



QU
UATERNARY
ERSPECTIVES

The INQUA
Newsletter



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Cover photo: Stratigraphic section along the Tagliamento River near Pinzano (Friuli Plain, NE Italy). The sequence consists of fluvioglacial gravels, where the top is formed by LGM deposits of Tagliamento River, while the yellowish sediments at the base were transported by Arzino River during the Middle Pleistocene.

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QUATERNARY PERSPECTIVES
is the newsletter of



INQUA
INTERNATIONAL UNION
FOR QUATERNARY
RESEARCH

Established in 1928, INQUA is the representative body for Quaternary science world-wide. INQUA is dedicated to removing barriers and to fostering diversity and inclusivity by prioritising funding for early career and developing country researchers to enable their participation in the international scientific networks that INQUA supports. INQUA promotes – and operates according to – a philosophy of inclusivity, not discriminating against any individual on the basis of race, colour, religion, gender, gender identity or expression, sexual orientation, genetics or disability. We encourage you to join INQUA through any of its Commissions, and contribute to the development of Quaternary science worldwide.
inqua.org/about

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INQUA and the COVID-19 pandemic

On the INQUA website one can read that INQUA's basic goal is to promote improved communication and international collaboration in experimental and applied aspects of Quaternary research. A goal that was, in the past decades, achieved by the organisation of a large INQUA Congress every four years and many smaller (more regional) meetings during the intra-congress periods. INQUA acknowledged the importance of those meetings to create international scientific networks and to inform and inspire colleagues. INQUA particularly has provided financial support to Early Career Researchers (ECRs) and researchers from Developing countries (DCRs) to enable them to attend these international meetings. INQUA's strategy and funding policy was based on an almost unlimited global mobility. Until 2020 when the COVID-19 pandemic changed the world, our world. It disrupted our lives; unlimited mobility changed into a lockdown for many of us to avoid a further spread of the virus, scientific meetings were cancelled, postponed or in some cases replaced by virtual meetings.

It is obvious that the COVID-19 pandemic also has an impact on the Quaternary Research community and as Francesca Ferrario states here: "The most vulnerable categories are disproportionately affected: those lacking financial stability, those having short-term appointments or caring responsibilities. Early-career researchers (ECRs) often belong to these categories". But let us not forget the DCRs, they are also very vulnerable. It is for INQUA a challenge to find ways to support those colleagues. We have to broaden the spectrum of possibilities to support the Quaternary research community in general and the most vulnerable colleagues in particular. The current situation may take longer than we would like and INQUA needs to adapt to it and to be creative and flexible. We would like to invite (individual) members of the INQUA community to take part in this discussion and to inform us about their ideas/suggestions on how INQUA could/should support our Quaternary research in the near future. The INQUA Executive Board and the Commission officers are fully aware of the current, difficult situation and we are ready to face the future challenges.

Please take care and stay healthy.

Thijs van Kolfschoten
INQUA President

The COVID-19 pandemic took the life of too many people and disrupted the lives of all of us. The most vulnerable categories are disproportionately affected: those lacking financial stability, those having short-term appointments or caring responsibilities. Early-career researchers (ECRs) often belong to these categories. We already saw several outbursts of generosity and solidarity from all over the world and we are firmly inclined to believe that the hardest challenges may thrive a new way of thinking.

Since its foundation, one of the missions of INQUA is to facilitate collaborations among scientists, with particular reference to ECRs and Developing Countries researchers (DCRs). INQUA is used to support them through travel grants to attend scientific meetings: for instance, 281 ECRs and DCRs were supported to attend the 2019 Dublin Congress. Under the current circumstances, travel grants may not be the best way to support ECRs and DCRs; therefore, we proposed, encouraged by the board of INQUA, concrete actions to broaden the spectrum of support possibilities:

- The ECR period (8 years after completion of the last degree) will be temporarily extended for 1 year.
- INQUA will support open-access fees for selected papers led by ECRs and DCRs, to be published in Quaternary International.
- Networking is a critical aspect for the scientific growth of ECRs and DCRs and is severely affected by the lack of in-person meetings: INQUA will encourage networking by promoting the publication of review papers led by ECRs and DCRs, under the supervision of senior scientists.

We are aware that these steps are just a drop in the ocean and that the current global crisis gives us the opportunity to think – or rethink – how our organization can be more inclusive and proactive during these challenging times. Failed experiments, barren samples, stalled computers and trenches with no faults or datable material will disappoint us again. And we will be rejoining in every fieldwork experience, positive result, new discovery and clever question by our students. The COVID pandemic will change some of our habits forever, but we will meet again at in-person congresses, during field excursions or in the lab.

Because we all love science.

Francesca Ferrario
on behalf of the INQUA ECR Committee

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Mapping Europe's Quaternary: the International Quaternary Map of Europe and Adjacent Areas (IQUAME)

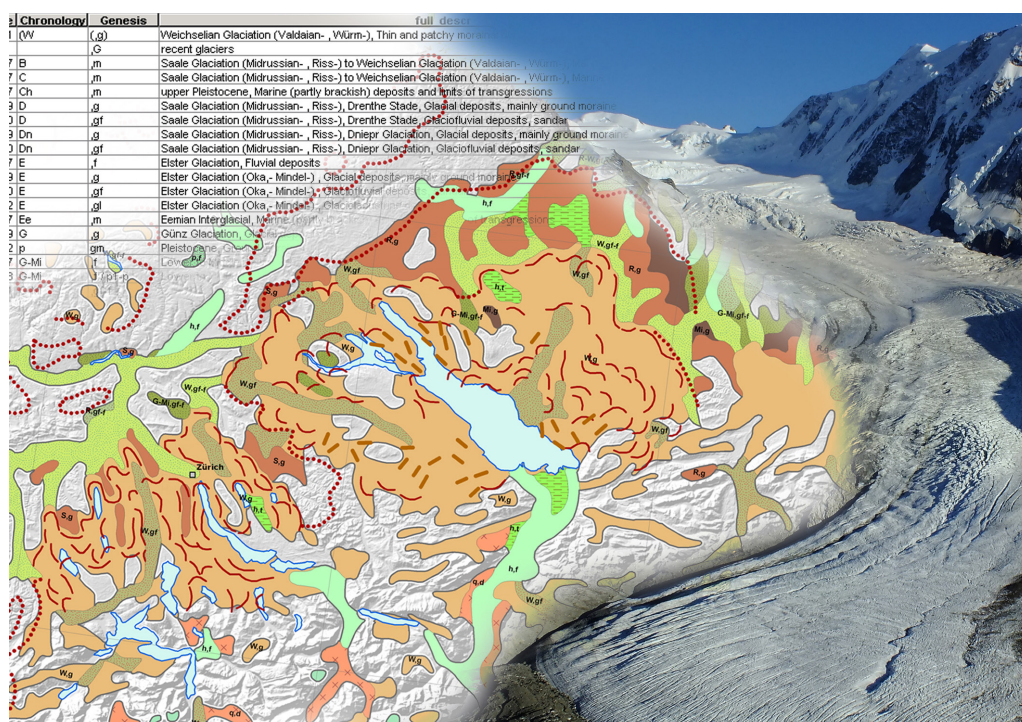


FIGURE 1: Building the GIS of the Quaternary geology of Europe. The figure symbolizes the combination of Quaternary map features in real life, the mapping process and the underlying data (sources: map and GIS taken from the IQUAME project. Graphic: Alexander Müller. Photo: Kristine Asch)

INTRODUCTION AND BACKGROUND

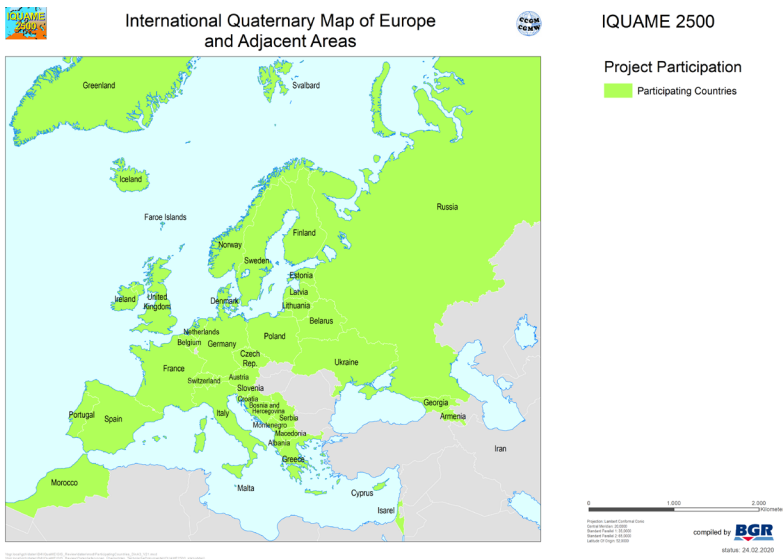
The Quaternary is an essential element of Geology: it is the uppermost stratum of the Earth's crust and thus it is of great present-day interest: it provides sand and gravel deposits, groundwater resources, building ground for houses, streets, landfills, plants; it contains active faults relevant for geohazards, its strata and formations provide information about the exciting evolution of the last 2.5 million years of Earth's story.

The International Quaternary Map of Europe project (IQUAME 2500) is creating a pan-European, harmonized, spatial geological (GIS) database, which will provide a summary of the status of European Quaternary geological research. It is a major international initiative coordinated by Germany's Federal Institute for Geosciences and Natural Resources (BGR), under the auspices of the Commission

of the Geological Map of the World (CGMW), Sub-Commission Europe and with support of the International Union for Quaternary Research (INQUA). BGR is highly experienced in cross-boundary map compilations at both national and international levels: it is a successor organization of the Königlich-Preußische Geologische Landesanstalt (1873–1939) whose main task was to map the geology of the region of the former Kingdom of Prussia. Its first presidents W. Hauchecorne and H.E. Beyrich were both involved in compiling the first pan-European geological map, the International Geological Map of Europe at the scale 1:1.5 Million. BGR, as successor organization,

continues this work of international co-operation and co-ordination in building geological, hydrogeological and soil spatial databases and GIS map compilations. BGR also co-ordinates the compilation of pan-German maps and databases, including the geological overview maps at 1:250 000 scale in cooperation with the German State Geological Surveys (SGD).

From 1967 to 2005, the first edition of the map was compiled under the leadership of BGR, supported by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and an INQUA Commission, founded for that particular task (Presidents: P. Woldstedt and J.I.S. Zonnefeld, 1967 - 2005). This map appeared in paper form as 14 sheets and a legend sheet (BGR & UNESCO 1967 - 2005), numerous countries contributed to this project.



IQUAME CONTENTS

The IQUAME project was initiated in 2011 at the XVIII INQUA Congress in Bern, at a workshop with 14 participants and was opened by Professor Dr. Christian Schlüchter. The IQUAME is intending to show the distribution of Quaternary features on the land and seafloor surface and general marine deposits across the entire European continent: stratigraphy and lithology of Quaternary units, genesis (environment, process), glaciogenic features, last permafrost maximum, postglacial rebound, last extent of ice sheets (during the Weichselian, Saalian, if possible Elsterian stages), direction of ice movement, limit of transgressions, limit of drift ice in summer time, active faults, key locations including Palaeolithic sites, glaciogenic elements, geomorphological features and off-shore information (in co-operation with the European Union EMODnet Geology project).

FIGURE 2: Outline of the map area, showing the participating countries. Map compiled by BGR

In 2011 BGR began reworking and digitizing the paper map in order to build a Quaternary geographical information system (GIS) without any issues across political boundaries (Figure 1). This project carried out based on the experience gained in building the successful GIS and map of the 1:5 Million International Geological Map of Europe and Adjacent Areas (Asch 2005) under the umbrella of CGMW and in international cooperation. This GIS and map present harmonized information of the land and sea areas of the European pre-Quaternary Geology (IGME5000) and can be seen on the [BGR Geoviewer](#). The Quaternary information of the IQUAME is planned to be compatible with the geographical information system (GIS) of the IGME 5000, so that the information of both layers can be combined, selected and cross-referenced. It is also being built as a GIS and it is planned to be released through the BGR Geoviewer, with several, combined information layers.

The IQUAME project, again coordinated by BGR, began as a revision for a second edition, but the new digital possibilities now allow the inclusion and illustration of much more detail. The project is based on co-operation, scientific curiosity and willingness to participate by organizations and individual scientists of 40 countries to date. Partner institutions (list of countries; Table 1) to-date include geological survey organisations from Russia in the East, Portugal in the West, Norway in the North and Cyprus in the South. A scientific board of Quaternary researchers ensures the high scientific quality of the resulting map and web products.

The original paper map sheets did not encompass all parts of Europe and contained an inset map of Svalbard. The new IQUAME will cover seamlessly an area from Greenland in the west to the Aral Sea in the east and from Svalbard in the north to the southern border of the Mediterranean Sea in the South, as shown in Figure 2.

INTEGRATION OF INFORMATION

It is a joy and a challenge to collaborate with colleagues from so many countries and co-ordinate the input and take the variations between mapping cultures, classifications and deliveries of differing characteristics into consideration. Working with such a multinational group, with backgrounds of different methods of mapping and presentation, requires commonly agreed (and fixed) rules so that the resulting product appears as a jigsaw puzzle with pieces, which do not always fit together, but offers information in the greatest possible harmonized and understandable fashion (Figure 3).

Table 1: Countries involved in the IQUAME project

Albania	Israel
Armenia	Italy
Austria	Latvia
Belarus	Lithuania
Belgium	Macedonia
Bosnia and Herzegovina	Malta
Croatia	Montenegro
Cyprus	Morocco
Czech Republic	Netherlands
Denmark	Norway
Estonia	Poland
Faroe Islands	Portugal
Finland	Russia
France	Serbia
Georgia	Slovenia
Germany	Spain
Greece	Sweden
Greenland	Switzerland
Iceland	Ukraine
Ireland	United Kingdom



FIGURE 3: The international data required to be integrated and harmonised both on-shore and off-shore. Left) Example on-shore: The red lines represent the political boundary between Germany (contributed by BGR) and the Netherlands, (contributed by TNO) Right) Need for data harmonisation off-shore: the grey dotted lined represents the Exclusive Economic Zone (EEZ).

That implies that map data, that were originally established in a plethora of regional and national classifications need to be integrated and harmonized. This encompasses data structure, semantics or terms, geometries of the geological units, portrayal rules (colors, symbols) etc. Existing international standards were required to be researched and tested for suitability, such as the standard International Union of Geological Sciences (IUGS) global chronostratigraphic correlation table (Cohen & Gibbard, 2019) or the comprehensive vocabularies of the European INSPIRE Directive (INSPIRE Thematic Working Group Geology, 2013). Where no (or too many which is equally a challenge) standards existed, a common base needed to be set up, for example for glaciogenic features (Figure 4).

Apart from the cooperation with geological survey organizations and universities, co-operation with other European cross-boundary projects working in similar topics is important. Of particular importance is the EMODnet Geology project (European Marine Observation and Data Network)



FIGURE 5: Participants in the IQUAME Consultation Workshop at the Geological Survey of Ireland during the 20th INQUA Congress.

which is financed by the European Commission (EC), it began in 2009 with the participation of BGR and now more than 30 countries. The EMODnet-Geology project collates relevant spatial information on the European marine geology in several work packages; the one mapping the seafloor geology is led by BGR and includes Quaternary information. At several workshops IQUAME and EMODnet Geology project participants worked together on a common term dictionary for marine geomorphological and Quaternary features. When completed, the data of the project can be downloaded from the [EMODnet Geology Portal](#). In addition, selected data from numerous projects are being tested for suitability, integrated or taken as example, including that from BRITICE (Clarke et al. 2017), the IGME 5000 (Asch 2005), the draft of the CGMW International Quaternary Map of the Middle East (Saidi & Straby 2016), DATED (Hughes et al. 2015), the LGM datasets (Ehlers et al. 2011) and others.

In 2019, during the 20th INQUA Congress in Dublin, both a scientific session dedicated to the IQUAME and an international consultation workshop hosted by the Geological Survey of Ireland took place (Figure 5). The session provided space to the IQUAME community and similar projects to introduce their national results. Within the workshop the most recent achievements were presented, discussed and the results further developed with colleagues from the international Quaternary community, members of regional and national mapping organizations and project participants.

In the current situation, resulting from the COVID-19 pandemic, IQUAME activities have been frozen at the time of writing. Therefore, the regular annual IQUAME workshop meeting, where much of the harmonization work is undertaken and coordinated, had to be postponed and it is hoped to take place during 2021.

Ultimately, the aim of the project is to create a web accessible, pan-European, coordinated, comprehensive, spatial geological database where the ground conditions of the Quaternary strata and landforms that can be retrieved,

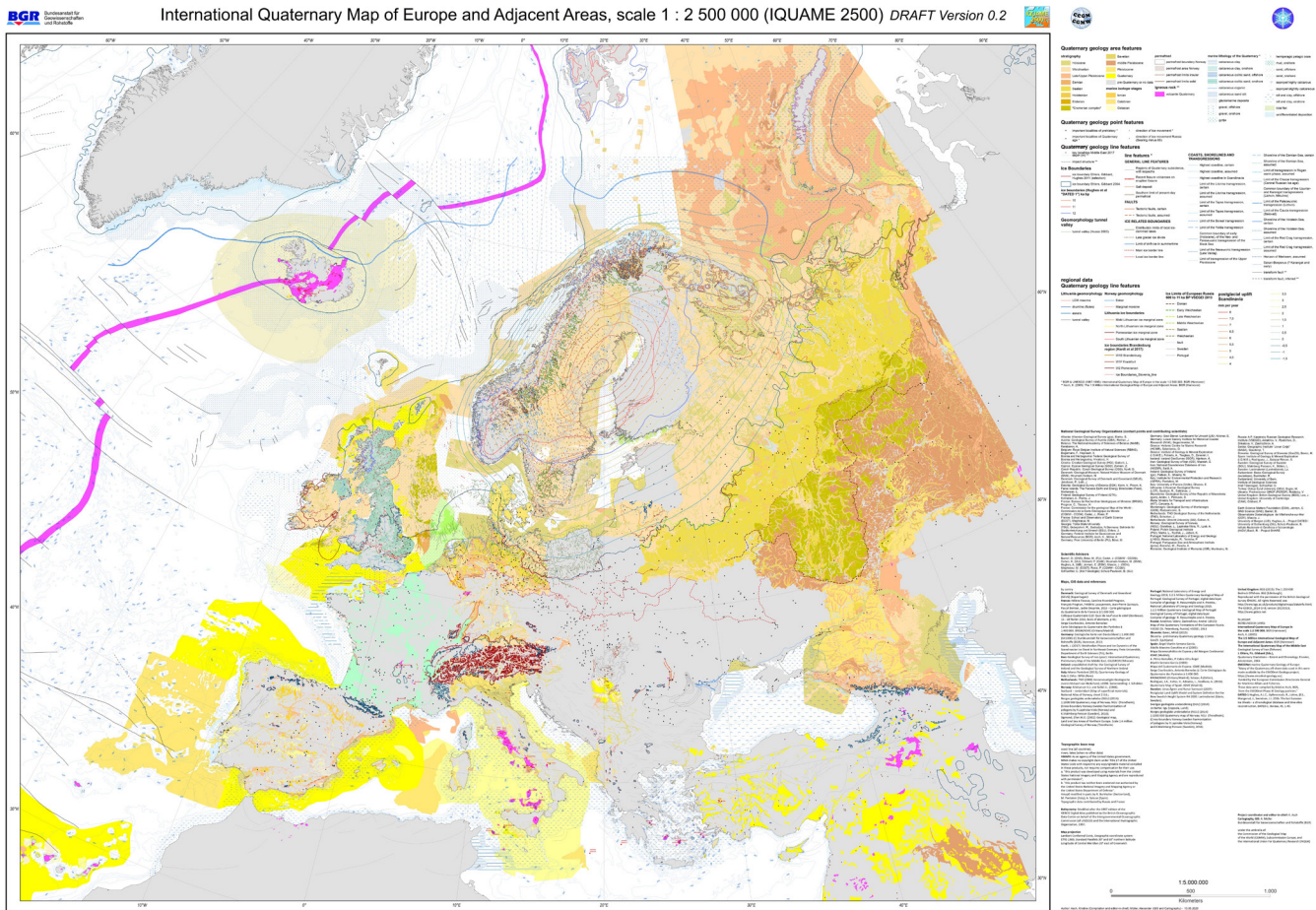


FIGURE 4: The current state of the Draft International Quaternary Map of Europe and Adjacent Areas (Asch 2020). The grey areas represent the pre-Quaternary geology and regions where data are missing.

combined, selected and cross-referenced across political boundaries. With that, it is intended to provide a major resource for researchers and students, as well as the public and users of spatial information for planning purposes.

THANKS

Thank you very much to the IQUAME community, the participating organizations, individual scientists and the advisors for their contributions. Without them, this project could not progress. Thanks also to the CGMW for their constant, tireless support and motivation and to INQUA for their support and appreciation. I also thank my fellow colleagues at BGR their foresight, tolerance and support in bringing this vitally important project in European integration to fruition and especially Alexander Müller for his excellent GIS-cartographic work. Finally, I would like to thank Professor Dr. Philip Gibbard for his helpful comments and proof-reading the English.

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Gaia Mattei

Project number: 2001P

NEPTUNE - NEW PROCEDURES AND TECHNOLOGIES FOR UNDERWATER PALEO-LANDSCAPE RECONSTRUCTION

Neptune project started March 30th 2020 (Figure 1) for the purpose of creating an interdisciplinary working group of young scientists aimed to develop multidisciplinary techniques to analyse and reconstruct past landscapes, presently submerged due to the postglacial sea-level rise. Special attention is paid to the technological content, considering that the recent technological innovation applied to geo-acoustic and remote sensing methods opened numerous new possibilities of high-resolution mapping of wide coastal areas, seabed morphologies and underwater archaeological structures.

To face the pandemic emergency posed by the coronavirus (COVID-19) outbreak, the NEPTUNE community will meet for the first time during an online meeting on September 3rd 2020. The online meeting will include two parts. The participants will briefly present their research activities (PART#1) followed by an online panel discussion coordinated by the Neptune's project leaders, concerning the open issues that the researchers normally face during their

activities (PART#2). The first result of this meeting will be the planning of a dedicated Special Issue in Quaternary International concerning the main Neptune topics.

This online meeting welcomes studies of early career researchers and PhD students concerning multidisciplinary and/or modern approaches to explore ancient submerged landscapes, geomorphological processes, human impacts and system responses, as well as issues such as landscape evolution, resilience and human adaptation. Themes may include the impacts of coastal dynamics and changes on human settlements, as well as the impacts of anthropic constructions on coastline evolution. Approaches involving the use of multi-scalar datasets are encouraged. In fact, Neptune scientific framework is placed in the context of regional and local scale studies on coastal landscape changes over the last 12 millennia. Such information is crucial to assess the potential impact of relative sea-level rise and to prepare the adaptation of

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coastal communities threatened by the ongoing climate changes.

Neptune is focused on the Mediterranean basin, but researchers coming from other geographic areas are welcome in order to provide a broader perspective on the open questions. For this reason, Neptune is directly connected with SPLOSH IFG, focused on the Southern Hemisphere. NEPTUNE is a progression of the MEDFLOOD and MEDFLOOD-MOPP projects, funded by the Coastal and Marine Processes (CMP) commission 2012-2019. The establishment of research collaborations resulting in numerous impactful publications from the previous two projects indicates the relevance and the scientific interest in the proposed topics. In this scientific context, the aims of NEPTUNE are to propose:

1. a multidisciplinary approach to underwater paleo-landscape reconstruction by means of innovative technologies integrated with well-established methods;
2. a methodological protocol for optimal high-resolution surveying suited to different bathymetric

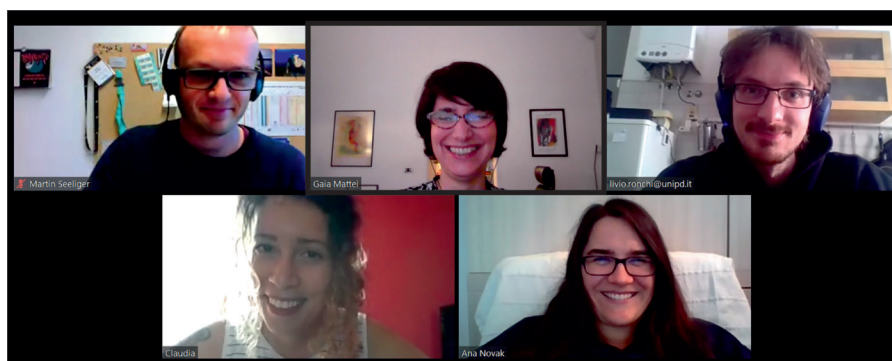


FIGURE 1: Online meeting of Neptune's leaders

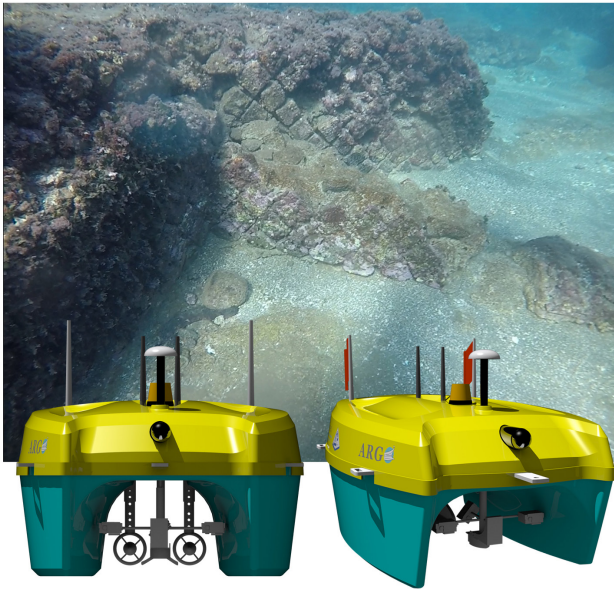


FIGURE 2: Marine survey of A Roman underwater archaeological site in the Gulf of Naples.

ranges, often corresponding to different time scales.

Neptune project activities are planned for the whole bathymetric range, starting from the early Holocene as the deepest environments, reaching the shallow water sectors where antique archaeological remains are present along the coasts of the entire Mediterranean.

In the framework of NEPTUNE, a series of four meetings favour the connection of researchers who actively study the Mediterranean and collect multiscale and multi-temporal datasets regarding the underwater physical environment useful to reconstruct past landscapes and their evolution.

During the first in-person meeting after the pandemic in Naples (Italy), the field surveys will be carried out in very shallow water sectors by means of robotic technologies designed and engineered in the Parthenope University laboratories (Figure 2). During these onsite activities, a multidisciplinary approach will be applied to the survey of underwater archaeological sites along the coasts of the Gulf of Naples, densely scattered of submerged archaeological remains of Roman period. The Gulf of Naples is one of the most populated Tyrrhenian

coastal sectors during Greek-Roman times. As described by the famous Greek geographer Strabo, the landscape beauty of this Gulf led the strong urbanization of the whole coastal area. In fact, it appeared as an uninterrupted sequence of luxurious villas and gardens. However, during the same period, this area was modified by extreme events such as the 79 AD eruption of Vesuvius and also by volcano-tectonic land movements related to the activity of the

Campi Flegrei volcanic area. The effects of these phenomena are well recorded along the coasts of Naples Gulf, where the interaction between exogenous, endogenous and anthropogenic factors is preserved in ancient relicts of the Greek-Roman landscape presently submerged.

The field activities aim at reconstructing natural and anthropogenic underwater landscapes in one or more of these sites by elaborating a multiscale dataset. The integrated marine surveys will be carried out by USV/ROV foreseeing the simultaneous use of geophysical and photogrammetric sensors according to the modern philosophy of multi-modal mapping. The participants will have the opportunity to assist and collaborate in data acquisition and post-processing phases.

The second meeting will be organized in Padova (Italy) and focus on

the surveying method in the offshore environment. It will be followed by a field trip to the Venice Lagoon as a modern analogue for the interpretation of the submerged morphologies. During the field trip, a demonstration on the use of a hand-auger will be provided as a simple but effective mean for sampling several meters of stratigraphy that can be correlated to the seismic signal, thus allowing the reconstruction of buried surfaces. These activities will be the starting point to address the discussion also on the methods for backshore surveying.

The third workshop is planned in Ljubljana and the activities will be focused on the 3D geo-modelling of underwater paleo-landscapes, and their changes through time since the Pleistocene/Holocene boundary. The fieldwork will be planned in the Gulf of Trieste on easily accessible shallow water sectors with the presence of archaeological and geological indicators of past sea levels in a karst setting.

A final workshop will be held in Frankfurt and will consist of a round table aimed to discuss all the results obtained in the 4 years of the project. Fieldwork will include training of sediment coring on a nearby lake on a floating raft to present and get used to this method of gaining sediment cores in near-shore environments (Figure 3).



FIGURE 3: The floating raft in action. Photo: Florian Steininger (Geography, University of Cologne).

Karen Gariboldi

Project number: 2002P

INQUA MARE - INtegrated QUAternary MARine REcords at Sensitive Latitudes

The "INQUA MARE: INtegrated QUAternary MARine REcord at Sensitive Latitudes" project (2020-2024) is a new scientific action in the frame of the Coastal and Marine Processes (CMP) Commission and of the Submerged Palaeolandscapes of the Southern Hemisphere (SPLOSH) International Focus Group. INQUA-MARE was conceived to specifically involve early-career researchers (ECRs) and developing-country researchers

(DCRs) studying Holocene sediments records from Arctica, Antarctica and Tropical regions in order to develop new scientific networks and collaborations with Senior Scientists (SS) working on the same topics. As the target areas of study are the most sensitive to climate change, INQUA-MARE is meant to bring together scientists developing their research on those specific areas, in order to meet, share and discuss scientific interconnections between areas, targeting the integration of data and knowledge on the recent evolution of the Earth's climate. During the INQUA-MARE workshops micropaleontologists, modellers, geochemists, sedimentologists, oceanographers and geophysicists will meet to discuss the pivotal drivers of oceanographic (e.g. the closure or opening of seaways) and atmospheric changes (e.g. those related to readjustment of marine currents), their feedback on climate and environmental characteristics, particularly addressing the timing of responses, having as main objective the definition of new reliable data necessary to model the future Earth's climate, through the promotion of new scientific collaborations.

workshops will be organised addressing the i) the Antarctic realm, ii) the Arctic realm, iii) the Tropical realms, and iv) the interaction between Polar and Tropical areas. The first two workshops will be held in Italy (in Trieste and Pisa, respectively), while the 3rd and the 4th workshops will be held in two of the countries of the DCRs involved in the project (Costa Rica and Tunisia).

INQUA-MARE workshops will develop considering:

1. the comparison and integration of the analytical data obtained by different research groups, encouraging their share through use of free online database (Pangea, GeoMapApp, Levitus, The World Data Centres, etc.);
2. the discussion on inter-laboratories standardisation of analytical procedure, with a special focus on dating methods and calibration;
3. the identification of unexploited existing sedimentary records (sediment cores) or survey datasets (e.g. oceanographic and geophysical data, etc.) which are stored in repositories/digital data banks and have not been studied yet, in order to ascertain possible additional dataset to study and

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In the frame of INQUA-MARE, 4



FIGURE 1: *Top: arctic landscape (Kongsfjorden, Svalbard, taken during the 2019 Norwegian Polar Institute annual monitoring cruise on board of the R/V Helmer Hansen. Photo: Viviana Gamboa). Bottom: tropical landscape (Manuel Antonio beach, Costa Rica. Photo: Karen Gariboldi).*

to identify critical areas still to be investigated. Also, we will identify samples which have already been analysed but may need further investigations applying modern instrumentations also through the promotion of collaborations between ECRs/DCRs and leading Institutions.

The workshop scientific discussion will address:

1. the interpretation of, for example, micropaleontological and geochemical proxies;
2. the definition of the state-

3. of-the-art about pole-to-pole teleconnections;
- the identification of Pacific versus Atlantic connection as responsible for the heat transport between the Polar areas, also through the identification of possible discrepancies between methods, results, process interpretation and scientific efforts previously made by the Scientific Community, and suggestions to overcome them.

All these topics will be faced during round table discussions, opened by key-talk presentations of Senior

Scientist(s), who will introduce the state-of-the-art on specific topic, and will help to define the main points that should be addressed for the discussion.

Beside the genuine scientific schedule, during the INQUA-MARE workshops, we will dedicate a session to scientific outreach, meant to stimulate the debate on the most efficient ways to present and disseminate scientific knowledge to the young generations.

Kimberley Davies¹, Aliyu Adamu Isa²

PASES - Past Socio-Environmental Systems Workshop 2020



Since August, 2019, just after the INQUA Congress in Dublin, preparations for the joint PAGES-INQUA workshop started. This was the outcome of a splinter meeting held during the INQUA congress in which some members of the INQUA's HABCOM and PALCOM, as well as PAGES attended. The workshop aims to facilitate scientific exchange between early-career researchers (ECRs) from a broad range of disciplines that work within the overarching theme of climate-environment-cultural change, a core of both INQUA (HABCOM and PALCOM) and PAGES's missions. This workshop will allow the development of positive inter-commission links as well as new PAGES-INQUA synergies within the ECR community.

So far, and in line with the workshop theme, organizers consisting

of ECRs from INQUA: Francesca Ferrario (University of Insubria, Italy; chair INQUA-ECR), Kimberley Davies (Bournemouth University, UK; INQUA HABCOM), Aliyu Adamu Isa (Ahmadu Bello University, Zaria-Nigeria; INQUA HABCOM), and Emuobosa Orijemie (University of Ibadan, Nigeria; INQUA PALCOM) are working with PAGES ECRs to organize and structure the workshop

sub-themes, and to participate by presenting papers. This platform enriches our ability as ECRs across different disciplines, to share innovative cross-disciplinary ideas for long-lasting societal impacts. The themes and keynote speakers include:

1. Novel techniques to uncover past human-environmental couplings - Simon Connor (Australian National University, Australia)
2. The whole is not the sum of the parts: synthesizing paleoclimatic, archaeological and paleo-ecological research - Yoshi Maezumi (University of Amsterdam, The Netherlands)
3. Socio-environmental systems in the anthropocene - Eugenia Gayo (Center for Climate and Resilience Research, University of Concepcion, Chile)

4. Human paleoecology of semiarid environments - César Méndez (Research Center for Ecosystems in Patagonia, Chile).

Other activities designed for the workshop include:

- Breakout groups, looking at the application of paleo-sciences to study socio-environmental systems that will address community-driven topic.
- Public events, discussions between Indigenous communities, local activists, interdisciplinary researchers, and communicators, to discuss motivations behind the overarching message that is promoted through current paleo-science research and opportunities for participants to explain their work to the public in an informal setting.

The workshop is currently scheduled to take place from 9 – 13 November, 2020 at the La Serena Archeological Museum, Center for Advanced Studies in Arid Zones (CEAZA), La Serena, Chile, although certain modifications are likely to allow for disruptions caused by the COVID-19 pandemic. See our [website](#) for more information.

AFFILIATIONS

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IFG 1702F

Holocene Global Landuse (HoLa) Activities for 2019

The IFG HoLa is working to aggregate data on human land use strategies during the Holocene, with priority given to 6kya, 4 kya, CE 1500 (1492 for the Americas). The IFG is composed of several geographical groups (e.g. Europe, North America) including official INQUA groups (e.g. Amazon and Africa), and it collaborates with many other teams backed by PAGES (e.g. PEOPLE3000) and individual projects and institutions covering most of the world. The main work of the IFG during 2019 was to 1) elaborate the data collected to date on land use from different groups; 2)

produce a per-capita land use (PCLU) database, which will be published in an open repository for public access; 3) update simulation outcomes of HYDE and KK10 with the new PCLU database (experiments with HYDE currently undergoing); 4) pursue regional developments of land use mapping. Part of the IFG actions also focused on augmenting the synchronicity between the land use working group and modellers involved with PMIP models (e.g. Harrison et al. 2020). The land use database structure is included in an open-access publication on the land use classification (soon to be

submitted). Also in this publication is a fully functional example of land use data for the Middle East at 6kya.

A key activity for the HoLa IFG has been the INQUA funded workshop “South Asia Land Use” organized at the University of Pennsylvania Institute for the Advanced Study of India in New Delhi on the 5th-6th March 2019, which was held as a joint event between the IFG and the PAGES working group, LandCover6k (LC6k) with a focus on land use dynamics. The workshop brought together 19 scholars with a diverse background in archaeology and palaeoecology from India, Europe and the USA. During the first day of the workshop, M. Madella (Universitat Pompeu Fabra) first introduced the HoLa initiative, the scope of the South Asia workshop was then discussed in presentations from M. Madella, K. Morrison (University of Pennsylvania) and O. Boles (University of Pennsylvania). The more general scope and methodology of the PAGES LC6k initiative were illustrated by K. Anupama (French Institute Pondicherry), while C. Petrie (University of Cambridge) gave a presentation on the current work in Haryana (India) that could be useful for prehistoric land use mapping in South Asia. At the end of the first day, there was a discussion session where participants were able to put forward suggestions and doubts about the work to be done. The second day was fully dedicated to gathering expert knowledge from the workshop participants and to



FIGURE 1: Participants discussing land use at the South Asia workshop organized in Delhi in March 2019.

transpose that knowledge onto maps at the 12 kya, 6 kya, 4 kya and 1500 AD time "slices". The participants were separated, according to their expertise and geographical area of work, into four groups each covering one or more of the time slices. To maintain uniformity of input, ideas and approach, some participants moved between groups. Each group was supplied with print-outs of a South Asia map base from the GIS database elaborated for the LC6k working group (land use) and the land uses, extrapolated from published and unpublished data, were plotted in colour according to the developed land use categories. Commentary related to the decision-making used to assign the different land use categories to specific areas in South Asia and a bibliographic database were also added to the maps.

The results from the workshop were extremely positive and the team was able to produce the first-ever commented expert knowledge maps of South Asian land use for four Holocene time slices (12 kya, 6 kya, 4 kya and 1500 AD). Work started in Delhi is continuing, with finalized maps of South Asia land use at 12kya and 6kya are now nearly complete (Figure 1). Conference calls between participants from the Delhi workshop as well as a visit by K. Selvakumar to Philadelphia aided this work significantly. A publication on the results of this work is currently in preparation. The maps produced in Delhi, and the associated commentary, will also be compared and merged with changes in population size reconstructed using summed probability distributions of radiocarbon dates. The approach will produce estimates of population in South Asia at the different time slices using kernel density techniques to extrapolate from site data.

Further discussions on South Asia land use were carried out during a parallel land use session organized at the PAGES funded workshop at Pondicherry in September 2019: Pollen based estimates of past land cover in South and Southeast Asia. Here the results of the Delhi workshop were expanded with new data from southern India and Sri Lanka added, thanks to the efforts of scholars working in those



FIGURE 2: Detail of preliminary land use classification in South Asia at 6kya.

regions (Figure 2).

The workshop on mapping Past Land Use in Africa was organized at Cambridge's McDonald Institute for Archaeological Research and Magdalene College and brought together 21 researchers from across the UK, Europe and Africa. The main aims of this meeting were to establish the nature and spatial-temporal coverage of existing datasets, and to foster collaborative efforts by which to fill in the gaps.

Several presentations on the first day of the workshop set the aims of the group: M Madella (Universitat Pompeu Fabra) described the rationale

of the land use initiative within HoLa and LandCover6k; O Boles (University of Pennsylvania) illustrated the classification system developed for identifying and recording land use types; M vander Linden (University of Cambridge) presented the example of Europe as work developed within the LandCover6k dynamics. Participants made short, informal presentations of their own work on land use in the African past, and explained how their data might contribute towards the collaborative syntheses we are developing. This was approached region-by-region: C Broodbank/G Lucarini discussed the comprehensive database of radiocarbon dates compiled for North Africa while

K Manning and S Biagetti past demography and land use strategies in the Sahara where approached from a resources perspective. In contrast to these geographically extensive studies, J Humphris gave a site-specific description of socio-ecological dynamics at Meroe in Sudan. O Aleru presented a detailed site database for Nigeria, and N Khalaf showed how satellite imagery was used to enhance archaeological survey data in Benin. L Phelps gave a presentation on mapping ecological niches and the kinds of land use that might be present in the particular environmental contexts with an almost continental perspective. E Ndiema and O Boles presented site databases from Kenya and the wider region, together with the initial results of developing them into land use maps; F Sulas ranged far and wide with examples of land use data from Ethiopia, Zambia and South Africa. Southern Africa has seen already important dynamics on targeted efforts for land use mapping; M Widgren and M Hannaford presented maps for the time slice 1500-1850 that were generated using archaeological and documentary evidence. T Russell and M Manyanga discussed archaeological data that could be used to cover earlier periods with respect to the XXI century,

and S Merlo with M Mvimi described similar opportunities in Botswana and Namibia. Finally, E Loftus presented a new database of radiocarbon dates for southern Africa that includes useful tools for exploring past human activity at a regional scale.

The most pressing concerns arising from the first day was related to how to fit the diverse land use strategies seen in Africa – both in the past and the present – into the necessarily narrow parameters of the developed classification system. During the second day, participants broke into regional groups to assess how the individual datasets might be integrated and to produce preliminary and very basic maps of land use for several important time periods, using the data at hand. This exercise was intended not as a definitive attempt at mapping, but in order to establish where the gaps in our data lie and what measures might be taken as we move forward. Nevertheless, most sub-groups sketched preliminary maps.

During HoLa 2019, M Madella, as the coordinator and representative of the INQUA initiative, also participated in the European meeting in Gaienhofen-Hemmenhofen (Germany) to update the group on the general latest developments, maintain homogeneity of developments between groups and acquire expertise developed by the European group to be transferred to the South Asia Delhi meeting. The first morning of the workshop was dedicated to a general introduction on land use activities (M Madella and N Whitehouse), an explanation of the methodological approach used by the land use initiative (M vander Linden) and a discussion on the available data and problems for implementing the methodology. In the afternoon there was a presentation on per-capita land use estimation for building better climate models, an example of work on land use in the Alpine foreland (T Baum) and more generally of the European group (J Hilbert). The second day was dedicated to a discussion on the maps for climate modelling with information on cultivated plants and domestic animals and how to represent the proportions of the main

crops and domestic animals as well as a discussion on data policy, copyright issues and conditions for data release to the global group.

The European group also sent a representative (N Whitehouse) to the LC6k / CRANE meeting on land use in the Middle East to create shared dynamics and methodologies for the two land use groups. N Whitehouse presented “European LandCover6k land use mapping for Europe at 6000 BP”. The European group was also represented at the INQUA conference in July 2019 with the presentation “European land-use at 6000 cal BP: from on-site data to the large-scale view” (N Whitehouse).

PROJECT LEADERS

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Tom Johnson

PALCOM IFGs and Projects for 2020

We are pleased to announce that three strong proposals submitted to PALCOM in 2019 have been approved by the INQUA Executive Committee for funding in 2020. An IFG proposal entitled "Terminations 5 – 0" was submitted by Ruza Ivanovic (University of Leeds, UK), Lorraine Liesecki (University of California Santa Barbara, USA), and Heather Stahl (ETH, Zurich) to examine the feedbacks linking the different components of the Earth's system affecting the dynamics of deglaciations, i.e. the interaction between ice-sheets, climate, ocean circulation and carbon cycle. The knowledge gained from an understanding of the processes and feedbacks involved in the last five glacial terminations will help estimate the rate of future climate change, "Termination zero", albeit under the considerably different driver of our present deglaciation. The goal of the IFG on Terminations 5-0 is to bring together scientists with different expertise (e.g. experts on marine and lake sediment records, ice core records, cave deposits, and sea-level with ice sheet, climate and carbon cycle modelers) to (1) improve our understanding of the sequence of events occurring during the last five terminations, and (2) highlight key processes and feedbacks within the Earth System that led to abrupt changes.

Within the T 5 – 0 IFG a new Project was funded, entitled, "Glacial Terminations: Processes and Feedbacks," led by Laurie Menviel (University of New South Wales, Australia), Emilie Capron (Niels Bohr Institute, Denmark), and Lise Missiaen (University of New South Wales). This project will bring together the latest results from modelling and data acquisition/synthesis efforts for the

previous two glacial terminations to understand the processes that shaped these two time periods, involving scientists with expertise in marine and lake sediment cores, speleothems, ice core records, sea-level changes, as well as climate and carbon cycle modelling to share their latest research in the field. The goal of the Project is to improve our knowledge of the feedbacks and processes occurring during the last two terminations, for which we have the best records as well as new syntheses of observational data and new multi-model simulations. The lasting impact of glacial terminations on the following interglacial period will also be studied. A workshop had been scheduled to be held in Cassis, France in September 2020, but this has now been put off due to the COVID-19 pandemic until a safer date can be established.

Another Project funded by PALCOM is "Carbon in Peat on Earth Through Time: Tropical Peatland Processes and Ecosystem Services," an offshoot of C-PEAT Phase II – PAGES, proposed by Sakonvan Chawchai (Chulalongkorn University, Bangkok), Susan Page (University of Leicester, UK), David Beilman (University of Hawaii Manoa, USA), Angela Gallego-Sala (University of Exeter, UK), and Julie Loisel (Texas A&M University, USA). Tropical peatlands are essential targets for research as scientists have recently discovered their extent is much larger than previously thought. Additionally, tropical peat ecosystems are vital for many people's livelihoods, providing clean water, food (fish, fruit, etc.) and other sources (wood etc.). Anthropogenic pressures on peatlands can substantially alter this provision. For example, fires in drained southeast Asian peatlands have been labelled "a crime against humanity" due to the haze and pollution they cause, while

releasing vast amounts of carbon to the atmosphere. These anthropogenic impacts and climate forcings on peatland ecosystems have resulted in ecological changes, some of which are stored in the stratigraphic record. The project will focus on researching this record to better understand tropical peatlands. Team leaders are interested in

1. developing a better understanding of the palaeo-peatland records in tropics and their associations with recent climatic changes;
2. connecting our work with land-use change analysis;
3. developing a framework of ecosystem services along with stakeholders concerned with peatland resource management.

A workshop had been scheduled for this past May in Bangkok, but of course had to be cancelled due to COVID-19. The leaders will consider holding this workshop at some future date when it is safe to do so.

While workshops have been cancelled for the time being, the leaders of the PALCOM IFG and Projects are encouraged to reach out to their communities, particularly to ECRs and DCRs, to pursue their scientific goals as effectively as possible, given the challenges of COVID-19. We have many ways to communicate effectively under the circumstances, and many of the goals of INQUA IFGs and Projects can still be accomplished in the absence of workshops.

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An outlook on SACCOM new activities

SACCOM continues to help promote and co-ordinate international cooperation and integrate the unification of regional and national chronostratigraphic nomenclature through stratigraphic methods, and disseminate stratigraphic knowledge. Since the INQUA Congress in Dublin last July, SACCOM members have been busy developing new initiatives for the current Inter-Congress period. AD 2020 has been particularly challenging as we face the unique issues associated with the COVID-19 pandemic. Despite these unprecedented times, SACCOM is continuing its mission to study the Quaternary period through Quaternary stratigraphy and chronology, and is providing a forum to discuss and establish stratigraphic investigations and classification throughout the world. The Executive Committee of INQUA recently approved support for two international focus groups, a working group, and a project as part of SACCOM's activities.

Both international focus groups build on their work during the last Inter-Congress period. *International Focus Group 1709, Ponto-Caspian Stratigraphy and Geochronology (POCAS)*, led by Valentina Yanko-Hombach (Avalon Institute of Applied Science, Winnipeg, Canada) will continue to study the Quaternary geology of the Ponto-Caspian region. POCAS specifically aims to bypass linguistic/political/disciplinary boundaries, linking continents (Europe and Asia) more closely, and encouraging East-West dialogue and cooperation among Quaternary researchers.

Pierluigi Pieruccini (University of Torino, Italy) is leading *International Focus Group 1612F, Database on Terrestrial European Stratigraphy*

(DATESTRA). DATESTRA aims to improve and complete their database on terrestrial stratigraphy that was designed for sites with stratigraphic importance across Europe through a series of workshops and meetings.

The many decades of activities of the loess and pedostratigraphy community continue as a working group, *Loess and Pedostratigraphy 2007WG*, led by Shiling Yang (Institute of Geology and Geophysics, Chinese Academy of Science, China). Their immediate goal is the establishment of a network (LEADER) to bring together young loess scholars from many Eurasian countries and provide them opportunities for more intensive development of their research skills and general knowledge.

In coordination with the Subcommittee on Quaternary Stratigraphy (SQS) of the International Commission for Stratigraphy (ICS), SACCOM will help support *The Gelasian GSSP revisited – an international field workshop (INQUA Project 2006P)* led by Martin J. Head Brock (University, Canada). This international field workshop will help organize an international research project GELSTRAT, to revisit the Gelasian/Pleistocene/Quaternary GSSP at Monte San Nicola in Sicily. Initially planned for June 2020, the working group is likely to run this meeting in June 2021.

All these projects will involve workshops, symposium and fieldwork. These activities will involve several hundred scientists and more than one hundred early career researchers from distant parts of the world. However, given the current challenges many of the planned activities are postponed or reorganized to allow their participants to continue their activities in the future.

Details of [SACCOM's activities](#) and updates are available online.

The Commission's activities will aim to span the whole of the Quaternary period and continues to identify critical times to focus on for the benefit of the broader community. SACCOM is particularly aware of the need for societal relevance and outreach, diversity and inclusion, supporting early career researchers, and training the future workforce. We welcome creative ideas of how to bring our community together to help promote and enhance our research during these tough times. Please reach out to the [Commission Officers](#) to provide suggestions or opportunities to advance our commission's goals. And please join [SACCOM](#).

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The new TERPRO leadership and upcoming activities

At the INQUA Congress in Dublin, a new TERPRO leadership was confirmed for the inter-congress period. We are also very happy to have a new TERPRO advisory board.

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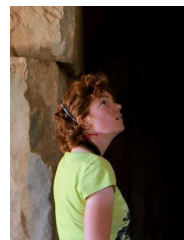


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NEW TERPRO PROJECTS

With the end of the last inter-congress period, all previous focus groups (IFGs) and projects terminated and new groups were formed. Within TERPRO, there are now two IFGs, one project, and two working groups. If you are interested in joining any of the

groups, projects, working groups or activities, please get in contact with the leaders or drop us an email and we will make sure to connect you with the community (terpro@inqua.org). We had a very interesting meeting and workshop program for 2020, but of course the circumstances forced us to change most of the plans.

INTERNATIONAL FOCUS GROUPS

TPPT (Terrestrial Processes Perturbed by Tectonics)

Leader: Stéphane Baize, IRSN, Paris; stephane.baize@irsn.fr

Objectives: We will cover the general topic of punctuated landscape instability, based in neotectonics but also considering the competing non-tectonic factors. The space and time scale of the various drivers may overlap, making the geomorphic effects of (say) a minor climatic fluctuation, or of a single extreme meteorological event, similar to that from a large earthquake. Distinctive criteria will be sought via case histories.

Scheduled 2020 Activity:

Workshop on Paleoseismology, Active Tectonics, and Archaeoseismology (PATA Days), Hornitos, Chile, Postponed, new dates to be decided; Organizer- Gabriel Gonzalez; ggonzale@ucn.cl

HYPEDAE (PalaeoHYdrological, -PEDological and -AEolian processes shaping Quaternary landscapes)

Leader: Alessandro Fontana, University of Padua; alessandro.fontana@unipd.it

Objectives: IFG focuses on continental environments, where the Quaternary evolution has been mainly driven by depositional and erosive phases, varying in time and space, and alternating with less dynamic periods, allowing for soil formation. Goals are (1) to stimulate progress in each of the involved disciplines, i.e. palaeohydrology, aeolian dust research and paleopedology, and (2) to bring these disciplines together, e.g. at interdisciplinary conference sessions and workshops to promote the interdisciplinary interpretation of complex continental archives.

Scheduled 2020 Activity:

Paleosols, pedosediments and landscape morphology as archives of environmental changes. 2 days

Symposium in Barnaul (Siberia) and 6 days fieldtrip in the Russian Altai, 15–23 August 2020. Organized by Maria Bronnikova (Russian Academy of Sciences, Moscow) et al. Postponed until August 2021

PROJECTS

EDITH (From Earthquake Deformation to SHA)

Leader: Franz Livio, Univ. of Insubria, Como, Italy; franz.livio@uninsubria.it

Objectives: to address missing knowledge on the relationship between crustal deformations in the interseismic period, strain release during coseismic and post-seismic periods, and to upscale these results with long-term deformation rates. The specific final target is to provide geological constraints to SHA and to pure probabilistic approaches to fault displacement hazard assessment studies (FDHA).

Scheduled 2020 Activity: Kickoff Meeting, date & time to be decided

WORKING GROUPS

Paleopedology: Leader- Maria Bronnikova, Russian Academy of Sciences, Moscow; mbmsh@mail.ru

Objectives: Paleopedology Working Group integrates researches dealing with polygenic soils and paleosols as one of the paleoenvironmental proxies. We are willing to correlate different proxies for more evidenced reconstructions of past climate change and landscape dynamics and for a deeper understanding of multiphase soil system within geosphere.

Scheduled 2020 Activity: see HYPEDAE Focus Group

Peribaltic: Leader- Robert J. Sokołowski, Inst. of Oceanography, University of Gdańsk, Poland; sokolowski@ug.gda.pl

Objectives: The Peribaltic Working Group is a scientific community from 12 countries located in the area of the Pleistocene Scandinavian Ice Sheet (SIS) influence. Our members study:

1. Chronology, dynamics and scope of SIS in the Pleistocene
2. Reconstruction of climate change and depositional environments based on mineral and organic

deposits.

3. alaeoecological studies and interaction of natural environments with early human activities.
4. Palaeoseismic activity in the Quaternary.

Scheduled 2020 Activity: Annual symposium of Peribaltic Working Group, organized by Prof. Dr. Albertas Bitinas from Klaipėda University, Lithuania (albertas.bitinas@apc.ku.lt), and Dr. Maris Nartiss from Faculty of Geography and Earth Sciences, University of Latvia. Originally scheduled for 9-13 May, 2020 in Lithuania and Latvia, but postponed until (tentatively) 4–10 October 2020. Final decision to be made in early September 2020.

If you are interested in joining TERPRO or if you want to learn more about us, please visit our [website](#). We will keep you updated with our blog and meeting calendar, and we will also send out a newsletter with the latest developments. Make sure to also follow us on [Twitter](#).

Stay safe and happy researching!

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Association of Quaternary Researchers Bringing together the Quaternary Researchers in the Indian subcontinent



India is a land of rich heritage and great geological, biological and cultural diversity. One of the world's three oldest civilizations, this region is a collage of many geological terrains and a mosaic of faiths, traditions, and languages. A highly populous democracy of the world today, India is spread over an area of 3.2 million km², with the Himalaya to the north, the escarpments of the Western Ghats towards the western margin of the Indian peninsula fringed by the Arabian sea, the Indian Ocean towards its southern face and the Bay of Bengal in which drain some large river systems to the east. India is grouped into several distinct natural regions.

Some of these are:

1. Himalaya Mountains
2. Indus-Ganga-Brahmaputra Plains
3. Indian Peninsula
4. Arid West
5. Shoreline and Islands

The Indian monsoon is a unique climatic system in the world and constitutes one of Earth's most dynamic expressions of ocean-atmosphere interactions. Although monsoons dominate the Indian landscape, India exhibits all major climates of the world, ranging from hot tropical in the south to temperate and alpine in the north, due to the large variation in altitude (0 to > 8000 m). Consequently, India nurtures large bio-diversity regions in the sub-continent where flora and fauna have flourished preceding and during the Quaternary period. The variations in the monsoon strength during the Quaternary on different timescales have largely determined the geomorphic history of the Indian sub-continent. In the last 4-5 decades, Quaternary studies in India have mainly dealt with continental and offshore palaeoclimate records, and attempts have been made to reconstruct the variations in the monsoon-induced rainfall, fluvial runoff, and related aggradation and erosion. Quaternary studies have also focused on the advances

and retreat of glaciers in the Himalaya and the Karakoram Mountains, the dune building activity and drainage reorganization in the Thar Desert, neo-tectonic activity in the Himalaya Mountains, the foreland basin and the Peninsular region, eustatic changes along the coast, human-climate relationships and archeological records.

The Indian subcontinent uniquely encompasses an array of Quaternary-climate-tectonic-surface processes from the Himalayan orogeny, the third pole, the foreland; via the Indian shield; the river systems; the rain-shadow zones of Thar Desert and Ladakh, to the long coastline. The large river drainage basins of India have been a witness to numerous social, agricultural, and anthropological events from pre-history to modern eras.

Quaternary researchers from the Indian subcontinent are involved in the Quaternary fields of studies since many decades. Indian researchers are known for their contributions in various aspects of Quaternary studies and many are recognized globally. The involvement of various Educational Institutions and Research Organizations in India has developed this field manifold and taking it up to global standards and repute. Many of the research work in this region was carried out in close collaborations with international experts of Quaternary sciences creating milestones in the history of Quaternary Research work carried out in India. The continued efforts of Quaternary researchers revealed the extensive wealth of information and knowledge hidden in the Quaternary strata of the Indian subcontinent. Though working hand in hand, these researchers are not grouped under a single association of Quaternary Researchers in India amalgamating the large pool of workers involved in Quaternary Research under a single frame of association and/or scientific group. The groups working on different topics of the region exchanged ideas and opinions through various platforms but coming together as one single group encompassing the diversified aspects of Quaternary Research had not begun. But following the same path all these national level researchers have finally witnessed the remarkable moment of the Association of Quaternary Researchers (AOQR) being formed in the year 2019. This milestone event happened at the Birbal Sahni Institute of Palaeosciences Lucknow where the seeds of AOQR are sown. The AOQR, which was the dream of many Quaternary Researchers in the Indian subcontinent, was registered as an



FIGURE 1: Founder Members of the Association of Quaternary Researchers, at Birbal Sahni Institute of Palaeosciences, Lucknow, India.

Association under The Societies Act of India, 1860, [Act No. 21 of Yr. 1860] with its Headquarters at Birbal Sahni Institute of Palaeosciences (BSIP), 53-University Road, Lucknow, Uttar Pradesh, India on December 12, 2019. This beginning involves the hard work of many members of the Indian Scientific Community and formally includes the current President Dr. Vandana Prasad, BSIP, Lucknow, who has begun this journey of AOQR.

This start also involves the Vice-President, Dr. Pradeep Srivastava, Wadia Institute of Himalayan Geology, Dehradun; Secretary, Dr. Binita Phartiyal and Treasurer, Dr. Santosh K. Shah both from BSIP, Lucknow. The other founder members are Prof Satish Sangode, SBP University, Pune; Dr. K. Anbarasu, National College (Autonomous), Tiruchirappalli; Dr. Vandana Chaudhary, Ministry of Earth Sciences, New Delhi; Dr. Rahul Mohan, National Centre for Polar and Ocean Research, Goa; Dr. Parth Chauhan, ISSER Mohali and Dr. Rakesh Chandra from University of Kashmir, Srinagar (Fig. 1). All ten founder of this national association, expertise in, various disciplines of Quaternary Sciences and are committed to their duties towards the Association as well as the development of the subcontinent Quaternary sciences and showcasing and sharing it to the global community.

The association is at a very first stage and still making its course towards its growth in India. We have just started to comprehend our tasks and future goals and organizations such as INQUA shall always be looked upon for the generous support and appreciation for the growth and development of AOQR as a true and successful Association of Quaternary Researchers in the Indian subcontinent. AOQR is committed towards the overall ascent of the Quaternary research in the Indian subcontinent, which is unique in its setting, geology, populace, and inter- actions between all its spheres. The historically high population density in this region leads to long-term feedbacks between industrial activities and

climate. Pre-serving few of the oldest human-climate interaction records this subcontinent is an ideal observatory to study long and short-term earth interactions and their input to climate change of the entire ~2.6 Ma time span.

As a preliminary initiative the AOQR has begun publishing a newsletter named 'Quaternary Chronicles'. The 'Quaternary Chronicles' is a quarterly online newsletter of the AOQR publishing news on the events on the Indian subcontinent with Perspectives, list of PhD thesis awarded, latest research papers published and upcoming conferences and workshops. It is an initiative of the Early Career Researchers involved in the same.

AOQR is enthused with an objective to organize regular meetings, national and international conferences, field workshops, laboratory trainings, brainstorming sessions and open panel discussions from time to time. The Quaternary timescale is Dynamic and the Indian continent is Diverse, hence both these D's have to be dealt with a vision encompassing the large spatio-temporal scale of the research prospects in this region. The formation of the association was extremely necessary to bring the vigor and dynamism under one banner. The association aspires of providing a new dimension to the Quaternary researchers of the subcontinent. Affected by the COVID19 lockdown the activities of the association have been delayed but the enthusiasm of this Quaternary family will take shape once the situation is normal.

AFFILIATIONS

¹Secretary AOQR, Scientist 'E'

Birbal Sahni Institute of Palaeosciences, Lucknow, U.P. India

²Woman Scientist, ECR PALCOM Commission INQUA (Secretary ECR INQUA)

Birbal Sahni Institute of Palaeosciences, Lucknow, U.P. India

SLOVENIA

6th Regional Scientific Meeting on Quaternary Geology: Seas, Lakes and Rivers - Postponed to autumn 2021 -

After a successful meeting in Croatia in Starigrad-Paklenica in 2017, we would like to invite you to Slovenia to the 6th Regional Scientific Meeting on Quaternary Geology (6th RMQG): Seas, Lakes and Rivers, which will take place in Ljubljana and in its broader region. The meeting was originally scheduled for October 7th through 10th, 2020, but was recently postponed to autumn 2021 due to coronavirus pandemic. The new date and corresponding deadlines will be soon posted on the [6th RMQG website](#).

The meeting is dedicated to researchers working on Quaternary geology, geomorphology, stratigraphy, and related subjects. The meeting is primarily intended as an opportunity to bring together researchers working in the

Adriatic, Alpine, Dinaric and Pannonian regions, however, participants more involved in other regions are also warmly welcomed. The theme of the meeting "Seas, Lakes and Rivers" will be the focus of keynote lectures and the field excursion. Participants are kindly encouraged to present their work related to the theme of the meeting or other Quaternary topics.

ORGANIZERS

Slovenian national INQUA committee (SINQUA), Croatian national INQUA committee, Geological Survey of Slovenia (GeoZS), Institute of Archaeology & Karst Research Institute of the Research Centre of the Slovenian Academy of Sciences and Arts (ZRC SAZU), Faculty of Natural Sciences



FIGURE 1: Soča Valley in Most na Soči, affected by exchanging glacial and fluvial processes and by mass wasting phenomena.
Photo: Petra Jamšek Rupnik

and Engineering at the University of Ljubljana (NTF UL), CNR - Institute of Geosciences and Earth Resources in Padova (IGG), University of Padova (UNIPD), CNR - Institute of Environmental Geology and Geoengineering, Unit of Milano (IGAG), Institute of Quaternary Paleontology and Geology of the Croatian Academy of Sciences and Arts (HAZU), Croatian Geological Survey (HGI), Faculty of Science at the University of Zagreb (PMF), Faculty of Mining, Geology and Petroleum Engineering at the University of Zagreb (RGNF), Archaeological museum of Istria (AMI), Flinders University in Adelaide, Australia, Slovenian Geological Society (SGD), Geomorphological Society of Slovenia (GMDS), Italian Association for Quaternary Research (AIQUA), Faculty of Arts at the University of Ljubljana (FF UL), Marine Biology Station Piran at the National Institute of Biology (NIB).

PROGRAM OUTLINE

- Day 0 – Evening icebreaker.
- Day 1 – Opening ceremony, keynote lectures, participant lectures, poster session.
- Day 2 – Keynote lectures, participant lectures, poster session, closing ceremony and social evening.
- Day 3, 2020 – Field excursion (overnight).
- Day 4, 2020 – Field excursion (return to Ljubljana).

KEYNOTE LECTURES

- Branko Čermelj (NIB): The recent sediments of the Gulf of Trieste, the most northern part of the Adriatic – An overview of the last 5 decades of the biogeochemical and sedimentological research.
- Andrej Gaspari (FF UL): Underwater archaeological investigations in Slovenia (the Slovenian sea and Ljubljana moor).
- Nikolina Ilijanić (HGI): Paleolimnology of Holocene karst lakes along the Eastern Adriatic coast.
- Ljerka Marjanac (HAZU): Pleistocene glacial lakes in Croatia.
- Slobodan Miko (HGI): Post-glacial sea level rise and submerged landscapes of the Eastern Adriatic Sea.
- Roberta Pini (CNR, IGAG): LGM to Lateglacial vegetation history and climate variability documented in the paleoecological record from Lake Fimon (northern Italy): what sensitive archives tell us about the past.
- Nadja Zupan Hajna (ZRC SAZU): Sediments of a sinking river in karst over time: Škocjan Caves as a case study.

FIELD EXCURSION

Two-day field excursion visiting Quaternary marine, lacustrine and fluvial sites in Slovenia, Italy and Croatia will be guided by: Maja Andrič (ZRC SAZU), Nina Caf (ZRC SAZU), Andrej Šmuc (NTF UL), Petra Jamšek Rupnik (GeoZS), Giovanni Monegato (CNR, IGG), Alessandro Fontana (UNIPD), Cesare Ravazzi (CNR, IGAG), Jernej Jež (GeoZS), Ana Novak (GeoZS, NTF UL), Nikolina Ilijanić (HGI), Slobodan Miko (HGI), Katarina Jerbić (Flinders U.), Ida Koncani Uhač (AMI), Dea Brunović (HGI), Ozren Hasan (HGI), Igor Felja (PMF).

On the first day of excursion we will first stop at lake Bohinj where the lake sediments recorded Holocene seismic



FIGURE 2: The oldest archaeological site in Zambratija Bay, a submerged prehistoric pile-dwelling settlement which was in use between around 4200 and 3700 years BC. Photo: Lõiç Damelet

activity, vegetation and erosion history and the human impact on the environment. At Most na Soči we will see a profile of glaciofluvial and glaciolacustrine sediments and discuss the mechanism responsible for their deformation. Near Gorizia we will visit the Lateglacial terraces which formed in the Soča LGM fluvioglacial fan. At the Renče clay pit we will observe the sedimentary succession which contains one of the best preserved palaeovegetation records of the Alpine LGM.

We will start the second day of the excursion at Tapogliano with an outcrop of the LGM to present day alluvial sequence of the Torre River which contains LGM paleosol. Near Grado we will observe continental LGM dunes which later interacted with Lateglacial fluvial and Holocene lagoonal environments. On the NE part of the Gulf of Trieste we will discuss the post-LGM transgression and the change from fluvial to marine sedimentary environments in the gulf. In the Zambratija bay we will present the latest archeological and paleoenvironmental findings regarding the studies of the prehistoric pile-dwelling settlement, which was submerged by the advancing transgression. Lastly, we will visit the Mirna river valley where transgressional depositional facies were prograded by the Mirna intra-estuarine delta.

For more information please visit the meeting [website](#), [FB](#) or [Twitter](#) accounts. We are looking forward to seeing you in Ljubljana!

On behalf of the Organizing and scientific committee,
 Petra Jamšek Rupnik (chair)
 Ana Novak (vice-chair)

CH-QUAT - SWITZERLAND

A look back on 2019 highlights in Switzerland

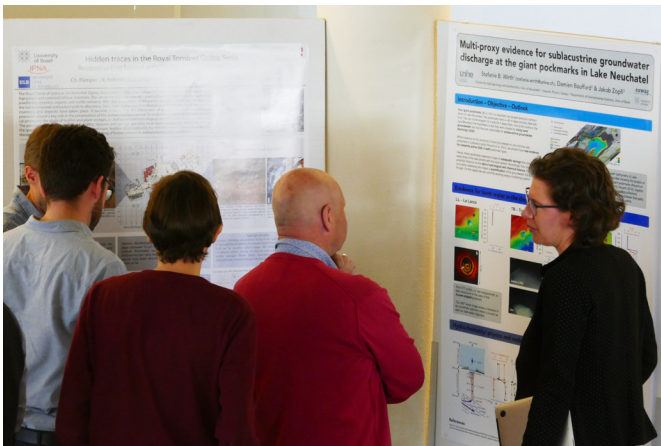


FIGURE 1: Members of CH-QUAT exchange knowledge during the poster session and coffee break. Photo: C. Pümpin.

The Swiss Society for Quaternary Research (CH-QUAT) represents a community of scientists, as well as Quaternary enthusiasts, from diverse backgrounds and multiple disciplines that deal with the Quaternary period (last 2.6 Ma of Earth History) and focus on the aspects concerning humans, the environment and climate interactions. An annual meeting, excursion and reoccurring session at the Swiss Geosciences Meeting, represent the three focal points of the year where we provide a platform to exchange knowledge, ideas and a chance to connect with like-minded students, scientists, and professionals from governmental institutions, private companies, and the wider public.

The CH-QUAT year started with the annual meeting, taking place at the University of Basel (Switzerland). The topic, "Anthropocene", focused on human impact during the Quaternary. The program featured a series of invited speakers presenting the interaction of humans with nature, the effect of the environment on humans, and the archives of these interactions. In addition, students and young scientists presented their ongoing research in a poster session.

Each year, an educational excursion is organised in collaboration with experts, to provide a stimulating experience for scientists in various phases of their careers. Thanks to the CH-QUAT board members, Dr. M. Luetscher and Dr. S. Wirth, in collaboration with the Swiss Institute for

Speleology and Karst Studies (SISKA), CH-QUAT explored the Karst environments of the Swiss and French Jurassic Range from Processes to Records. A thrilling two-day adventure that started in the hidden Dolines and Karrens of Vaud near the "Naturpark Jura Vaudois". A breath-taking hike through landscape evolution and Karst Geomorphology, which ended diving into a cave to explore Speleogenesis and erosion patterns. Day one ended with a tour of the "Grottes de Vallorbe", known for its expansive Karst records. Day two began in the Ice cave "Glacière de Monlesi" one of the larger ice caves found in the Jurassic Range carrying approximately 10,000 m³ of permanent ice. The journey continued to the "Grotte de Môtiers" to examine vermiculations, a pattern on the rock surface that is likely produced by bacterial activity, similar to the Lascaux Cave in France. The last cave, Cotencher, a Palaeolithic site, allowed a view on lithic artefacts and faunal remains as well as evidence of a local glacier, present 70 ka ago. The excursion ended in Twann. Firstly, with karst hydrogeology, where construction had to be adapted around important and complex karst conduits, draining the catchment area of the Chasseral and secondly with a brief wine tour that examined the different geological substrates. A jam-packed and thrilling excursion.

The International Union for Quaternary Research (INQUA) Congress, a top event for all Quaternary



FIGURE 2: Christian Schlüchter receives recognition for his nomination for the INQUA Honorary Life Fellows Award. Photo: S. Wirth.



FIGURE 3: J. Pierre-Yves explains the karstic environment of "Cascade de Môtiers" and the neighbouring "Grotte de Môtiers" to the participants of the excursion. Photo: L. Eggenschwiler.

scientists, also took place in Dublin. In addition to sending representatives on behalf of CH-QUAT, President N. Akçar and Webmistress S. Wirth, CH-QUAT were able to provide funding to four early career researchers. However, our most cherished achievement this year was the nomination and recognition of Christian Schlüchter for the INQUA Honorary Life Fellows award. Congratulations!

CH-QUAT also provided students and early researchers the chance to receive funding to present their research at different conferences and encouraged them to contribute to the Quaternary Session at the 17th Swiss Geoscience Meeting (SGM) 2019 on November 22-23rd in Fribourg (Switzerland). The CH-QUAT annual open session "Quaternary environments: landscapes, climate, ecosystems, human activity during the past 2.6 million years" presented 13 talks and 24 posters during the session. SGM is held every year, shifting between various cities in Switzerland. The 18th SGM is expected to be held on November 6th & 7th, 2020 in Zürich. We hope you will join us to catch up on all the latest Quaternary research in Switzerland.

For up-to-date information on CH-QUAT events, please visit our [website](#). You can also follow us on Twitter [@ChQuat](#).

Loren Eggenschwiler
CH-QUAT secretary

AIQUA - ITALY

AIQUA annual Assembly 26 June 2020

AIQUA (Associazione Italiana per lo studio del Quaternario) is organising its annual Assembly and conference as a [virtual online meeting](#). Invited talks will be delivered in English or Italian. The conference will be held June 26, starting at 9 AM (CEST). You can join using the [GotoMeeting online platform](#). For more info visit our [website](#).



- 9.15-9.30: **Official opening**
- 9.30-9.50: **Sourav Saha** (Earth, Planetary, and Space Sciences University of California, Los Angeles). Timing and extent of Holocene glaciation in the Himalaya and Tibet
- 10.00-10.20: **Tom Higham** (ORAU, School of Archaeology, University of Oxford). Unravelling the chronology of Neanderthal disappearance.
- 10.30-10.50: **Federica Badino** (ERC-SUCCESS, Dipartimento di Beni Culturali, Università di Bologna). Registration of mid-latitude ecoclimatic patterns in terrestrial pollen records and connections with the North Atlantic climate variability during last glacial.
- 11.00-11.20: **Matteo Vacchi** (Dipartimento di Scienze della Terra, Università di Pisa). 125'000 years of climatic variability along the Mediterranean coasts. Open issues and research perspective in the context of on-going climatic changes
- 11.30-11.50: **Francesca Ferrario** (Dipartimento di Scienza ed Alta Tecnologia, Università dell'Insubria). Thick as a brick: on-fault effects on Roman-age structures at Tiberias (Israel)
- 12.00-13.30: **AIQUA Assembly**

Thijs van Kolfschoten

A year of sudden change: COVID-19, new releases and the new editorial team

The year 2020 will be remembered as the year with the Covid-19 pandemic crisis; a crisis that has a huge impact on most of our activities. Scientists all over the world have to work from home and many (finally) found the time to finish their manuscripts. This resulted in a large increase of submissions (>100 in less than 4 weeks); however, others asked for a postponement of the submission/revision deadline because they were not able to go to the institute to collect the data they needed. The consequence of the latter is that there will be a delay in the publication of the Special Issue. Together with the Guest Editors of a Special Issue we will do our best to reduce the delay.

The policy of Quaternary International is to publish thematic issues that are, in many cases, the proceedings of scientific meetings. The current number of running Special Issues is still rather high; however, the number of scientific meetings in 2020 will be dramatically low and that decrease will have an impact on the number of Special Issue proposals to be published in Quaternary International. It is, however, good to see that science continues despite the Covid-19 pandemic crisis and that scientists are exploring alternative solutions such as virtual, remote meetings, video conferences etc. to meet colleagues and to present and discuss their ideas. Meetings that might be the base for new thematic issues.

A changing world with new challenges. Quaternary International with its new editorial team is ready to support the Quaternary research community and to adapt to the new circumstances.

QUATERNARY INTERNATIONAL - NEW RELEASES

So far (May 25, 2020) 8 new volumes of Quaternary International have been published in 2020: 5 Special Issues and 3 volumes with regular papers. At the moment, there are 7 new volumes completed and in production including Special Issues on: The Archaeology of Human-Bird Interactions: Essays in Honour of Dale Serjeantson.

AFFILIATION

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Volume 1, Formation and Transformation of Early Neolithic Lifestyles in Europe in the second half of the 6th millennium BC, ArchaeoLife and Environment, Long-Term Perspectives on Circumpolar Social-Ecological Systems, Groundwater and global palaeoclimate signals and Loess records of environmental change.

Volume 535 is with 6 contributions among the [25 most downloaded articles](#) from Quaternary International in the last 90 days, a very successful one.

- **Volume 535** - Recent Progress of the Paleolithic Research in Asia: Cultural diversities and Paleoenvironmental changes - Edited by Masami Izuho, Kazuki Morisaki, Hiroyuki Sato - Pages 1-154
- **Volume 538** - EX-AQUA 2016: Palaeohydrological Extreme Events, Evidence and Archives - Edited by Alessandro Fontana, Willem Toonen, Rajiv Sinha, Juergen Herget - Pages 1-110
- **Volume 539** - Depicting the past of Balkan and Appennine Peninsulas between Eneolithic and Bronze Age: artefacts and ecofacts as means of functional differentiation and social stratification - Edited by Achino Katia Francesca, Borut Toškan, Anton Velušček - Pages 1-158
- **Volume 540** - Caspian to Mediterranean - Edited by Valentina Yanko-Hombach - Pages 1-168
- **Volume 541** - Subsistence Strategies in the Stone Age: Direct and Indirect Evidence of Fishing and Gathering - Edited by Marian Berihuete-Azorín, Olga Lozovskaya - Pages 1-204

Follow the latest updates of the [published issues](#).

NEW PROPOSALS FOR SPECIAL ISSUES

The policy of Quaternary International is to publish thematic issues, including peer-reviewed collected research papers from symposia, workshops and meetings sponsored by INQUA's Commissions, Sub-Commissions and working groups. We would like to invite leading scientists to propose SIs in Quaternary International. Please contact the Editor-in-Chief (Jule Xiao) for further details. Standalone manuscripts of outstanding quality presenting advanced research that were deemed to be of broad interest for the global Quaternary research community as a whole are also accepted and published in a restricted number/year regular issues after passing the review process.

QI NEW TEAM

The first issue of Quaternary International appeared in 1989 and the Founding Editor, Nat Rutter served as Editor-in-Chief until 1999. Norm Catto was Editor-in-Chief from 1999 – 2016, Min-Te Chen from August 2015 to June 2018. In May 2018, Thijs van Kolfschoten decided to succeed Min-Te Chen in order to form a new editorial team.

The new team met for the first time in July 2019 at the INQUA Congress in Dublin, and since then we, together with the Publisher and the Journal Manager, established a revised workflow and updated the guidelines for authors and guest editors. I am very pleased to inform you that the new team is now fully operational since the 1st of June 2020, the date that I stepped back as Editor-in-Chief. The team consists of the Editor-in-Chief who will have a more managerial role responsible for the direct contact with the Publisher and the Journal Manager and with the board of INQUA. In addition he will act as handling editor for the standalone submissions. A team of 8 Editors are handling the Special Issues.

I am pleased to see that several prominent scientists, young as well as senior, offered to support Quaternary International by acting as Editor or as Editor-in-Chief. With this new team, the future of our journal is in good hands.

EDITOR-IN-CHIEF**Jule Xiao**

- Affiliation: Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, China
- Specialisation: Quaternary geology; paleolimnology; paleoecology; paleoclimatology



As the Editor-in-Chief, I would like to sincerely cooperate with the other members of the Editorial Team, the Publisher and the Journal Manager to ensure the progress of the editorial process. I will devote my energies to the further development of Quaternary International.

EDITORS**Hema Achyuthan**

- Affiliation: Institute for Ocean Management, Anna University, Chennai 600025, India
- Specialisation: paleoclimate fluctuations, Quaternary paleosols associated with calcretes, ferricretes, their isotopic compositions etc.



Quaternary geology encompasses all branches of earth sciences, evolutionary sciences, chemistry, physics, mathematics etc enabling us to understand past climate, 'Man' and land relationship. Thus as an Editorial member

of the Quaternary International journal I will endeavour to show case the cutting-edge research carried out by scientists across the Asian subcontinent. My aim is also to interact with the contributors enabling them to produce high quality manuscripts which would in turn enhance the impact factor of the journal.

Marian Berihuete-Azorin

- Affiliation: IPHES (Catalan Institute of Human Paleocology and Social Evolution) Tarragona, Spain.
- Specialisation: archaeobotanist, specialised in the study of fruits, seeds and parenchymatous tissue



I am currently working as a Postdoc fellow at the IPHES. I am an archaeobotanist, specialised in the study of fruits, seeds and parenchymatous tissue. My main interest is how hunter-gatherer communities managed plant resources and how that shaped their economic and social organization. As a researcher, I think that the process of peer review and paper editing is a cornerstone of our job. Everything that we do would mean nothing if it would not reach other investigators and the public. I love to collaborate in the editorial tasks of Quaternary International, where I offer my expertise in the particular field of archaeobotany, but also collaborate with my patience, networking and research skills to help the authors to make the best of the submitted manuscripts.

Alexander Francke

- Affiliation: University of Wollongong (Wollongong, Australia)
- Specialisation: limnogeologist and geochemist



My research mainly focuses on the application of novel metal isotope analyses to lacustrine sediment sequence. I have worked on lakes in Australia, the High Arctic and the Mediterranean and am involved in ICDP (International Continental Drilling Programme) projects that have recovered long sediment cores from ancient lakes Ohrid (North Macedonia, Albania) and El 'gygytgyn (Russia). I am covering the topics paleoclimate, paleoenvironments, limnogeology, and geochemistry in QI's editorial team and I particularly support special issue proposals and manuscript submissions aiming to extend our portfolio of geochemical methods applied to Quaternary archives.

Qingzhen Hao

- Affiliation: Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, China

- Specialisation:
Quaternary geology;
Loess and
paleoclimatology;
Environmental
magnetism;
Paleomonsoon

As an Editor, I would contribute to further improve the manuscript quality by fair and strict review processes, and help the Editor-in-Chief to reach a reasonable decision on the manuscript. When I deal with manuscripts, I will try to balance accepted papers from different disciplines.



Pierluigi Pieruccini

- Affiliation: Dipartimento di Scienze della Terra, Università degli Studi di Torino, Italy
- Specialisation:
Quaternary stratigraphy;
seismic hazard;
geoarchaeology

As Associate Editor my goal is to encourage submitting high quality manuscripts and Special Issues related to International symposia, workshops and meetings sponsored by INQUA or other INQUA-related Associations or Working groups. Moreover, I will put my effort to manage the process of reviewing with well-defined timing, promoting high-quality reviewers and high-quality accepted manuscripts in order to improve the international quality of the Journal



Patrick Roberts

- Affiliation: Department of Archaeology, Max Planck Institute for the Science of Human History
- Specialisation:
Archaeology, Stable isotope analysis, Palaeoecology, Palaeoenvironment analysis Tropical forest prehistory

I am in the editorial board to support Quaternary International as a key place for the publication of high quality Archaeology, Archaeological Science, and Palaeoenvironmental research.



Jan-Berend W. Stuut

- Affiliations: 1) NIOZ – Royal Netherlands Institute for Sea Research, dept of Ocean Systems, and Utrecht University, Texel, the Netherlands [www.nioz.nl/dust]; 2) VU – Vrije Universiteit Amsterdam, Faculty of Science, dept of



- Earth Sciences, Amsterdam, the Netherlands
- Specialisation: aeolian sedimentology; marine geology; palaeoclimatology; desert environments

I am proud to be a member of the team of editors with whom I would like to serve the INQUA community by keeping up the high quality of our journal Quaternary International.

Andrea Zerboni

- Affiliation: Dipartimento di Scienze della Terra "A. Desio", Università degli Studi di Milano, Italy
- Specialisation:
Geoarchaeology,
Geomorphology, Arid Lands, Loess, Paleosols

Being part of the editorial team of Quaternary International is an honour and I hope to contribute in the development of the journal. Quaternary International is the official journal of INQUA and deserves to foster visibility. I will work to raise the impact of the journal among the community of Quaternary scientists, as much as in the community of archaeologists.



PUBLISHER

Emilie Wang

Journal Manager - Elsevier
Publisher, Geoscience Portfolio,
Department Global STM Journals



Bhuvaneshwari Jeyapandian (Bhuvana)

Elsevier Journal Manager



