-human interactions during the Mid-Pleistocene Transition.

Forthcoming Activities in Autumn 2018: Training Lab and Workshop *We boldly went. Advances in Modelling the MPR.*

This three day meeting will be held in Burgos (Spain) in November 2018, and it will be organised by Jesus Rodríguez and Ana Mateos at the Centro Nacional de Investigación sobre la Evolución Humana (CENIEH). In this meeting we intend to introduce a variety of modelling approaches, like foodweb analyses on the basis of network modelling and environmental niche modelling. It is expected that many participants of other workshops of the METHOD IFG will present their formalized hypotheses and their advances in translating them into models.

Project 1606P: Ground squirrels on the march: expansion and speciation in the Quaternary of the Circum-Pontic area and surroundings

Project Leaders: Lilia Popova (Taras Shevchenko National University of Kyiv, Ukraine), Lutz Christian Maul (Senckenberg Research Station of Quaternary Palaeontology, Germany).

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Report for 2017

Authors: Lilia Popova¹, Lutz Christian Maul², Piroška Pazonyi³, Bogdan Ridush³

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Current activities of the project:

1) Compilation of the database of fossil ground squirrel records. A preliminary version of the database, which will be used for GIS analyses and the production of distribution maps, became accessible online in 2017.

2) Phylogenetic studies. We intend to clarify whether *S. citelloides* is a valid species, or conspecific with *S. suslicus*. Therefore we plan studies on ancient DNA of fossil *S. citelloides* of Jankovich Cave (Hungary). Our genetic results will be compared with the geometric morphometric outcomes from the recent *S. suslicus* and fossil *S. citelloides* material. Genetic studies may also reveal the direction of expansion of the species. It is possible that, like in the southern birch mouse, this species does not spread from east to west, but in reverse direction.

3) Ensuring broad access to fossil and recent materials on ground squirrels for all members of the research team. Partly this goal is attained during our previous meetings, by direct demonstration of fossils in question. However, materials from different regions must be accessible permanently for the members of the project. This in view, we started a collection of photos and figures, measurements and scores of frequencies of discrete dental characters. This is a germ of a future morphological database that would comprise the variety of gross dental morphology of ground squirrel species under consideration.

4) Interdisciplinary exchange of experience and knowledge in the scope of the project, in order to synthesize ideas on both the role of natural barriers in species distributions.

The backwoods: at the periphery of the adaptive zone: a working meeting coordinated by A. Nadachowski, Institute of Systematics and Evolution of Animals, Krakow, Poland; 21st–26th of August 2017.

The Pleistocene range expansions repeatedly caused an appearance of ground squirrels in rather

unexpected places, like Britain or The Netherlands. Such disjunct populations provide useful arguments to define ground squirrels as a special life-form. We chose for this purpose the most phylogenetically distinct group, the extinct Early Pleistocene *S. polonicus*. The meeting shed light on changes in tooth morphology that correspond to this expansion of the ground squirrel adaptive zone, and on the route, by which archaic ground squirrels might reach Poland. Participants were also introduced in aspects of ground squirrel occlusal morphology (by L. Popova), in the Pleistocene history of small mammal faunas in Poland (by A. Nadachowski), and in mesowear analysis (by A. Ulbricht). We thank the organizer of the meeting A. Nadachowski for his warm hospitality and productive co-operation.

Populations in the non-optimal environment: international field workshop coordinated by B. Ridush, Yuriy Fedkovych Chernivtsi National University, Ukraine, 20–23rd of September 2017.

Field excursions in the Middle Dniester area alternated with reports that were dedicated to large and small mammal faunas, Quaternary stratigraphy and palaeogeography, expansion and landscape exploitation by Palaeolithic humans. In particular, our last common development was presented there: The ‘patchwork quilt’ model for the expansion and spatial distribution of ground squirrel species. Among other reports and posters, which highly contributed to elucidating issues of species expansion and geographical barriers, we would like to highlight the reports of O. Krokhmal about the Pleistocene migrations of the water vole, the report of O. Ozkurt about mammalian biodiversity and evolution of Anatolia in Cenozoic and of E. Hoelzchen introducing participants in the method of Agent-based modelling.

During the excursions led by B. Ridush, we visited impressive alluvial gravel exposures and gypsum caves Bukovynka, Kryshaleva and Verteba. There we learned much about the fluvial history of this area and its characteristic features that affected the distribution of fauna and humans (fig. 2a). The Dniester valley is a likely way to connect the Pleistocene open habitats of Western and Central Europe, bypassing the Carpathians. We are almost sure about it, concerning the late (Holocene?) invasion of the spotted ground squirrel in Western Europe. The well-developed terraces staircase, the incision of which has been continued since the beginning of the Neogene, opened a wide choice of habitats. Since each type of habitats run along the river like a narrow string, the traffic along the valley must have been quite busy.

Overall, the area and scientific results collected during the meeting look very promising for the study of range dynamics of the Quaternary fauna and human dispersal.

Events of 2018

The Ground Squirrel Story: 3 years of research on geographical barriers, expansion and speciation in the Quaternary of the Circum-Pontic area and surroundings: workshop coordinated by Piroška Pazonyi, Hungarian Natural History Museum

Budapest Budapest (Hungary), 8th May – 11th May 2018.

The specific aim of this meeting is to summarize results over the duration of the project. So the workshop is expected to be broadly multidisciplinary and address the full spectrum of project’s issues. In addition to these general tasks, the venue in Hungary allows us to hope for a break-through in the following questions:

1. Why there is an absence of barrier effect of the Danube? In most cases the large rivers were strict barriers which could not be overcome by ground squirrels. However, the present range of the European ground squirrel (*S. citellus*), as well as some molecular analyses imply that the Danube was not a barrier for genetic flux.
2. Was the Carpathian Basin a refugium during the Pleistocene for *Spermophilus citellus*, or not?
3. When and why the Carpathians stopped playing their role of the barrier for steppe fauna (ground squirrels, in particular)?
4. Founder effect as an evidence of the expansion.
5. Is *S. citelloides* a valid species, or is it the same as *S. suslicus*?

We plan presentations and poster sessions, to discuss these and other connected topics, and an excursion. The excursion starts from the vicinities of Paks, a town on the Danube, south from Budapest, where we will see a ground squirrel colony. Then, in the Town Museum, we will visit a permanent exhibition of paleontology, namely ‘Glimpses of Paks’ (the loess wall of Paks). There the mining activity of the brick yard has revealed the loess profile and the different sediments of one million-year-old, an impressive evidence of the Pleistocene period of Hungary. The exhibition gives visitors information about different climatic changes, various loess formations, sediments and fossils. A great interest for our research group is devoted to another exhibition of the Museum, which deals with the Danube history (changes of the channel, fishing habits etc.). Finally, we will also go to the Kálvária Hill of Dunaföldvár (north to Paks), to see the bed changes of Danube on the spot.

NICHE: a working meeting coordinated by L. Rekovets, National Museum of Natural History NAS of Ukraine, Kyiv; September of 2018.

In the course of the Krakow meeting it became clear that such a format (the joint work of some experts and young researchers on a problematic material) contributes significantly to all activities of the project and has to be continued. In Kyiv we hope to finish what was successfully started in Krakow: the study of the correspondence between occlusal morphology and trophic niche in extinct ground squirrel species. A comparison between closely related, but ecologically different species, like *S. polonicus* and *S. nogaici*: *S. severskensis* and *S. pygmaeus* is expected to be effective to reconstruct vanished ecological niches. The scope of meeting may be expanded with other species indicative of geographical barrier change (mole-rats seem to be at the top of the waiting list, other ideas are also welcomed).

Stratigraphy and Chronology

International Focus Group on Tephrochronology and Volcanism (INTAV)

Project leader: David J. Lowe (School of Science, University of Waikato, New Zealand)

News from INTAV 2018

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INTAV, the International Focus Group on Tephrochronology and Volcanism, an IFG within the Stratigraphy and Chronology Commission (SACCOM), has been busy. Recent news, events, and other information are provided on our [Facebook site](#) and the [INTAV website](#). We also operate an email service to members through [JISCMail-TEPHRA](#). Please join us to find out what's happening in the world of tephrochronology and to engage with our global tephra community.

Report on INTAV tephra workshop, Portland, USA, 19th August 2017

INTAV ran a workshop entitled "Best practices in tephra collection, analysis, and reporting – leading toward better tephra databases", on Saturday 19 August, 2017, in Portland, Oregon, USA. The one-day workshop followed the IAVCEI conference "Fostering Integrative Studies of Volcanism" in Portland the preceding week.

The workshop, held at the Hilton Hotel in Portland, was directed towards Objective 5, "Databases", of the INTAV project "EXTending TephRAS as a global geoscientific research tool stratigraphically, spatially, analytically, and temporally" (EXTRAS). Objective 5 aims to develop regional and ultimately global databases of high-quality mineral, geochemical, and other data (stratigraphic, chronologic, spatial) for tephra and cryptotephra deposits.

The workshop conveners (who provided most of the notes below) were: Kristi Wallace (U.S. Geological Survey/Alaska Volcano Observatory,

kwallace@usgs.gov), Steve Kuehn (Concord University, sckuehn@concord.edu), Marcus Bursik (University of Buffalo, mib@buffalo.edu), Andrei Kurbatov (University of Maine, akurbatov@maine.edu)

The workshop's central purpose was to continue efforts to bring disparate tephra researchers together, highlight commonalities, and discuss ways to work together, share data and list major research goals that a collaborative system may help to address. The workshop thus deliberately included a broad representation of scientists and students who work with tephra. A total of 50 volcanologists, tephrochronologists, archaeologists, geochronologists, paleoclimatologists, paleoecologists, paleolimnologists, glaciologists, petrologists, Quaternary scientists and data managers attended from 13 countries (Fig. 7). One aspect of the meeting that came across very strongly was the great enthusiasm for tephra studies that was evident from the many Ph.D. (14) and postdoctoral fellows (7) present. All these early career researchers (ECRs), including several from countries with low GDP, were supported at the workshop to some extent by an INQUA grant (SACCOM 1710P) for 'Skills Enhancement' made to INTAV with the help of SACCOM president Mauro Coltorti. Seven ECRs (6 PhD students, 3 female and 3 male, with 2 from low GDP countries; and one postdoctoral fellow) were awarded travel grants (Fig. 8). This enthusiasm and growth was extremely pleasing, and helps meet objective 6, "Capability", of the EXTRAS project, namely to foster and support the development of the emerging generation of tephrochronologists.

The workshop ran as a series of invited short talks (around 10 in total) interspersed with discussion sessions throughout the day. The talks are available



Fig. 7. Participants engrossed in the tephra workshop.



Fig. 8. Some of the ECRs funded to help enable their attendance at the workshop. Seven of these grateful people were provided with INTAV travel grants of \$500 USD each.

on the [Vhub website](#). Vhub is an online resource for collaboration in volcanology research (including tephrochronology) and risk mitigation to enable collaboration across geographic and economic boundaries.

All workshop participants reconfirmed a strong commitment toward standardization of tephra field/core data collection, processing, storage and distribution. The community feels that such an interdisciplinary effort will help to advance and to solve future emerging research problems in tephra studies. Although major discussion focused on geochemical analysis, correlation, and data reporting, there was a mutual understanding that other datasets will benefit from improved interdisciplinary compatibility. Best-practice checklists and templates for minimum required data are already being developed.

The need for transparent data access across disciplines is a more complicated issue, one that may require a new generation of computer-based research tools. These tools should be integrated into a more complex system that is designed to assist users with solving problems for the particular research area (domain specific), while allowing data streams and tools to be interconnected into a larger framework that is flexible by design to adapt to emerging interdisciplinary problems.

Some specific anticipated products of the workshop include (1) publication of a consensus paper to draw attention to the demand, and to develop a plan for creating comparable datasets

across disciplines, (2) continuing to develop multiple open access products, for example, best practice checklists, data collection and processing templates with minimum sets of required data, and (3) collation of already built tools/code/software for data processing. Work on these outputs is currently underway.

Future directions

1. Translate checklists into templates – distribute initially by including as supplements to proposed papers.
2. Earthchem and Geochron have templates for different communities that can be adapted – we could work with Earthchem to develop a geochemical template that is specific to tephra.
3. Build on our current collection of known databases.
4. Begin to collate links to analysis tools into one place; work on motivations for linking proximal and distal datasets.

INQUA–INTAV International Field Conference and Workshop on Tephrochronology: Crossing New Frontiers – Tephra Hunt in Transylvania, 24–29 June, 2018.

Planning is well advanced for the inter-INQUA international field conference and workshop on tephrochronology, “Crossing New Frontiers: Tephra Hunt in Transylvania, 24–29 June, 2018”, which is being held at the Resort ‘Cheile Gradistei’ Fundata in the village of Moieciu de Sus in Transylvania, Romania. Easily accessed from Bucharest, and 35 km from the medieval city of Braşov, the venue is just a few kilometres from Bran (Dracula’s) castle, with views over the Bucegi and Piatra Craiului Mountains in the Southern Carpathians (Fig. 9).



Fig. 9. Spectacular landscape and the venue for the tephra meeting of the Resort ‘Cheile Gradistei’ Fundata in the village of Moieciu de Sus in Transylvania, Romania.

The second circular has all the information needed regarding registration, venue, accommodation, travel, programme, social events, and field trips. It is hosted by [Bayreuth University](http://www.bayreuth-university.de). Although abstracts are closed, there is still time to register and participate in this meeting. As at early May, more than 90 participants were registered.

Daniel Veres (Romanian Academy and Babes-Bolyai University, Cluj, Romania), is convening the meeting and is chairing the local organizing committee that includes volcanologists and loess specialists from Romania, Germany, Hungary, and Serbia, along with INTAV’s executive members. For queries about the conference please contact Daniel at dsveres@gmail.com or intavromania2018@gmail.com. For queries regarding the online registration (etc) contact Ulrich Hambach (University of Bayreuth, Germany) at ulrich.hambach@uni-bayreuth.de.

The venue is close to several late Quaternary volcanic centres and the loess fields of the Danube–Black Sea area, where tephra has played an important role in providing a chronology for these sequences (Fig. 10). Interestingly, both the terms ‘rhyolite’ and dacite’ derived from volcanic deposits in this part of Romania and some of the world’s earliest work on loess and paleosols was published in 1726 by Marsigli, an Italian who mapped the Middle–Lower Danube area. Another feature of Transylvania and adjacent areas is the leadership shown in medieval mining technology and early geological exploration.

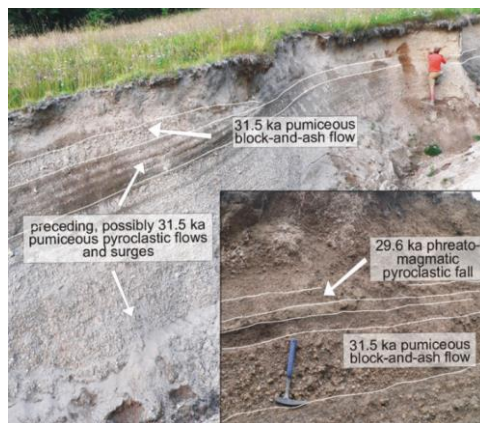


Fig. 10. Tephra deposits from eruptions of Ciomadul volcano during last 31.5 ka, and intervening (now buried) soils (from Karatson et al. 2017).

Programme, field trips

The conference will start on Sunday 24 June (icebreaker) then run from Monday 25 June to Thursday 28 June with a mix of oral and poster papers, keynote presentations, workshops, a public lecture, and social and cultural events. A one-day field trip, “Persani volcanic field”, will take place on Tuesday 26 June, and a three-day post conference field trip, “Late Quaternary Carpathian volcanism and Lower Danube palaeoclimate: implications for establishing an integrated tephrostratigraphic framework”, will run from Friday 29 June to Sunday 1 July, finishing in Bucharest. Costs for all these trips as well as accommodation and registration and so on are very reasonable; students have discounted rates for most events (see second circular).

The general scientific sessions, guided by wide-ranging themes from EXTRAS, are building around the expertise of our invited keynote speakers. These include (but are not limited to):

- Past, present and future directions of classical tephrochronology
- Characterising and correlating tephra: improved and new methods
- The integration of multiple disciplines in discerning climatic impacts of volcanism
- The revolution continues: distal and ultradistal cryptotephra dispersal, deposition, and detection
- The interplay of physical volcanology, tephrochronology, and petrology in understanding volcanoes
- The ‘number’ challenges in tephrochronology and volcanology: age modeling, databases and statistics

Keynote speakers

John Westgate (tephrochronology, geochemistry) University of Toronto, Canada
 Sabine Wulf (tephrochronology, luminescence dating) University of Portsmouth, UK
 Michael Sigl (sulphate records in ice cores, volcanic impacts on climate) Paul Scherrer Institute, Switzerland
 David Karátson (physical volcanology, remote sensing) Eötvös Lorand University, Hungary
 Caroline Bouvet de la Maisonneuve (volcanology, petrology and tephrochronology) Nanyang Technological University, Earth Observatory of Singapore
 Maarten Blaauw (radiocarbon, age-modelling) Queen’s University Belfast, N. Ireland, UK
 Vera Ponomareva (volcanology, tephrochronology) Institute of Volcanology and Seismology, Petropavlovsk-Kamchatsky, Russia

Acknowledgements

INQUA and SACCOM president Mauro Coltorti are gratefully thanked for a grant of €4600 (1710P) to INTAV, announced in late March. It has been used to support ~20 ECRs and students to attend the conference. The LOC and the INTAV executive acknowledge and appreciate administrative and logistical support from the Romanian Academy – Cluj-Napoca Branch, Institute of Speleology, Romanian Academy, and BayCEER, University of Bayreuth, Germany. Additional financial support has been kindly 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 No [678106]; PI: A. Timar-Gabor) and Department of Physical Geography, Eötvös Lorand University, Budapest, Hungary (PI: D. Karátson).

Reference

Karatson, D., Veres, D., Wulf, S., Gertisser, R., Magyari, E., Bormann, M. 2017. The youngest volcanic eruptions in east-central Europe – new finds from the Ciomadul lava dome complex, East Carpathians, Romania. *Geology Today* 33, 62–67.

LoessFest2018

23 – 29 September 2018

Volgograd, Russia

The conference is jointly organised by the INQUA Loess Focus Group and Ponto-Caspian Stratigraphy and Geochronology Focus Group. The aim is to bring the international communities together to solve a number of contentious issues involving stratigraphy, geochronology, geological history, archaeology, and climate change in loess regions. Loessfest2018 will also focus on the observation of geological characteristics of Quaternary sections in Lower Volga valley, describing the eventful palaeogeographical history of the region and loess-paleosol formation in an area under an active transgressive-regressive regime of the Caspian Sea and fluctuations of Volga River.

Registration deadline: 31 May

Financial support deadline: 30 June

www.loessfest2018.ru

INQUA IFG 1709F Ponto-Caspian Stratigraphy and Geochronology (POCAS)

Leaders: Valentina Yanko-Hombach (Avalon Institute of Applied Science, Canada), Tamara Yanina (Lomonosov Moscow State University, Russia), Redzhep Kurbanov (Institute of Deserts, Turkmenistan).

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Report from POCAS in 2017 and plans for 2018

Authors: Valentina Yanko-Hombach^{1,2}, Tamara Yanina³, Redzhep Kurbanov⁴

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The INQUA SACCOM International Focus Group "Ponto-Caspian Stratigraphy and Geochronology (POCAS)" was created to study the geology of the Ponto-Caspian region during the Quaternary as a single geographic entity, bypassing linguistic/political/disciplinary boundaries, linking the continents of Europe and Asia more closely, and encouraging east-west dialogue and cooperation among researchers.

The Ponto-Caspian is defined as a chain of intercontinental basins that encompasses the Caspian, Black, Azov seas, the Kerch Strait, the Manych Valley, and their coasts (Fig. 11). This chain represents a unique oceanographic system of relict Paratethys basins that were repeatedly connected and isolated from each other during the Quaternary. Due to its geographical location and semi-isolation from the open ocean, this region acts as a palaeoenvironmental amplifier and a sensitive recorder of climatic events, in particular, glacial-interglacial cycles on the Eastern European Plain and mountains, as well as transgressive-regressive sea-level variations. Thus, it can be considered as a type region where geological history is well recorded within a long series of marine and continental sediments, which can be used for the exploration of Pleistocene stratigraphy and geochronology of Central Eurasia.

The main activities of POCAS IFG in 2017 were focused on three main areas:

i) The first international meeting was organized as a Joint Plenary Conference and Field Trip of IGCP 610 and INQUA IFG POCAS. This event was hosted by the University of Palermo, Italy. The

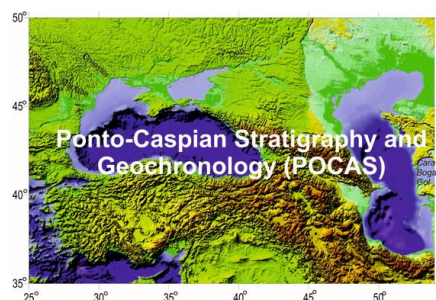


Fig. 11. The Ponto-Caspian region studied by INQUA SACCOM International Focus Group POCAS.



Fig. 12. The fieldtrip group in the visit to the Eraclea Minoa Greek Town that was founded by the Greek family of Eraclidi in 6th century BC, on the ruins of the oldest village of Minoa. Impressive findings belong to the different colonization of the village such as the town-walls dating back to 320-313 BC.

meeting and fieldtrip were held in Palermo and Agrigento, respectively. The fieldtrip focused on the GSSPs of the Zanclean, Piacenziano, Gelasian, and Calabrian stages of the Plio-Pleistocene in the Mediterranean as well as a number of archaeological sites (Fig. 12).

The Joint Plenary Conference and fieldtrip of IGCP 610 and INQUA IFG POCAS facilitated the following: (i) Discussion of the status of both projects and progress made by participants. Particular attention was given to scientific approaches for integrating environmental, anthropological, ethnological, and archaeological data in order to trace the history of ancient humans from the Caspian to Mediterranean during the entire duration of the Quaternary. (ii) The introduction of "young" scientists, especially from Eastern countries, to new analytical techniques and state-of-the-art interpretation of data. (iii) Encouraged east-west dialogue and integration of researchers from different countries into the international research and development community, as well as contribute to the preservation of cultural and religious heritage through the discussion of ancient cultures, civilizations, and their legends.

A 239-page proceedings and fieldtrip guide resulted from the Joint Plenary Conference of IGCP 610-INQUA IFG POCAS. The proceedings of the conference contain contributions from 109 scientists from two continents and 14 countries; 61% of the contributors are from developing countries. About 50% of participants are female. The conference was characterized by a high number of "young" scientists and students. You can watch a movie about the meeting [here](#), or you can find a link on the project website.

ii) Field research in various areas of the Ponto-Caspian region

In the Caspian Sea region (Supervisor Professor Yanina), multiple studies have been undertaken, these include: (i) Middle Volga - Khvalynian transgression in the outcrops along the river valley within the Saratov region. (ii) Lower Volga - Pleistocene key sections Srednyaya Akhtub, Leninsk, Raigorod (Volgograd region), the Tsagan-Aman (Kalmykia), Seroglazka (Astrakhan region) supplemented by newly obtained 14C, thorium-uranium, and for the first time in the region, OSL

dating that reflect transgressive-regressive sea-level changes related to glacial-interglacial cycles on the Russian Plain. The study of boreholes (12 m length) for obtaining new data on the Holocene history of the basin, including the influence of the Volga River on sea-level fluctuations. (iii) Eastern coast of Turkmenistan - the Gulf of Kara-Bogaz-Gol and the Uzboy River, and Kazakhstan, Mangyshlak Peninsula. For arid regions of both countries, a dendrochronological and dendroclimatic chronological study has been performed showing significant climate response. This study is potentially suitable for paleogeographic reconstructions.

The studies were preliminary in nature and will be continued in subsequent years. In the framework of this study, the Field Summer Training School in the Caspian Sea Region was carried out in the Astrakhan region, Russia (27th-30th August 2017). The School was attended by 23 people, of which 20 were students, graduate students, and early career scientists. The school was devoted to the field study of sections of the Caspian Pleistocene, their description, and sampling methods for different types of analyses (Fig. 13). Within the framework of the school, a one-day excursion to the Volga delta and the Caspian seashore reserve was conducted. On the trip, master classes were oriented on taking samples from a boat (Organisers Professor Yanina and Makshayev).



Fig. 13. POCAS ECR Field Summer Training School, Lower Volga.

In the Eastern Manych valley (Supervisor Dr Kurbanov), a study was undertaken using different methods to understand the middle-late Pleistocene and Holocene sediments in outcrops near the Chograysky dam, Zunda-Tolga settlement, and cliffs of the Manych-Gudilo lake, as well as four boreholes up to 70 m in length.

In the Sea of Azov region (Supervisor Dr Kurbanov), a field study was performed on the northern and eastern coasts of the Sea of Azov as well as on ten boreholes of 15 m length by various methods to provide evidence for a palaeoenvironmental reconstruction of the late Pleistocene-Holocene history of the basin.

In the Black Sea region, multiple studies have been undertaken and include: (i) a study of the Kerch Strait (Supervisor Professor Yanina) was pursued with the aim of correlating climate, sea-level changes, and human activity during the Holocene. The famous key section of Eltigen with Karangatian deposits (MIS 5) was also studied using faunal and geochronological (OSL) methods (Supervisor Dr Kurbanov). (ii) The Western Black Sea basin (Supervisor Professor Panin) involved (a)

continued geological and geophysical mapping of the continental shelf and release of a new sheet of the sedimentological map at 1:50,000 scale. The structure of the bottom sediments was investigated by sub-bottom profiling and 2D seismic equipment; (b) the bio-gas and gas-hydrate zones of occurrence were studied by performing new sub-bottom and seismic lines and coring; (c) the coastal zone dynamics were studied together with complex studies (grain size, mineralogy, dynamics) of beaches artificially fed; and (d) the "Black Sea Security System – an Early warning system for marine geohazards," that is operational since 2013, provides continuous data about the environmental state and dynamics of the water masses and sediments in the western Black Sea. All data are stored and primarily processed in two national centers in Constanta (Romania) and Varna (Bulgaria). The final study (iii) involved exploration of the Northwestern Black Sea region including the application of an interdisciplinary approach for the study of human responses to global climate change to better understand the history of human occupation in the region during the Stone Age, paleometal epoch, and early medieval period.

In the Ponto-Caspian region, the study of the Reference Collection of microfauna (foraminifera, ostracoda) and palynology (spore and pollen, Non-pollen palynomorphs) from stratotypes and key sections and boreholes (Supervisor Professor Yanko-Hombach) was performed along with revision of on-land archaeological data and definition of the main regularities in spatial distribution of prehistoric sites and artifacts known today (Supervisors Professor Smyntyna and Professor Özodgan).

iii) The website is under construction (responsibility of Dr Kurbanov, matter of funding). For the time being, information related to activities of POCAS is linked to the [IGCP 610 activities](#).

The planned activities for 2018

1. POCAS Workshop in Moscow, Russia, 25th-27th April 2018. The workshop will be focus on discussion of the most debated and diverse outcomes in geomorphology, stratigraphy, paleogeography, paleontology, and geochronology.

2. POCAS and Loess IFGs of INQUA SACCOM will jointly organise the International conference LoessFest2018: "Diversity of Loess: Properties, Stratigraphy, Origin and Regional Features." LoessFest2018 will be held in Volgograd, Russian Federation, 23rd-28th September 2018. The main goal of this meeting is to bring the international communities together to solve a number of contentious issues involving stratigraphy, geochronology, geological history, archaeology, and climate change in loess regions and the Ponto-Caspian. Loessfest2018 will facilitate cross-disciplinary and cross-regional correlation of geological, archaeological, environmental, and anthropological records in loess-paleosol sequences. LoessFest2018 will also focus on the observation of geological characteristics of Quaternary sections in the Lower Volga valley, describing the eventful paleogeographical history

of the region and loess-paleosol formation in an area under an active transgressive-regressive regime of the Caspian Sea and fluctuations in the Volga River.

3. POCAS Training School for ECRs and students in Volgograd, Russia, to be held after the LoessFest conference. The school will focus on the Quaternary stratigraphy of the Caspian region and correlation of the Caspian deposits and events with those of the Eastern European Plain.

4. Quaternary session "Caspian-Black Sea-Mediterranean Corridor: paleontology, biostratigraphy and paleoecology" (IGCP 610-INQUA POCAS projects) at the LXIV session of the Paleontological Society, 2nd-6th April 2018, St. Petersburg, Russia.

5. The sixth plenary meeting and fieldtrip of IGCP 610 will be carried out jointly with the second meeting of INQUA POCAS in the wonderful and world-renown coastal setting of Antalya Province, located in the Active Alpine Mountain Belt, 14th-21st October 2018. It will focus on the geological history extending from the Upper Miocene through the Plio/Pleistocene and into the historical periods, in the Antalya Province of the central Taurus Mountain belt, along the Eastern Mediterranean coast of Turkey. This subject is very important to achieve a better understanding of the tectonic-climatic interactions during the Plio/Quaternary period in this region. The main goal is to correlate the Quaternary events in the Ponto-Caspian region with those in the Mediterranean-Atlantic Gateways. A majority of POCAS participants will attend the meeting as it was in Palermo in 2017. Participation of early career researchers and students from developing countries will be particularly welcomed. Their exposure to new analytical techniques and state-of-the-art interpretation of the field data will be of a great importance.

6. Completion of the POCAS website that was not finalised in 2017 due to shortage of funds. It will be finished in 2018 with the development of IFG POCAS GIS-Geoportal (though it is still subject to funding).

7. Publication of a series of articles on the stratigraphy, geochronology, and paleogeography of the region, including a review of modern views of Late Quaternary stratigraphy of the Caspian-Black Sea-Mediterranean corridors.

References

Sorokin, V., Yanina, T., Bezrodnykh, T., Romanyuk, B. 2018. Identification and age of submarine Girkanian sediment beds (upper Pleistocene) in the Caspian Sea. *Quaternary International* 465: 152–157.

Yanina, T., Sorokin, V., Bezrodnykh, Yu., Romanyuk, B. 2018. Late Pleistocene climatic events reflected in the Caspian Sea geological history (based on drilling data). *Quaternary International* 465: P. 130-141.

Yanko-Hombach, V. (also Yanko, V.), A.S. Gilbert. 2018 Editorial to IGCP 610 Special Volume // *Quaternary International* 465: 1-10.

Yanko-Hombach, V. (also Yanko, V.), Kislov, A. Late Pleistocene - Holocene sea-level dynamics in the Caspian and Black Seas: Data synthesis and Paradoxical interpretations. *Quaternary International* 465: 63-71

INQUA IFG 1709F Ponto-Caspian Stratigraphy and Geochronology (POCAS)

14 - 21 October 2018

Antalya, Turkey

This joint meeting will focus on the geological history extending from the Upper Miocene through the Plio/Pleistocene until historical periods, in the Antalya Province of the central Taurus Mountain belt, along the Eastern Mediterranean coast of Turkey. This subject is very important in shedding light on, and achieving a better understanding of, tectonic-climatic interactions during the Plio/Quaternary period in this region.

The Conference will include Plenary Sessions and subsequent field trips. The two day sessions of the Conference will be devoted to oral presentations and posters. They will be held in a centrally located resort [hotel](#) on the world famous Konyaalti Beach setting of the [Antalya Metropolitan Municipality](#). This accommodation offers a magnificent sea view, mountain view, and city view all together. The Blue flagged 'Konyaalti' Beach is just across from the hotel.

The next three days of the Conference will be devoted to geological field trips that focus on the geoarchaeological history of the ancient roman site Sagalossos (Burdur Province), the Upper Miocene-Pliocene deposits of the Aksu (Antalya) Basin, Travertine of Antalya, and the sunken Roman cities of Simena&Teimussa, Kekova Bay (Antalya Province).

It is expected that the meeting will bring together multidisciplinary scientists from all over the world to enhance the West-East scientific dialogue, and provide a foundation for collaboration on correlation and integration of subjects covered by the conference as previous IGCP 610, IGCP 521, and INQUA 0501 meetings have done.

Meeting registration and abstract submission will open on 15 April 2018.

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Terrestrial Processes, Deposits and History

IFG 1617F GEODUST: Geomorphology of dust sources and dynamics of dust emission from different geomorphic units

Project Leaders: Onn Crouvi (Geological Survey of Israel), Andrea Zerboni (University of Milano, Italy), Kerstin Schepanski (Leibniz Institute for Tropospheric Research, Germany), Frank Eckardt (University of Cape Town, South Africa), Matthew Baddock (Loughborough University, UK).

[Webpage](#)

Report on the second meeting of the GEODUST International Focus Group of the INQUA TERPRO Commission (Gobabeb, Namibia, 22 - 27 October 2017) and future actions

Authors: Frank Eckardt¹, Onn Crouvi², Andrea Zerboni³

¹University of Cape Town, South Africa;

²Geological Survey of Israel; ³University of Milano, Italy

The GEODUST International Focus Group of the INQUA-TERPRO Commission was established in 2016 to address several knowledge gaps in the field of dust research, which are mandatory to confirm existing global models of mineral dust cycle. Mineral dust plays multiple roles in mediating physical and biogeochemical exchanges among the atmosphere, land surface, and ocean, and thus is an active component of the Earth system. Numerical models (at various spatial scales) depend on a realistic representation of dust source areas, and dynamics of dust emission from these sources. The first stages of the dust cycle, those related to the characterization of major dust sources, still have fundamental knowledge gaps and need to be further addressed. The main scientific issue addressed by participants of the GEODUST IFG is a more comprehensive treatment of the geomorphic controls on dust emission, transportation, and deposition to improve the performance of dust-cycle models through the investigation of field and remote sensing geomorphology of dust sources and dynamics of dust emission.

The 2nd meeting of the GEODUST IFG of the INQUA TERPRO Commission was organized by the authors and by Johanna Von-Holdt (University of Cape Town, South Africa), at Gobabeb Training and Research Centre from the 22nd to the 27th October 2017. The meeting gathered together 12 participants from 5 countries around the world. Thanks to the financial contribution of INQUA, we were also able to fully support travel costs of 5 early career researchers (ECR) from Germany, Israel, Italy, Namibia, and South Africa. This workshop was organized as a field-trip meeting, integrating evening talks of participants at Gobabeb conference hall and daily visits to main dust sources and sinks along the margins of the Namib Desert.

Day 1 (22 October), all participants flew into Walvis Bay International airport and headed straight to the Gobabeb Training and Research Centre. The meeting started with an ice-breaker dinner in Gobabeb, after which we had three introductory talks: (i) a short opening on the rationale and goals of the GEODUST IFG by Andrea Zerboni and Onn Crouvi, (ii) a brief introduction on the expected field trip, focusing on the geology, geomorphology, soils and dust activity of the region by Frank Eckardt, and (iii) the erosional history of central Namib, a key to understanding the present landforms of the region, presented by Tibor Dunai (University of Cologne, Germany).

Day 2 (23 October) consisted of a 170 km drive that took visitors eastward around the upper Kuiseb catchment in the Central Namib Park. Stops were made at the Homeb Silts before heading to the



Fig. 14. Participants of the 2nd GEODUST IFG meeting at Gobabeb Training and Research Centre (Namibia).



Fig. 15. Participants inspecting the Homeb Silts along the Kuiseb River.

Welwitschia Mirabelis plants. Lunch was held at the Kuiseb Canyon lookout and the day terminated at the Mirabeb granite outcrop. This introduced the participants to the geologic, geomorphic and Quaternary history of the eastern gravel plains and semi-arid section of the park. In the evening we had four talks: (i) Kerstin Schepanski presented the general scheme of the dust cycle, (ii) Kaurane Kanguenehi (ECR from University of Stellenbosch, Namibia) presented the chemical composition of aerosols from south African sources, (iii) Jore von Holdt (ECR) showed dust emissions from southern Africa in different spatial scales, and (iv) Guido Mariani (ECR from University of Milano, Italy) showed local dust addition into mountain top soils in Italy.

Day 3 (24th October), a 180 km westward drive took the group to major dust emitting hotspots as identified from Landsat satellite imagery. These were mostly associated with drainage, terraces, and desiccated branches of the lower Kuiseb Delta as well as trapped sediments on the Namib gravel plains. This highlighted the Quaternary age of many dust sources, which had been stockpiled in the recent past and are emissive in the current environment in particular with anthropogenic disruption such as off road driving and water diversion schemes. In the evening we had four talks: (i) Oliver Bodeker (University of Cologne, Germany) presented his work on the system of aeolian age, (ii) Sarlotte Kalenga (ECR from University of Cape Town, South Africa) presented the potential of off road activity on dust emission in the Namib, (iii) Stefanie Feuerstein (ECR from



Fig. 16. Meeting participants in the sunset on a dune of the Namib Desert

Leibniz Institute for Tropospheric Research, Germany) presented first results of airborne measurements over the Etosha Pan, and (iv) Ofer Lavi-Bekin (ECR from Ben Gurion University, Israel) showed dust sources identification in north Africa using 3 km pixel data.

Day 4 (25th October), saw a 300 km roundtrip to the coast and consisted of a short break in Swakpomund before exploring the coastal playas as well as road cuttings and dunes. In the evening we had one talk by Tibor Dunai on the project CRC1211 Earth-Evolution at the dry limit.

Day 5 (26th October), started with a tour of the research station, its facilities, library, measurement equipment, and observation networks with a focus on atmospheric processes and chemistry as well as ordinary first order weather stations. The afternoon was spent in the dune and interdune belts south of the station focusing on dunes, silts, and lake carbonates at Khommabes.

We wish to thank Gillian Maggs-Kölling and Eugene Marais from Gobabeb Training and Research Centre for their hospitality and help in conducting the field trips and evening sessions. Finally, we wish to thank all participants of the GEODUST IFG 2nd meeting. The meeting brought together large number of specialists working on the same scientific topic with different approaches and experience from different parts of the world. This was highlighted in the general discussion that resulted in the creation of a large working group.

IFG 1622R: HEX - Palaeohydrology and fluvial archives - extreme and critical events

Leaders: Jürgen Herget (Department of Geography, University of Bonn, Germany), Alessandro Fontana (Department of Geosciences, University of Padova, Italy)

[Webpage](#)

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Report for 2017 and future actions

Author: Jürgen Herget¹

¹ Department of Geography, University of Bonn, Germany.

Palaeohydrology addresses all components of the water cycle (including rivers, lakes, groundwater, etc), although in practice most of the previous research has focused on river channels and discharges, related to geomorphological and stratigraphic indicators. Moreover, as the quantification of hydrology and rates of sediment production in the past have become increasingly understood, research in palaeohydrology has largely focused on the last glacial-interglacial cycle, and Holocene hydrological changes.

Discussions in the context of a previous IFG indicated the potential of performing cross-disciplinary studies between fluvial archives, historical records and their hydrological and climatic interpretation considering active and passive human impact. There is now an opportunity to re-think and update the objectives of the focus area on fluvial palaeohydrology, building upon the ability of INQUA to foster multidisciplinary international research and emphasize collaboration between groups. Some of the floods that have occurred in previous years around the world (e.g. Northern Europe, Balkans, Brazil, USA, China, Pakistan, Bangladesh and Australia) attracted attention to the strong impact that these episodes have on societies and economics. In the context of global environmental change, the assessment of magnitude, frequency, and other characteristics of extreme hydrological events in the preceding centuries and millennia is of capital importance. This highlights the required collaboration among researchers dealing with different expertise, from geology, geomorphology, palaeoenvironmental analysis, archaeology, and history. The Focus Group aims to achieve inter- and trans-disciplinary cooperation at not only local, but also at a continental perspective, which consequently requires further international collaboration. To achieve this multidisciplinary research we propose to focus on palaeohydrological research initiatives that will incorporate timely topics and each involve new cross-boundary research groups including:

- extreme hydrological events
- collation and presentation of palaeohydrological research results
- human perception and impact
- new methods and techniques.

In 2017, two meetings to address the objective of the IFG were carried out:

- "EX-AQUA 2017 - Palaeohydrological extreme events: evidence and archives", Noida, India (1st-5th November)
- "Palaeohydrology and fluvial archives - hydrological extreme and critical events", New Delhi, India (6th -11th November)

The first meeting in Noida, India was organized by Professor Dr Rajiv Sinha; a co-lead of the IFG-related TERPRO-project titled "EX-AQUA: Palaeohydrological extreme events: evidences and archives". The meeting was organized as a

workshop and focused on the integration of young and early career scientists from Asia into the project. INQUA kindly provided financial support for the workshop.

The second meeting in India was organized as a session at the 9th International Conference on Geomorphology, which took place in New Delhi. It was a joint session of the two core organisations of the Focus Group GLOCOPH (Global Continental Palaeohydrology) and FLAG (Fluvial Archives Group). The session of 12 oral presentations during the final time slot of the conference was remarkable well attended. Proceedings based on contributions of the meeting are in progress.

In addition to numerous publications by individuals active within the Focus Group, the main joint publication is an edited volume of Quaternary Science Reviews, the full citation is given below, and the table of contents can be accessed here.

Stéphane Cordier, Becky Briant, David Bridgland, Jürgen Herget, Anne Mather (eds.) (2017) Quaternary fluvial archives: advances from the first 20 years of FLAG (the Fluvial Archives Group). Quaternary Science Reviews 166: 1-380.

Program for 2018:

2018, September: FLAG biennial meeting in Belgium (for details contact Becky Briant - b.briant@bbk.ac.uk)

2018, September: EX-AQUA workshop in Hungary (for details contact secretary.glocoph@gmail.com)

IFG 1618F: EGSHaz - Earthquake Geology and Seismic Hazards

Leaders: Ioannis Papanikolaou (Greece); Petra Štěpánčíková (Czech Republic); Christoph Grützner (Germany)

8th International INQUA Workshop on Paleoseismology, Active Tectonics and Archaeoseismology (PATA Days)

Author: Neta Wechsler¹

¹ Dept. of Geosciences, Tel Aviv University, Israel

The 8th annual PATA Days Workshop was held in the city of Blenheim, on the South Island of New-Zealand, from 13th-16th November 2017. PATA Days is the premiere annual event for the INQUA focus group "Earthquake Geology and Seismic Hazards" (IFG EGSHaz). The purpose of the workshop was to share new research, ideas, and techniques in the various fields of earthquake research, ranging from Paleoseismology and active tectonics to earthquake hazard evaluation. More than 130 attendees from 21 countries participated in the workshop, among them c. 30% were early career researchers (ECR) and developing-country researcher (DCR). A three-day fieldtrip followed the workshop and focused on the Alpine fault and



Fig. 17. A group photo of workshop attendees from the Wither hills winery reception (photo credits: the Okumuras).

Marlborough fault system of the northern region of South Island. The intimate setting of the workshop fostered extended discussions not easily attainable at larger conferences and scientific gatherings. The workshop and field trips provided a venue for Ph.D. students, post-doctoral researchers, and recent graduates to share and discuss their work with distinguished scholars in their field and receive feedback.

The meeting was organized by the New-Zealand GNS Science Earthquake Geology team, in collaboration with Victoria University of Wellington, the University of Canterbury and the University of Otago. The venue, the Marlborough convention center, was chosen due to its proximity to the impact zone of the Kaikōura earthquake on 14th November 2016. This proximity provided attendees the opportunity to examine the impressive surface rupture of this M7.8 earthquake, with up to 12 m of dextral (horizontal) offset!

The original idea of the GNS Science Earthquake Geology team was to commemorate the tercentenary of the AD 1717 (+/- 5 yrs!) M-8.0 Alpine fault earthquake by having PATA Days take place in New Zealand in 2017. An international conference seemed an ideal way to gather earthquake geology expertise in New Zealand, share recent work on the Alpine fault, and raise public awareness of the hazard posed by the Alpine fault. However, the original plans to hold the meeting in April 2017 on the West Coast near to the Alpine fault were derailed by the Kaikōura earthquake, which required full involvement and enormous effort by the organizers to undertake field surveys of the ruptures, and conduct follow up research. The meeting was relocated in order to have the opportunity to visit the still visible rupture of the Kaikōura earthquake and postponed to November 2017 to commemorate both the tercentenary year of the last great Alpine fault earthquake and the first year anniversary since the Kaikōura earthquake.

The 2016 Kaikōura earthquake demonstrates the many ways in which a large earthquake can create



Fig. 18. The Leader landslide (photo credit: N. Wechsler).

devastation and reshape our understanding of earthquake and tsunami hazards. One year on, the main transport routes in the northern region of South Island are still severely disrupted. Communities are still isolated, and ongoing aftershocks (workshop participants experiences a M4.7 aftershock November 16), land instability and sediment mobilization are constant reminders that earthquake recovery and rebuilding is a prolonged process. The science community has much to learn from the Kaikōura earthquake – from our fundamental understanding of how plate boundaries evolve in time and space, to slow-slip triggering, turbidite emplacement, earthquake-induced landslide distribution, the ongoing sedimentary response as landslide debris moves downstream, and communication of earthquake science in times of crisis. The PATA Days workshop presented an opportunity for all to share the latest in earthquake geology research.

The workshop began with a one-day trip to examine, up close, a part of the 220 km long surface rupture of the Kaikōura earthquake on the Papatea and Kekerengu faults and its impact upon the landscape. Trip participants walked along the 8-10 m of fresh vertical scarp on the Papatea fault, observed dextrally offset fences and roads, and the remarkable resilience of a timber frame single story house built right on the Kekerengu fault. Finally, we inspected the 2.5 m coastal uplift at Ward beach.



Fig. 19. 10 meter laterally offset fence on the Kekerengu fault rupture (photo credit: N. Wechsler).

The next day, the workshop technical sessions commenced at the Marlborough Convention Center, with a keynote lecture by Pillar Villamor (GNS Science) giving attendees a scientific overview of the Kaikōura earthquake. Three days of talks and poster presentations followed, session topics included: complex fault ruptures on transpressional plate boundaries, archaeoseismology, advances in paleoseismic techniques, earthquake geology contributions to seismic hazard analysis, large earthquakes in mountainous regions and landscape response,

earthquake geology contributions to seismic hazard analysis, and earthquake behavior of high slip strike-slip faults. On Tuesday evening, the one-year anniversary of the Kaikōura earthquake, a public Town Hall meeting was held, entitled "Earthquake research from New Zealand and beyond". Speakers from earthquake prone areas such as the US west coast and Italy, as well as local New Zealand scientists gave the public an overview of the current state of knowledge in earthquake science and seismic risk. This outreach event proved to be of immense value, as evidenced by the wall-to-wall attendees from local communities and their numerous questions during the open panel discussion.



Fig. 20. Uplift at Ward beach (photo credit: N. Wechsler).

An INQUA business meeting was held on Wednesday 15th November, led by Christoph Grützner during which he reported on the progress of the IFG and its two projects (SURFACE and GEMAP), collected feedback from the IFG members, and discussed the future of the IFG EGSHaz in the framework of INQUA. Around 80 people attended this business meeting and provided valuable feedback.

Following the workshop, 65 participants stayed on for the three-day post-conference field trip. The trip focused on the fault and earthquake activity in the northern region of South Island and included stops along the Wairau fault, the Alpine fault, the site of the 1929 Buller earthquake, and the southern part of the Kaikōura earthquake rupture. Participants had the chance to examine offset terrace risers, cross a river on a hanging bridge to see the rupture of the Buller earthquake, and hear about river avulsion due to the movement of the Alpine fault. Participants also helped local researchers to determine the feasibility of a potential trenching site by using shovels to open a small soil pit and hand-auger in a pond along the Alpine fault. On the third day, the local homesteaders were kind enough to allow trip participants on their land to see the famous "Woodchester Wall" – a near vertical slope facing scarp on the south Leader fault created by the Kaikōura earthquake, and the giant Leader landslide which dammed the Leader river and created a lake. The trip ended in the Central Business District of the city of Christchurch, which is still recovering from the devastating effects of the 2011 Darfield earthquake.

We would like to thank the organizing committee for putting together a fantastic workshop and field trips at a beautiful venue, in particular: Kate Clark, Rob Langridge, and Phaedra Upton from GNS science, and all of the rest of the people who lent a

helping hand and contributed to the success of the workshop. See you in Thessaloniki in 2018!

1620R: SURFACE - SURFACE Faulting Catalogue - Earthquakes

Leaders: Frank Audemard (FUNVISIS, Argentina), Stéphane Baize (IRSN/PRP-DGE/SCAN BERSIN, France), Francesca R. Cinti (Istituto Nazionale Geofisica e Vulcanologia, Italy), Carlos Costa (Universidad Nacional de San Luis, Argentina), James McCalpin (GEO-HAZ Consulting, USA), Alessandro Maria Michetti (Università degli Studi dell'Insubria, Italy), Koji Okumura (Hiroshima University, Japan), Oona Scotti (IRSN/PRP-DGE/SCAN BERSIN, France)

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Report on the International Field Trip "From 1997 to 2016: three destructive earthquakes along the Central Apennine fault system", 19 - 22 July 2017, Italy

Authors: Chiara Frigerio¹, Alessandro Maria Michetti¹, Francesca Ferrario¹, Franz Livio¹, Emanuele Tondi²

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The International Field Trip "From 1997 to 2016: Three Destructive Earthquakes" was held in the epicentral area of three destructive earthquakes that hit Central Italy in the last 20 years: Umbria-Marche (26th September 1997, Mw 6.0), L'Aquila (6th April 2009, Mw 6.3) and Amatrice-Visso-Norcia (the seismic sequence ongoing since the 24th of August, with a maximum Mw 6.5 on 30th October 2016). This was the largest earthquake in Italy after the Mw 6.9, 1980 Irpinia eq.). This meeting provided a unique opportunity to observe the causative active and capable faults belonging to a coherent and interacting fault system, and participants were able to evaluate the contribution of active fault-field-based studies on seismic hazard analysis.

The organizing and scientific committee was led by Professor Emanuele Tondi (Sezione di Geologia, Scuola di Scienze e Tecnologie, Università di Camerino, Italia) who coordinated researchers from seventeen different institutes (from Italy, UK, France, Greece). The event was co-sponsored by the IFG EGSHaz, INQUA-TERPRO Commission. The 118 field trip participants represented thirteen countries from five continents. The scientific programme included one very busy afternoon of introductory talks, held at the University of Camerino Campus, and a three-day field trip, which allowed participants to visit the key sites of the three epicentral areas, from NW to SE, along the backbone of the Central Apennines.

On the afternoon of the 19th July, the scientific session started with welcoming remarks by Professor Flavio Corradini and Professor Carlo Doglioni, followed by an introduction to the International Field Trip by Professor Tondi.

Following this, three talks focused on the main features of the three seismic events. Massimiliano Barchi and Giusy Lavecchia presented an overview of the Apennines, from the geologic and active tectonics point of view, in the framework of the Mediterranean area. Lauro Chiaraluce talked about the seismicity of the three earthquakes, followed by Roberto Devoti, who presented GPS data, and Stefano Salvi who showed the INSAR data for each event. Finally, Eutizio Vittori discussed the active faults and coseismic surface effects in the epicentral areas of the 1997 Umbria-Marche and 2009 L'Aquila earthquakes, whereas Paolo Marco de Martini illustrated those of the 2016 Amatrice-Visso-Norcia sequence. The scientific session ended with an open poster session with 22 contributions.

On the first day of the field trip (20th July) the group visited the epicentral area of 1997 Umbria-Marche earthquake. Here, at the Romanesque Church of Santa Maria in Plestia, after the introduction of the geology of the area with panoramic view over the Colfiorito basin, the participants reached the Colfiorito Border Fault scarp on the Faento Mountain. The group moved to the swamp of Colfiorito, close to a karst sink-hole, where geomorphological and archaeological evidence of fault activity could be observed. The last stop was in the Red Zone of Camerino city, with the observation of buildings damaged during the 2016 seismic sequence. Before the social dinner, the INQUA Business Meeting, led by Alessandro Maria Michetti, was held at the UNICAM Campus; the paleoseismic projects developed by INQUA and the forthcoming INQUA meeting, which will be held in November in New Zealand, were presented. In particular, Stéphane Baize described the progress of the SURFACE project and the SURE database.

The second day (21st July) was dedicated to the epicentral area of 2016 Amatrice-Visso-Norcia earthquake. At Forca Canapine, the geology of the Castelluccio Basin was introduced, combined with a panoramic view of Mt. Vettore, crossed by the surface expression of major faults activated during the last earthquake sequence of 2016. The second stop was at Pian Perduto, north of Castelluccio village, visiting two paleoseismological trenches excavated by INGV, in collaboration with IRSN, to observe secondary faults that moved during the 30th October main shock. The exploratory trenches were designed to study the seismic events that occurred in the past and which have permanently deformed the soil in the proximity of the fault. The last stop of the day was at Forca di Presta, where the participants split in three groups. One group walked along the fault segment located on the southern slope of Mt. Vettoretto arriving just below the top of Cima Redentore, to appreciate the metric fault scarp, commonly named "Cordone del Vettore"; the second group continued up to the top of Mt. Vettoretto, reaching the "Cordone del Vettore" fault scarp close to Scoglio dell'Aquila, where the offset shows a "free face" with about 2 m vertical throw; and the third group walked along the SE termination of the "Cordone del Vettore" fault, visiting one paleoseismological trench excavated by INGV and IRSN.

During the night, the field trip attendants were suddenly woken up at 0400 hours by a Mw 4.0 earthquake, which reactivated the Campostosto segment of the fault system and was a stark reminder that the seismic sequence is still ongoing.

On the last day (22nd July) the field-trip reached the epicentral area of the 6th April 2009, L'Aquila earthquake. After an introduction to the geological setting of the Middle Aterno valley, where L'Aquila is located, the group observed the evidence of surface faulting along the Paganica-San Demetrio Fault, at the NE margin of the Paganica village. In this area the April 2009 event caused the failure of the Gran Sasso aqueduct; the following excavation to repair the rupture provided an extraordinary exposure of sediments displaced by a system of fault splays, and unequivocal paleoseismological evidence of Holocene coseismic offset significantly larger than that of the last event. The coseismic faulting is also clear at the paleoseismic trench excavated by INGV at the Zaccagnini site. The last stop was at L'Aquila city centre, where engineer Fabio Liberati, co-ordinator of the project "Officina L'Aquila", presented the reconstruction projects of the city centre. The policy of this virtuous project is to rebuild the city "Com'era, Dov'era" ("as it was and where it was"); an example is the historic small palace under reconstruction that the group had the opportunity to visit.

The field trip ended at Hotel Fiordigigli with a open, roundtable discussion moderated by Daniela Pantosti (INGV). The participants agreed on a new vision of the use of geological data for seismic hazard assessment, including the slip history of active faults and the detailed field mapping of capable structures for seismic microzonation purposes.

The three-day field trip was exceptional, and it was unanimously agreed that the organisation was remarkable. The heterogeneity of researchers resulted in an excellent combination of experience and new perspectives that will drive the next years of work, hopefully together.

The conference website, including the program and abstracts, field trip guidebook, list of participants and organizing committee can be found [here](#).

10th PATA Days

Israel

19 - 27 September 2019

Technical meeting: 22nd-27th September 2019; Pre meeting field trip: 19th-22nd September 2019

The meeting is a part of the successful series of Paleoseismology, Active Tectonics and Archeoseismology (PATA) meetings organized by the INQUA-TERPRO group. The 2019 meeting will mark the 10th annual PATA Days event. PATA meetings bring together researchers from around the world to present the newest research and innovations in the fields of earthquake geology and seismic hazard. The 2019 meeting will take place in two locations, one along the Mediterranean shores and the other near the Sea of Galilee. There will be several oral and poster sessions interspersed by two half-day and one full day intra-meeting field trips. The field trips will visit world-class archaeological and geological sites in the area, related to the main themes of the meeting.

The meeting will be preceded by a two-day field trip to the Dead Sea area. The field trip will cover topics such as active faults and their geomorphic expression, soft sediment deformation, tectonics and sinkholes, and salt tectonics.

More information can be found [here](#).

Project 1624R: Peribaltic Working Group

Leaders: Robert J. Sokołowski (president, University of Gdańsk, Poland), Olga Druzhinina (secretary, Immanuel Kant Baltic Federal University, Russia)

Report on the INQUA Peribaltic Working Group Excursion and Meeting 2017, with planned activities for 2018

Meeting organizers: Pertti Sarala and Peter Johansson (Geological Survey of Finland, Rovaniemi, Finland).

Author of report: Robert J. Sokolowski¹, Pertti Sarala²

¹Department of Marine Geology, University of Gdańsk, Poland; ²Geological Survey of Finland, Finland.

The Peribaltic Working Group (PWG) is the informal regional group within the INQUA Commission on Terrestrial Processes, Deposits and History (TERPRO). PWG was established in early 90s as a group of Quaternary scientists from former republics of the Soviet Union. Researchers from other countries joined subsequently. The group currently connects over 60 scientists from several European countries, including areas that were under the influence (direct and indirect) of the Scandinavian Ice Sheet (SIS), as Norway, Sweden, Finland, Russia, Estonia, Latvia, Lithuania, Belarus, Poland, Germany, Denmark, the Netherlands and France. The main goal of PWG is to coordinate studies of Quaternary sediments that were deposited in the area of the SIS and its surroundings. The main objective is to advance knowledge of the dynamics, chronology and extent of the SIS, and the various processes that developed in the vast area around the SIS. Advancing this objective requires a wide range of methodological specialities including, among others, glacial geology, palynology, sedimentology, absolute dating methods, geomorphology, and palaeoclimatic and palaeogeographic reconstructions.

Recent developments of working group studies were presented during the annual excursion and meeting in 2017. This annual meeting was held in Finland, Sweden and Norway in 20 – 25 August 2017. It was organized by the Geological Survey of Finland, Oulu Mining School at the University of Oulu, University of Stockholm, INQUA Finnish National Commission and INQUA Peribaltic Working Group (INQUA TERPRO Commission).

The meeting started and ended at Rovaniemi (Finland, fig 21). The title of the meeting was 'From past to present – Late Pleistocene, last deglaciation and modern glaciers in the centre of northern Fennoscandia'. The Organizing Committee allotted one day for oral and poster presentations (23th August 2017) and a five day field excursion. Presentations and discussions as well as the WG business meeting were held in the Kilpisjärvi Biological Station, northwestern Finnish Lapland. Oral (16) and poster presentations (31) and flash



Fig. 21. PWG meeting route.

speeches (10) covered a wide range of different Quaternary and Holocene subjects around the Baltic Sea area from the central part of the SIS to the maximum glacier edge in eastern Europe and Russia.

The field excursion was organized in northwestern Finland, northern Sweden and northern Norway (Fig. 1). Topics included the Late Pleistocene glacial deposits and morphology, pre-glacial weathering patterns, last deglaciation history, and the Holocene mires in southern and western Finnish Lapland and northern Sweden, as well as modern glacial environments at the Steindalsbreen Glacier in northern Norway. Discussions during the excursion focused on ice sheet dynamics, glacial landforms, stratigraphy, Late Pleistocene changes in paleogeography of proglacial lakes and surface drainage pathways, glacial and interglacial/-stadial events. The excursion included a visit to the Rautuvaara-Hannukainen stratigraphic typesite area in the central area of the former SIS and around the Last Ice-divide Zone.

Meeting participants included 54 researchers from Finland, France, Germany, Lithuania, Norway, Poland, Russia and Sweden (Fig. 22).

Participants were invited to publish papers in the Peribaltic 2017 Special Issue of the Bulletin of the Geological Society of Finland (Guest editor Pertti Sarala).



Fig. 22. Peribaltic Working Group members in the Arctic, northern periphery of Finland (author: Pertti Sarala).

REGIONAL and NATIONAL MEMBERS

CROATIA

Short Report on the Fifth Regional Scientific Meeting on Quaternary Geology

Author: Ljerka Marjanac¹

¹Institute for Quaternary paleontology and geology, Croatia

The Fifth Regional Scientific Meeting on Quaternary Geology dedicated to geological hazards took place in November 2017 in Starigrad-Paklenica, a cosy place in the foothills of Velebit Mountain, Croatia. The meeting also included the final conference of the LoLADRIA project "Submerged Pleistocene Landscapes of the Adriatic Sea" of the Croatian Geological Survey. The event was organized by the Croatian and Slovenian National INQUA Committees, the Croatian Geological Survey and the Geological Survey of Slovenia, with support from the State Directorate for Protection and Rescue, the Geological Survey of Austria, the Italian Institute of Geosciences and Earth Resources, the Department of Geology of the Faculty of Science, Faculty of Mining, Geology and Petroleum Engineering, University of Ljubljana, the Public Institution of the National Park Paklenica, and Beta Analytics Laboratory. The Ministry of Science and Education, Croatian Geological Survey, National Park Paklenica and Bluesun Hotel Alan financially supported this meeting.

The forty-six participants contributed with presentations and posters, with thirty from Croatia, seven from Slovenia, three from Poland, two from Israel, two from Italy, one from Greece and one from the United Kingdom. 50% of attendees were Early Career Researchers. Contributions included five invited lectures and covered multidisciplinary topics such as mega-disasters, earthquakes, asteroid impacts, tsunamis, slope processes, floods, Quaternary stratigraphy, sedimentology, limnology, modern and past glacial and periglacial environments, geomorphology, geoarchaeology. Information and the Book of Abstracts are still available at the [website](#) created and maintained by L. Marjanac.



Fig. 23. Participants of the field trip at the entrance to the Velika Paklenica canyon.



Fig. 24. The group discussion at the outcrop of glaciolacustrine sediments of Seline near Starigrad-Paklenica.

Lj. Marjanac, T. Marjanac and O. Hasan led the post-meeting field trip (Figs. 23 to 25). Participants got insight into Quaternary glaciogenic sediments in the area of Velika Paklenica Canyon (The National Park Paklenica), the southern Velebit Channel and Northern Dalmatia. The Pleistocene glacial sediments and features, and recent slope deposits and hazardous events were also observed in Velika Paklenica. The Middle Pleistocene glaciogenic sediments and palaeoenvironments were shown and discussed at the Novigrad Sea and Karin Sea coastal sections, at the coast of Ždrilo and in Northern Dalmatia. Hasan presented the Holocene sediments and palaeoenvironments of the Novigrad Sea and Karin Sea based on geoacoustic geophysical survey and high-resolution multiproxy analysis of long sediment cores.



Fig. 25. Observation of anthropogenic sediments (Holocene) with charcoal layers in a cave that was formed in a remnant of a Pleistocene tuffa barrier on the present coast of Karin Sea.

DIG 4th International field workshop 2018

21 - 26 May 2018

Baška on Krk Island, Croatia

DIG – 4th Workshop on Dinaric Glaciation: Early/Middle Pleistocene Glaciations of the NE Mediterranean – filling the gaps in reconstructing its geological history and climate change. Focus on glaciogenic sedimentary palaeoenvironments of Krk Island, Croatia

Official language: English.

[webpage](#)

Registration deadline: 5 May 2018

Registration fee: 600 Euros (all inclusive)

Contact: ljerka.marjanac@gmail.com

The 5th Geoarchaeological Conference: Late Antiquity and the Migration Period in the light of geoarchaeological records from the eastern Mediterranean, eastern Adriatic and adjacent regions

and

The Second Meeting of the International Focus Group on North-Eastern African Quaternary Stratigraphy

23 - 24 October 2018

Zagreb, Croatia

Official language: English

Registration deadline: 30 June 2018

Abstract submission deadline: 31 August 2018

NO REGISTRATION FEE

[webpage](#)

Contact: kbotic@iarh.hr or f.welc@uksw.edu.pl

GERMANY

Relaunch of E&G Quaternary Science Journal

Lüthgens, C.¹, Böse, M.², Preusser, F.³, Sauer, D.⁴, van Edig, X.⁵

¹ University of Natural Resources and Life Sciences, Vienna, Austria; ² Freie Universität Berlin, Berlin, Germany; ³ University of Freiburg, Germany; ⁴ University of Göttingen, Germany; ⁵ Copernicus Publications, Germany

E&G Quaternary Science Journal (EGQSJ) is an interdisciplinary open-access journal published by the German Quaternary Association (DEUQUA) since 1951, and it is one of the longest-running journals in the area of Quaternary research. At the end of 2017 the journal was successfully relaunched and is now published by Copernicus Publications (Fig. 1). EGQSJ publishes papers related to Quaternary geology, paleo-environments, paleo-ecology, soil science, paleo-climatology, geomorphology, geochronology, archaeology, and geoarchaeology focussing on, but not limited to, research from central Europe. Submission is now possible via the new [website](#).

EGQSJ is published by Copernicus Publications on behalf of the German Quaternary Association, offering peer review by independent referees; thorough layout and processing of text, figures, tables, and equations; English language copy-editing; and immediate open-access publication. The journal is financed by moderate article processing charges (APC), but the German Quaternary Association will cover the article processing charges for papers to be published in EGQSJ until further notice. If you would like to support DEUQUA and EGQSJ, there is the option to pay for the APCs yourself (e.g. from project funding). Printed volumes consisting of two online issues are available for DEUQUA members as part of their membership and for subscribers. They can be also ordered on demand.



Fig. 26. New cover layout of EGQSJ as published by Copernicus Publications.

As an open-access journal, EGQSJ provides free immediate access to and unrestricted reuse of original works of all types by any user. Therefore, all content of EGQSJ is distributed under the Creative Commons Attribution 4.0 International License (CC BY 4.0) and authors retain copyright. Supplementary material is published at no extra charge, and assets stored externally (data sets, model code, samples, and/or videos) will of course be linked. Each publication of EGQSJ is assigned with a digital object identifier (DOI). In addition, articles and bibliographic metadata are distributed to scientific databases and indices, an article alert service is offered, and long-term preservation is guaranteed by external archives. The online open-access publications are indexed and archived worldwide in electronic archives, search engines, and databases in order to guarantee their maximum dissemination and impact. EGQSJ is listed in the Zoological Record within the Web of Science, and the aim is to establish EGQSJ as a fully indexed journal in the Science Citation Index Expanded (SCIE).

The collection of articles results from standard peer review, as well as from peer reviewed special issues supervised by guest editors. Apart from full research articles based on primary data collected and presenting substantial and original findings, EGQSJ also publishes express reports. Express reports are short, quickly published papers on innovative aspects of Quaternary research. They can present unusual or ambiguous discoveries which are provided to the public for discussion or comment, or they can contain interesting but perhaps incomplete results or technical reports on lab or field methods which foster Quaternary research but are not sufficient for a full article. Express reports may also contain status reports on finished research projects or reports on field surveys. A simplified peer-review process is intended to enable rapid publication of these express reports. Lastly, EGQSJ also offers the possibility to publish thesis abstracts related to Quaternary research in order to promote young researchers. On the journal's website, all issues of the journal can be accessed free of charge: the complete archive starting with first issue published in 1951.

Please consider EGQSJ as a reputable, worthwhile alternative for publication of scientific papers dealing with the broad range of Quaternary research and [submit](#) now.

Central European Conference on Geomorphology and Quaternary Sciences: Connecting disciplines

23 - 27 September 2018

Giessen, Germany

The conference is organized by the German Association on Geomorphology and the German Quaternary Association and will be hosted by the Department of Geography, Justus-Liebig-University Giessen near Frankfurt / Germany. The conference brings together the closely related disciplines of Quaternary Sciences and Geomorphology, both dealing with the earth surface, its processes and related sediments.

The conference will present cutting edge research from both disciplines with their specific and individual perspectives. Oral presentations and poster sessions will be accompanied by three keynote lectures (Flavio Anselmetti / Bern, Hans Middelkoop / Utrecht, Wilfried Haeblerli / Zürich). Five pre- and post-conference field trips and a public evening lecture by Friedemann Schenck (Frankfurt / M.) will complement the scientific program.

The conference is open to all scientists interested in Geomorphology and Quaternary Sciences and especially young scientists are invited to participate!

Deadlines

Early registration: 15 July

Abstract submission: 6 July

Late registration: 14 September

[website](#)

We are very much looking forward to welcome you in Giessen!

OBITUARIES

In memoriam Dr Mike Izuchukwu Akaegbobi (1955-2017)



Dr Mike Izuchukwu Akaegbobi of the University of Ibadan, Nigeria, a renowned petroleum geologist and sedimentologist whose core areas of interest were organic geochemistry, coal and Quaternary deposits, passed away on 10th September 2017.

Mike Izuchukwu Akaegbobi, an Associate Professor, was born on 2nd December 1955 in Jos, in the north central part of Nigeria, where he lived his early years. He attended St. Paul Primary School, Jos, and completed at Amakom Central School, Ukpokpor during the Nigerian Civil War. He later proceeded into Zixton Grammar school, Ozubulu, for his secondary education from 1970 to 1974. He was later admitted into the University of Ibadan in 1975 where he graduated as a Certified Geologist in July 1979.

Due to his interest and scientific curiosity, Dr Akaegbobi proceeded in the field of Geological Sciences to Rheinisch Westfaelische Technische Hochschule, Aachen, Germany (1983-1989) after which he attended the Technische Universitaet in Berlin, Germany (1990 – 1995).

Amongst the scholarships and fellowships he won are the Federal Government Scholarship (1982-1985), Deutscher Akademischer Austauschdienst (DAAD) Scholarship (1985, 1995), NAPE/TEXACO Best Paper Award Winner (1997), Bashorun M.K.O. Abiola Travel Fellowships to Postgraduate Teachers (1999), Travel Scholarship AMNI International Petroleum Development Company (1999), and Deutsche Akademische Austauschdienst (DAAD) Short Research visit to University of Jena, Germany (July-September, 2001). He received a seed grant from INQUA in 2009, granted with an INQUA Project 0904 (Paleo-climatic/sea level changes and anthropogenic responses and adaptations during the Quaternary in the West African subregion: Evidences from marine and terrestrial sources) and INQUA Project 0904 (West African Quaternary paleoenvironment/sea level changes and Archeology/Paleontology/Paleoclimate Impact: Understanding the Past to Plan the Future) in 2010.

He taught briefly at University level in Technische Universitaet Berlin as a graduate Assistant (1992-1994), and later at the premier University of Ibadan up till the time of his death, where he rose through the ranks from Lecturer II to an Associate Professor.

He supervised many undergraduates and postgraduate (M.Sc. M.Phil. and Ph.D.) students, some of who are lecturers at diverse higher Institutions of learning in Nigeria today. He was a member of many renowned International Associations, a reviewer of many local and international journals, and published and co-authored many publications in renowned international journals.

Dr Mike initiated the grant from Past Global Changes Bern, Switzerland (PAGES), which was awarded in 2009, for the inauguration of West African Quaternary Research Association (WAQUA) in Ibadan and Paleontological and Scientific Trust (PAST) South Africa to support its establishment.

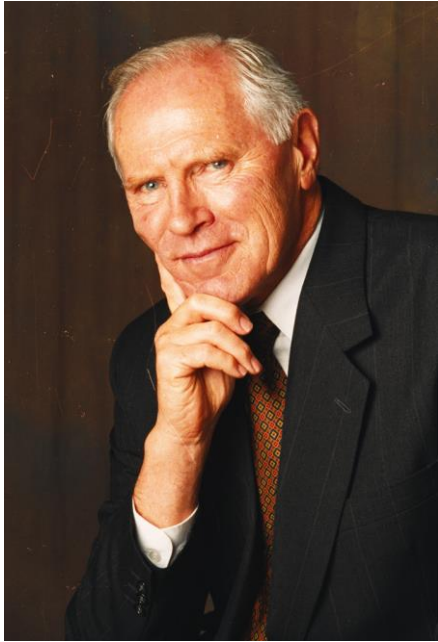
He was a founding member and immediate past President of the West African Quaternary Research Association, which has grown fast and is still growing across the Western African Countries today, with numerous members from multifaceted disciplines. He was also the Secretary of the Human and Biosphere Commission (HABCOM) for INQUA between 2011 and 2015.

Those of us who met, interacted and/or worked with Dr Mike keep a great memory of his scientific and human qualities, his commitment and his friendship. Above all, we would like to stress that his integrity and simplicity made him much loved by his colleagues and students across the globe. He is survived by his mother, wife, four children, and grandchildren.

Olugbenga A. BOBOYE

Associate Professor of the Department of Geology, University of Ibadan, Nigeria. West Africa

In memoriam Michael J. Selby (1936-2018)



Michael John Selby died in Auckland, New Zealand, on 21 January 2018 aged 82. In his professional career as an Earth scientist at the University of Waikato, Hamilton, New Zealand, for nearly 40 years, Michael began as a junior lecturer and ended as a deputy vice chancellor. He played a pivotal role in helping to establish and develop the Department of Earth Sciences, and its unique, integrative multi-disciplinary approach, at Waikato from 1970. Articulate, friendly, and with a good sense of humour, Michael exemplified diligence, hard work, and professional integrity. He was an inspiring leader with qualities of decency and reliability that made him appealing to staff with whom he worked, and to undergraduate and postgraduate students.

Born in the UK (on 13 January 1936), Michael was a geomorphologist/geographer trained at the University of Oxford (after a two-year stint in Berlin in the Royal Military Police of the British Army), receiving an MA as well as a BA(Hons) and a DipEd. Following an initial job teaching (from 1960) at Christ's College in Christchurch, New Zealand, Michael was appointed in 1964 as a lecturer in physical geography at the Waikato Branch of the University of Auckland (in Hamilton, New Zealand). In 1965 he transferred to the new University of Waikato (founded in 1964) in Hamilton when students were first enrolled. Michael was then appointed a senior lecturer in the new Department of Earth Sciences in 1969 with foundation professor John McCraw, helping to prepare the department to open its doors to its first students in 1970 (McCraw 2002; Nelson et al. 2015). Harry Gibbs joined McCraw and Selby in 1970 and the three set out to teach Earth sciences, with new staff being appointed as student numbers grew rapidly.

Exceptionally well organised, Michael was eloquent and authoritative in his lectures, and always up with the latest advances, such as the theory of plate tectonics (Selby 1970a) and the newly-published (in 1973) marine oxygen isotope record of glaciations (Lowe 2014). His doctoral thesis was on the erosion of the extensive Pumice Soils (Vitrandis in Soil Taxonomy: Lowe and Palmer 2005) in central North Island. Michael used a

quantitative and experimental approach that involved novel factor analysis by computer (e.g. Selby 1970b, 1970c, 1972, 1973; Selby and Hosking 1971, 1973). His D.Phil. thesis, conferred in 1972, was the first to be awarded in Earth sciences, and one of the first three doctorates to be awarded by the University of Waikato.

Studying landsliding processes and drivers in volcanic-ash mantled slopes on greywacke (a hard, resistant sandstone pervasive in much of New Zealand) early in his career (Selby 1966, 1967a), Michael had already made a name for himself by writing two text books, "The Surface of the Earth", Volumes 1 and 2 (Selby 1967b, 1971). These books were used in some high schools as well as universities, and were responsible for attracting a number of students to the fledgling department. His early papers, published at a prodigious rate, gave important credibility and respect to the research capability of the new Department of Earth Sciences. At the same time, Michael edited Earth Science Journal, published by the Waikato Geological Society (Hamilton), over five years (1967-71).

Awarded a personal chair in 1980, Michael's career transgressed through hard work and new thinking into rock and soil mechanics, bringing together geomorphology (making it more quantitative) and engineering geology. This latter discipline became an important strength within the Department of Earth Sciences, leading to many students subsequently gaining livelihoods in the field. Michael developed simple portable equipment to assess the mass strength of rocks and, from this and a number of other easily assessed parameters, he established a 'Rock Mass Strength Index', which has been adopted internationally, not only by geologists and geomorphologists, but also by engineers (Selby 1980; Selby et al. 1988).

Michael then published (in 1982) what some regard as his magnum opus textbook, "Hillslope Materials and Processes". The second edition (Selby 1993) was named in 2005 as one of the 10 'classic' books of geomorphology and its author as one of the 20 most-cited geomorphologists in the English language, highlighting the fact that Michael's reputation extended well beyond New Zealand (Doyle and Julian 2005). Michael published seven books in all, including Selby (1985) and two editions of "Landforms of New Zealand" (Soons and Selby 1992). The latter book comprised the first synthesis of New Zealand geomorphology and landscapes since the seminal volumes of Sir Charles Cotton of the early- to middle-20th Century (e.g. Cotton 1942). It is only recently that new texts (Shulmeister 2017; Williams 2017) have partly superseded it.



Fig. 27. Michael Selby relaxing atop Derrick Peak in the northern Britannia Range, Transantarctic Mountains, 11 December 1978. The high peak in the background at right is Mount Selby (Photo: David Lowe)



Fig. 28. Michael Selby (near centre wearing tie) amidst colleagues of the Department of Earth Sciences at University of Waikato, Hamilton, after his final lecture in 2001 (Photo: University of Waikato)

Michael undertook four expeditions to Antarctica, leading three of them. Mount Selby in the northern Britannia Range was named for him as a mark of respect for his leadership and contributions to Earth sciences, both at Waikato and globally (Fig. 27; Kamp and Lowe 1982). In 1984 Michael was awarded a D.Sc. from Oxford University in recognition of his highly regarded texts and papers on rock slope stability.

Michael moved increasingly into senior management and became Deputy Vice Chancellor of the University of Waikato in 1986. While maintaining an undergraduate teaching load until his retirement, he increasingly devoted his time to mentoring staff across the university in the art of winning external research contracts and, importantly, successfully completing those research contracts.

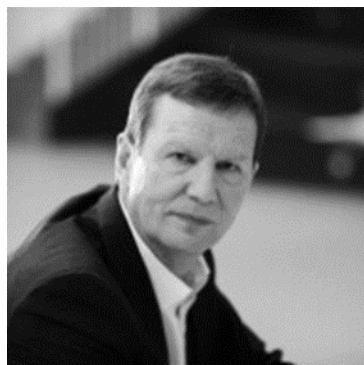
Michael retired in February 2002 (as emeritus professor) (Fig. 28; Lowe and Kamp 2002). He became an Officer of the New Zealand Order of Merit (ONZM) for services to education in 2005.

References

- Cotton, C.A. 1942. *Geomorphology – An Introduction to the Study of Landforms*, Third Edition. Whitcomb and Tombs, Christchurch, 503 pp.
- Doyle, M.W., Julian, J.P. 2005. The most-cited works in Geomorphology. *Geomorphology* 72, 1-4.
- Kamp, P.J.J., Lowe, D.J. 1982. Geology and terrestrial age of the Derrick Peak meteorite occurrence, Antarctica. *Meteoritics* 17, 119-127.
- Lowe, D.J. 2014. Marine tephrochronology: a personal perspective. Geological Society, London, Special Publications 398, 7-19.
- Lowe, D.J., Kamp, P.J.J. 2002. Retirement of Michael Selby. *Geological Society of New Zealand Newsletter* 129, 44-45.
- Lowe, D.J., Palmer, D.J. 2005. Andisols of New Zealand and Australia. *Journal of Integrated Field Science* 2, 39-65.
- McCraw, J.D. 2002. Geology or Earth sciences? In: Adams, J.A. (editor), "Jubilee Reminiscences: Fifty years of soil science memories". New Zealand Society of Soil Science Occasional Publication 3, 40-42.
- Nelson, C.S., Lowe, D.J., Tonkin, P.J. 2015. The working life of John McCraw (1925-2014): a remarkable New Zealand pedologist and Earth scientist. *Journal of the Historical Studies Group (Geosciences Society of New Zealand)* 50, 2-29.
- Selby, M.J. 1966. Some slumps and boulder fields near Whitehall. *Journal of Hydrology (New Zealand)* 5, 35-44.
- Selby, M.J. 1967a. Aspects of the geomorphology of the greywacke ranges bordering the lower and middle Waikato basins. *Earth Science Journal* 1, 37-58.
- Selby, M.J. 1967b. *The Surface of the Earth*, Volume 1. Cassell, London, 272 pp.
- Selby, M.J. 1970a. Towards a unified theory of the origin of the Earth's major physical features. *New Zealand Journal of Geography* 49, 1-16.
- Selby, M.J. 1970b. A flume for studying the relative erodibility of soils and sediments. *Earth Science Journal* 4, 32-35.
- Selby, M.J. 1970c. Design of a hand-portable rainfall-simulating infiltrometer, with trial results from the Otutira catchment. *Journal of Hydrology (New Zealand)* 9, 117-132.
- Selby, M.J. 1971. *The Surface of the Earth*, Volume 2. Climate, Soils and Vegetation. Cassell, London, 437 pp.
- Selby, M.J. 1972. The relationships between land use and erosion in the central North Island, New Zealand. *Journal of Hydrology (New Zealand)* 11, 73-87.
- Selby, M.J. 1973. An investigation into causes of runoff from a catchment of pumice lithology, in New Zealand. *Hydrological Sciences Bulletin* 28, 255-280.
- Selby, M.J. 1980. A rock mass strength classification for geomorphic purposes: with tests from Antarctica and New Zealand. *Zeitschrift für Geomorphologie* 24, 31-51.
- Selby, M.J. 1985. *Earth's Changing Surface*. Clarendon Press, Oxford, 607 pp.
- Selby, M.J. 1993. *Hillslope Materials and Processes*, Second Edition. Oxford University Press, New York, 451 pp.
- Selby, M.J., Hosking, P.J. 1971. Causes of infiltration into Yellow-brown Pumice Soils. *Journal of Hydrology (New Zealand)* 10, 113-119.
- Selby, M.J., Hosking, P.J. 1973. The erodibility of pumice soils of the North Island, New Zealand. *Journal of Hydrology (New Zealand)* 12, 32-56.
- Selby, M.J., Augustinus, P.C., Moon, V.G., Stevenson, R.J. 1988. Slopes on strong rock masses: modelling and influences of stress distributions and geomechanical properties. In: Anderson, M.G. (editor), *Modelling Geomorphological Systems*, 341-374.
- Shulmeister, J. (editor) 2017. *Landscape and Quaternary Environmental Change in New Zealand*. Atlantis Advances in Quaternary Science, Volume 3. Atlantis Press/Springer, 334 pp.
- Soons, J.M., Selby, M.J. (editors) 1992. *Landforms of New Zealand*, Second Edition. Longman Paul, Auckland, 531 pp.
- Williams, P.W. 2017. *New Zealand Landscape – Behind the Scene*. Elsevier, Amsterdam, 470 pp.

*David J. Lowe
University of Waikato, New Zealand*

In memoriam Volli Kalm (1953 – 2017)



Suddenly and unexpectedly, Estonian science and higher education has lost its bold and wise spokesman. The Estonian nation has lost its nationally-inclined intellectual of international stature, Tartu University its dignified leader, and the international Quaternary community an outstanding researcher and a friend – Volli Kalm.

Volli Kalm was born on 10th February 1953 in Vändra. He graduated from Tartu State University with a degree in geology in 1976, and in 1984 earned his Ph.D. in geology from the Estonian Academy of Sciences after successfully defending his doctoral thesis "Formation, composition and usage of glaciofluvial deposits in Estonia". The same year he joined the staff of the University of Tartu as a lecturer in the Institute of Geology, of the Faculty of Biology and Geography. In 1988 he spent a period at the University of Alberta as a postdoctoral scholar. He was elected professor of applied geology at the University of Tartu in 1992. Between 1998 and 2003, he served as Vice-Rector for Academic Affairs of the University of Tartu. In 2012, he was elected Rector of the University of Tartu, his second term as rector began on 1st June 2017.

Volli Kalm's research focused on palaeoclimate, palaeogeography and chronology of glaciations, sedimentology of glacial deposits, urban-geology, and geoarchaeology. He published over 100 scientific articles and supervised eight Ph.D. theses. He was an editorial board member for many scientific journals, of which those closest to us include *Boreas* and the *Estonian Journal of Earth Sciences*. Since 2004, Volli was a member of INQUA, and between 2007-2012 also a president of the INQUA PeriBaltic Working Group.

Volli's devotion, consistency, and work ethic were exemplary. We will remember him as an honest and demanding man whose position was always clear, who had a straightforward manner of expression; he was someone you could rely on. Volli's entire working life can be summarized in one sentence: Straight way is the shortest way between two points, and this way was laid down with precision and vigour. However, we all know that in his moments of leisure Volli shared with us or with his students, he forgot all his straightforwardness.

Volli Kalm's life was cut unfairly short. However, he managed to achieve a lot in his lifetime, among other things to be a loving father and husband to his family, and a good colleague and a friend to us – the Quaternary community. We bow our heads in grief and respect to mourn the passing of our friend and colleague and extend our condolences to his family.

Volli Kalm's scientific publications can be found [here](#).

INQUA Peribaltic Working Group ([source](#))

In memoriam Paolo Antonio Pirazzoli (1939-2017)



Paolo Pirazzoli was born in Venice (Italy) in 1939 but acquired French citizenship in 1978, several years after marrying Michèle Pirazzoli-t'Serstevens, a well-known historian specialising in Chinese civilization. Paolo Pirazzoli graduated in Civil Engineering from Palermo (Sicily), before becoming an engineer in France where he was actively involved in the student demonstrations of 1968. In September 1968 he was made redundant by the engineering company he was working for at the time, paving the way - almost by accident - for an exceptional career in geography.

Paolo quickly became interested in sea-level changes after listening to a conference in Paris about the submersion of his home town Venice "full of approximations and errors". He was rapidly integrated into the coastal research group headed by the geographer Fernand Verger, a very active professor at the Ecole Normale Supérieure of Paris. In 1976, he obtained his Ph.D. in Geography from Paris University with a thesis entitled "Les variations du niveau marin depuis 2000 ans".

Paolo Pirazzoli's main research interests were centred around Quaternary sea-level change, and the identification and dating of former shorelines (Holocene, Pleistocene) all over the world. Following his retirement, he focused on recent and present-day sea-level changes (tide gauges, satellites, modelling), surges and climate variability, coastal evolution, human impacts, the impacts of a sea-level rise, and global change. He was a tireless explorer who travelled the world, from Tierra del Fuego to Iran and from Tahiti to Africa...but islands were his favourite spots, and he had a particular passion for the Greek and Pacific islands. Paolo was one of the rare French geographers of his generation to have had an important international audience. For example, he was leader of the International Geoscience Programme IGCP Project #200 (1983-1987), and advisor for the IGCP projects #274 (1988-1993), #367 (1994-1998) and # 437 (1999-2003).

Paolo Pirazzoli was also a very active scientific editor for different international journals, most notably *Global and Planetary Change* (Elsevier). In 2013, he received an Honorary Fellowship from the International Association of Geomorphology for his services to the discipline.

Paolo was a tireless worker and thinker, and our community greatly appreciated his scientific and interpersonal qualities. He was exceptionally intelligent and independent, and was widely viewed as one of the most prominent coastal geoscientists of his generation. His innovative studies significantly contributed to our understanding of sea-level changes and coastal evolution, authoring hundreds of publications that inspired both his peers and students. He was a strong believer in multidisciplinary research. His international reputation was equalled only by his kindness and his availability for young colleagues and students, who benefitted from his knowledge and vast international network. Sadly, we have lost a great scientist and a warm colleague.

Paolo also loved cats, Baroque music, especially Johann-Sebastian Bach's cantatas, good food and Ouzo! All those privileged to have known him grieve this loss.

Among hundreds of important scientific publications, we can cite the following as particularly pioneering and innovative:

References

- Pirazzoli, P. A. (1976). Sea level variations in the northwest Mediterranean during Roman times. *Science*, 194(4264), 519-521.
- Pirazzoli, P. A., Thommeret, J., Thommeret, Y., Laborel, J., & Montaggioni, L. F. (1982). Crustal block movements from Holocene shorelines: Crete and Antikythira (Greece). *Tectonophysics*, 86(1-3), 27-43.
- Pirazzoli, P. A., & Montaggioni, L. F. (1986). Late Holocene sea-level changes in the northwest Tuamotu Islands, French Polynesia. *Quaternary Research*, 25(3), 350-368.
- Pirazzoli, P. A. (1987). Recent sea-level changes and related engineering problems in the lagoon of Venice (Italy). *Progress in Oceanography*, 18(1-4), 323-346.
- Pirazzoli, P. A. (1989). Present and near-future global sea-level changes. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 75(4), 241-258.
- Pirazzoli, P. A. (1991). *World Atlas of Holocene Sea-Level Changes*. Elsevier Oceanography Series, Vol. 58, 300 p., Amsterdam.
- Pirazzoli, P. A., Laborel, J., & Stiros, S. C. (1996). Earthquake clustering in the Eastern Mediterranean during historical times. *Journal of Geophysical Research: Solid Earth*, 101(B3), 6083-6097.
- Pirazzoli, P. A. (1997). Sea-level changes: the last 20 000 years. *Oceanographic Literature Review*, 8(44), 785.
- Pirazzoli, P. A., & Tomasin, A. (2003). Recent near-surface wind changes in the central Mediterranean and Adriatic areas. *International Journal of Climatology*, 23(8), 963-973.
- Pirazzoli, P. A. (2005). A review of possible eustatic, isostatic and tectonic contributions in eight late-Holocene relative sea-level histories from the Mediterranean area. *Quaternary Science Reviews*, 24(18), 1989-2001.
- Pirazzoli, P. A., & Evelpidou, N. (2013). Tidal notches: a sea-level indicator of uncertain archival trustworthiness. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 369, 377-384.
- Evelpidou, N., & Pirazzoli, P. A. (2017). Did the Early Byzantine tectonic paroxysm (EBTP) also affect the Adriatic area?. *Geomorphology*.

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