

PALYNOS

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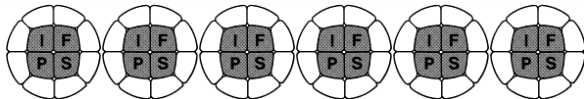
Volume 47 (1) – 2024

NEWSLETTER OF THE INTERNATIONAL FEDERATION OF PALYNOLOGICAL SOCIETIES

<http://palyno-ifps.com/>

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IFPS BUSINESS

PRESIDENT’S MESSAGE

I recently returned from the Czech Republic having attended the Prague conference. I thoroughly enjoyed this meeting which appeared to me to proceed flawlessly. Prague was a wonderful venue for this meeting; Jiří Bek and Jiri Kvaček are to be heartily congratulated for their superb organizational skills.

The IFPS Council held their outgoing and incoming meetings in Prague and at the latter I became the latest President of IFPS. I set out my proposals and vision for IFPS in my

candidate statement in *PALYNOS* 43/1, pp. 4-6 in 2020.

I am proposing to complete several tasks during my tenure as President, these are:

1. To completely rethink our policy in collecting and distributing money. I have, for many years, thought that our raising money from the member societies is both unfair and unnecessary. I will engage with the member societies and try to achieve a consensus on the best way forward. I will also consult on other revisions to the IFPS constitution.
2. I will seek to migrate the IFPS website to a host where we will not be liable to paying annual fees for security checks.
3. I will liaise with the Newsletter Editor about potentially increasing the frequency of *Palynos*.
4. I will try to establish an archive for IFPS, starting with obtaining all the old Newsletters for placing on the website; the record of these is incomplete.
5. From conversations, it seems that not everyone is up to speed with what IFPS does. I will try to write a history of the organization so that members of the different societies understand the purpose and mission of IFPS.
6. Liaise with the IOP in regard to proposals for a type specimen

registration system for plant macro- and microfossils similar to MycoBank.

7. Liaise closely with the organisers of the next IPC in Calgary 2028.

I know that I can count on your support in all these endeavours. Please do not hesitate to contact me if you have any suggestions.

Best wishes

Jim Riding, President of IFPS

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CATCHING UP IN PRAGUE

The IPC/IOPC Congress is passed now, but during these days in Prague, the international community of palynologists (together with their palaeobotanists colleagues) gathered and enjoyed some fantastic sessions contributing to the advance of the scientific disciplines.

Also, during these (normally) quadrennial events IFPS takes the opportunity of scheduling several face-to-face meetings for discussing some topics with the IFPS councilors, and updating the IFPS board (Figure 1).



Figure 1. Gathering of IFPS officers and incoming board.

In this congress, during the outgoing board meeting, we have the opportunity to thanks Prof. Charles Wellman (Figure 2), who has stopped being the past-president and has been involved in some way or another in IFPS during the last two decades. It has been a pleasure to work with you Charles, thanks for everything!!!

We also met for discussing the Canadian bid for hosting the next IPC/IOPC meeting, as

well as introducing the incoming IFPS board, formed by:

- Jim Riding (President)
- Jean Nicolas Haas (Past-president)
- Fabienne Marret-Davies (treasurer; temporary represented by J. Riding)
- Sandra Brügger (IFPS web-master)
- Encarni Montoya (PALYNOS editor)



Figure 2. Relay between outgoing (Charles Wellman) and incoming (Jean Nicolas Haas) past-president figures, to be celebrated with a glass of “Museum” wine :D.



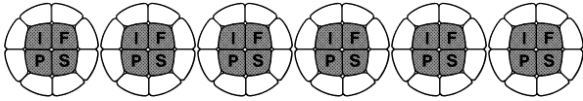
Figure 3. Local organiser Jiří Bek thanking treasurer Jim Riding for his support during the last years and wishing him good luck as new IFPS president!

As IFPS board, we really hope the attendants have enjoyed these scientific interchange days, especially those early careers that were funded by IFPS to attend it (see their report on page 14). I do not want to end these lines without sending special thanks to the local organisers (see their report in page 6).

See you all in Canada in 2028!

Encarni Montoya, PALYNOS editor

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NEW IFPS OFFICERS & COUNCILLORS

We have had some movement during the IPC/IOPC conference renewing the IFPS board, and would like to give a warm welcoming to our new board members. Please see below a brief introduction of themselves, their new role and contact details. We would also like to THANK in capitals the help and support of the outgoing board members, it has been a pleasure to work with you all!

SANDRA BRÜGGER – IFPS WEBMASTER



Sandra is a passionate paleoecologist interested in vegetation, land use, and fire history preserved in glacier ice and other natural archives. She enjoys the challenges to conducting research in biogeographical regions where paleodata is still scarce.

In this sense, her expertise covers projects around the globe from the remote Polar region

to the Neotropics to understand the complex interactions between ecosystems and climate over centennial to millennial timescales.

She did a PhD in the University of Bern (Switzerland) and after completion in 2018 moved to the Montana State University (USA) as a postdoctoral researcher. She is currently based at the University of Basel (Switzerland) as the PI of the project entitled “FrozenEcosystems - Understanding Siberia's past with a combination of state-of-the-art and next-generation ice core methods”, funded by the Swiss National Science Foundation (call Ambizione).

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ASSUNTA FLORENZANO – GPPSBI



Assunta Florenzano is Associate Professor of Botany at the University of Modena and Reggio Emilia in Modena, Italy. She completed her PhD at the same university in 2013, studying the Late Holocene dynamics of human–environment interactions in the Mediterranean through pollen records from archaeological sites of Southern Italy.

She has been a member of the GPP-SBI for 15 years, and in 2024 joined the executive board of the Society. Since 2015, she has been the scientific secretary of BRAIN – Botanical records of Italian Network, and responsible for the implementation and management of the database.

Assunta is a palynologist and archaeobotanist. Through the study of biostratigraphic archives from natural and anthropogenic contexts, she investigates past-present environments and cultures/plants relationships, with focus on the environmental dynamics that have occurred in the circum-Mediterranean regions and their influence on human communities. Her main interests are the reconstruction of plant biodiversity and its transformations on a long-term perspective, and the evaluation of the effects on vegetation of both anthropogenic impact and climate change from the Late Glacial to the present. She is also keenly interested in increasing the taxonomic resolution of non-pollen palynomorphs linked to pastoralism to further clarify the anthropogenic impact on vegetation.

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JULIA GRAVENDYCK – CPS

Julia Gravendyck is Lecturer for Systematic Botany at the University of Bonn (Germany). She has completed her PhD (2021) at the Freie Universität Berlin & Botanical Garden and Botanical Museum in Germany in cooperation with the University of Oslo investigating the palynofloral change at the Triassic-Jurassic transition in the Germanic Basin. For her Post-Doc she moved on to the Leibniz University Hannover to work on the Early Cretaceous. Hunting for the oldest angiosperm evidence, she started to apply novel and adapted microscopy methods, to improve our understanding of the elusive pre-Aptian evidence of flowering plants. In December 2022 she started her permanent teaching position at the University of Bonn as a lecturer at the Department of Biology.



Her current research focus encompasses Mesozoic paleobotany and palynology; taxonomy & nomenclature, vegetation dynamics in the context of environmental stress and the evolution of the earliest angiosperms.

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RECEP HAYRETTIN – TCP

Recep Hayrettin SANÇAY was born in Ankara-Turkey in 1975. After his graduation from Geological Engineering Department of Hacettepe University in 1997, he was awarded a full government scholarship from the Ministry of Education in the field of palynology/biostratigraphy in USA. He graduated from Texas A&M University Department of Geology & Geophysics in 2000. His graduate study was about “Palynology and Paleoecology of Late Eocene Manning Formation (Jackson Group) of the Lake Somerville Spillway of east – central Texas”.

Then he started working for Turkish Petroleum Corporation Research & Development Center as palynologist in 2000.



Recep completed his Ph.D. in Middle East Technical University Department of Geological Engineering in 2005. His Ph.D. study was about “Palynostratigraphic and palynofacies Investigation of the Oligocene-Miocene units in the Kars-Erzurum-Muş sub-basins (Eastern Anatolia), Turkey”. Recep has studied in several national and international projects as Tertiary, Mesozoic and Paleozoic palynologist. Since 2000, Recep has different responsibilities in Turkish Petroleum Corporation as senior palynologist, project manager, quality administrator, R&D Center coordinator of the off-shore wells, and Deputy Managing Director. He used to be the World Petroleum Council (WPC), Turkish National Organizing Committee Member in 2006, board member of Petroleum Trading Company in 2007-2008, and board member of TP Europe Corp. in 2013-2016. Currently, Recep has been working as R&D Project Coordinator and Stratigraphy Manager in Turkish Petroleum Corporation, board member of Turkish Stratigraphy Committee, and the President of Ozan Sungurlu Charity of Science, Education, and Scholarship.

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MARIANNA KOVÁČOVÁ – IUGS

Marianna Kováčová obtained her PhD. at the Comenius University Bratislava (Slovakia) in

2004, focusing on Miocene Palynology of the Vienna Basin. As an associated professor at the Department of Geology and Paleontology is involved in General Paleontology, Paleobotany and Paleoclimatology teaching.



Her research activity within the national and international projects are focused on the pollen and palynofacial analysis of the Miocene and Pliocene sediments, mainly from Central Paratethys, Anatolia and its paleovegetation and paleoclimate reconstructions. Marianna was 2016-2024 the councillor of OCSP in IFPS and in 2024 she became a councillor of IFPS in IUGS.

More information here

<https://geopaleo.sk/kovacova-marianna/kovacova-marianna-cv/>

Marianna Kováčová, Department of Geology and Paleontology, Faculty of Natural Sciences, Comenius University Bratislava

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VERA POSPELOVA – CAP

Vera Pospelova is a professor in the Department of Earth and Environmental Sciences at the University of Minnesota (USA) and a Senior HWK Fellow in Marine and Climate Research.



She earned her Honors BSc in geology from Novosibirsk University in Siberia (Russia) and had a lengthy career in Canada. Vera received her PhD in 2003 from McGill University in Quebec, followed by a postdoctoral position at the University of Victoria (British Columbia) and the University of Guelph (Ontario), all supported by NSERC and FCAR fellowships. From 2005 to 2019, she was an Assistant, Associate and then full Professor at the School of Earth and Ocean Sciences, University of Victoria, and she served as the president of the Canadian Association of Palynologists (CAP) from 2016 to 2018.

Vera's research over the past 20 years has been focused on the development, calibration, and application of organic-walled dinoflagellate cysts as qualitative and quantitative indicators of past and present environmental conditions. Her research interests include the taxonomy of late Quaternary dinoflagellate cysts; cyst production, ecology, and seasonal dynamics in coastal waters; applications of dinoflagellate cysts as indicators of water quality conditions, with an emphasis on pollution and eutrophication in North American estuaries; and paleoceanographic reconstructions using sedimentary archives.

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SOPHIE WARNY – AASP

Sophie Warny is the AASP Endowed Chair Professor of Palynology and Associate Chair

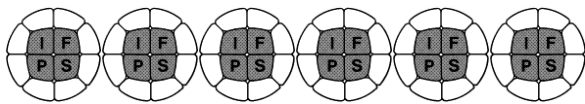
of the department of Geology and Geophysics. She is also a Curator at the Museum of Natural Science (MNS), both units are at Louisiana State University in Baton Rouge, Louisiana. She was recently elected as an AAAS Fellow. She grew up in France (Grasse) and Belgium (Namur). She received a B.S. degree in geology from the Université Catholique de Louvain (UCL) in Belgium, a DEA in oceanography from the Université Libre de Liège (in Belgium), and a Ph.D. from UCL in marine geology/palynology in 1999, working under the direction of Dr. Jean-Pierre Suc (Université de Montpellier in France).



She is the director of the Center for Excellence in Palynology (CENEX) at LSU. CENEX focuses on various aspects of palynological research, from the use of pollen, spores and algae in biostratigraphic studies (biosteering applications) in collaboration with the industry to the use of pollen in forensic applications and melissopalynology when she partners with the USDA or beekeepers. Her research also focuses on using palynological records for palaeoceanography and paleoclimate reconstruction, including investigations of the palynological record to decipher past sudden

climatic events and climate variability to help constrain their triggering mechanisms. She received a NSF CAREER award in 2011 and has published in journals such as Science, Nature, Nature Geoscience, PNAS, Geology, Gondwana Research, Climate of the Past, and in Palynology. She served in 2016 as the Vice President of the Gulf Coast Section of the SEPM society and was one of the six AAPG Distinguished Lecturers for 2019-2020. She is currently the President of AASP-The Palynological Society. The most touching honour of her career was to have been nominated by her former graduate students for the AASP-TPS society's Medal for Excellence in Education in 2021. She has supervised 24 theses and dissertations since starting at LSU in 2008. The majority of her students now have successful careers in the oil and gas industry.

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NEWS FROM IFPS SOCIETIES

XVI IPC / XI IOPC – ORGANISING COMMITTEE REPORT



The International Palynological Congress (IPC) and International Organisation of Palaeobotany Conference (IOPC) only come every 4 years with the exception for XV IPC and XI IOPC, Prague 2024 because the conference had to be postponed due to global Covid pandemic from 2020 to 2024. It means that organizing committee headed by Jiří Bek

who is its president, Jiří Kvaček vice-president, Jana Votočková Frojdovalová general secretary and Jakub Sakala (Figure 1), worked hard not for four years as organizers of every IOP/IOPC but for more than eight years.



Figure 1. Organizing committee of XV IPC/XI IOPC. From left: Jiří Bek President, Jiří Kvaček Vice-President, Jana Votočková Frojdovalová General Secretary and Jakub Sakala.

At least 521 participants from 46 countries were present on IPC/IOPC sections. All this audience contributed to the congress success with 521 abstracts (414 oral presentations) covering the themes of 46 symposia and 96 sessions. 276 participants came from Europe, 123 from Asia, 71 from North America, 31 from South America, 4 from Africa and 3 from Central America (Figure 2).

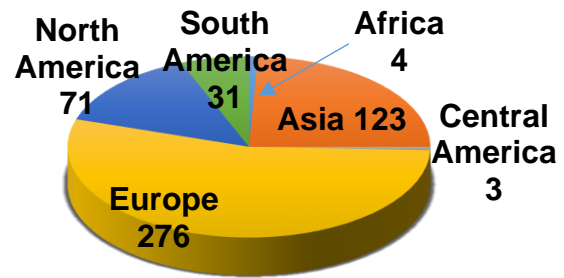


Figure 2. Continents and number of their participants.

Top three countries include China (about 70 participants), Germany and USA (Figure 3).

All abstracts were published in a Book of abstracts and extended abstracts as Proceedings of XVI IPC and XI IOPC in Folia Musei rerum Naturalium Bohemiae occidentalis, Geologica et Palaeontologica edited by the Pilsen Muzeum, Czech Republic.

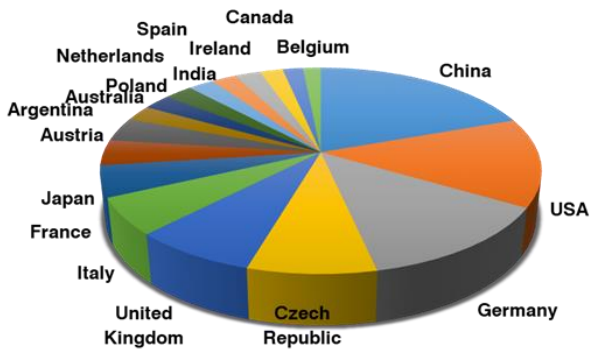


Figure 3. Top 20 countries.

There were three workshops, six field trips and one nice Art Session with about 25 pictures of reconstructions of fossil plants and landscapes with them.

Two invited IFPS speakers were Carina Hoorn (Figure 4) and James Riding (Figure 6), two key note representatives of IOP were Marion Bamford (Figure 7) and Jun Wang (Figure 8).



Figure 4. IFPS speaker Carina Hoorn during keynote talk.

We thank to both parent organizations, IFPS and IOP, sponsors (city Prague, National Museum, Prague, Annals of Botany, Schweizerbart, Palynotech, IAWA) and associations (IFPS, IOP, CIMP, Botanical Society of America, Collegium Palynologicum Scandinavicum) that supported almost 40 students.

Organizers are obliged to C-IN collaborating conference agency and Clarion Conference hotel, Prague.



Figure 5. Group photo of IPC/IOPC attendees.

PERSONAL PROTECTIVE EQUIPMENT (PPE) IS 100% MANDATORY

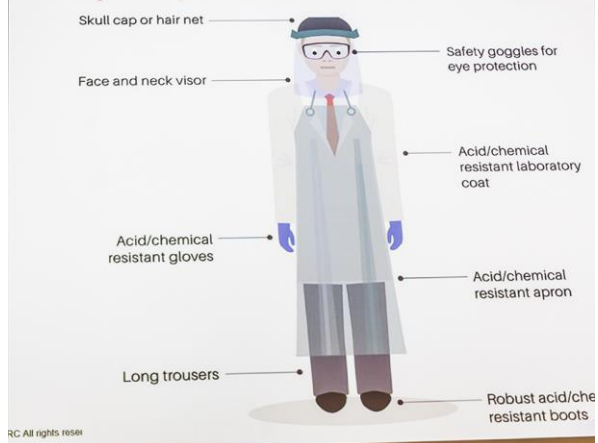


Figure 6. IFPS speaker James Riding during keynote talk.



Figure 7. IOP speaker Marion Bamford during keynote talk.

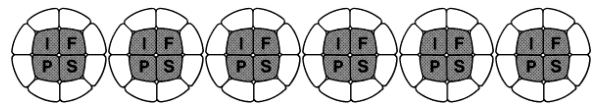


Figure 8. IOP speaker Jun Wang during keynote talk.

During their meetings, IFPS and IOP have set Calgary (Canada) for next joint meeting holding in 2028. See you in Calgary 2028!



Jiří Bek
President of XVI IPC/XI IOPC
Prague 2024



NEWS FROM THE PALYNOLOGICAL ASSOCIATION OF NIGERIA (PAN)

12TH BIENNIAL INTERNATIONAL CONFERENCE, IBADAN, NIGERIA, OCTOBER 29 – NOVEMBER 1ST, 2023

The 12th Biennial International Conference/Exhibition of the Palynological Association of Nigeria (PAN) was hosted by the Department of Archaeology and Anthropology, University of Ibadan, and held at the Otunba Subomi Balogun Conference Centre, University of Ibadan, Nigeria from October 29 to Nov 1, 2023.

The theme was “*Palynology in a Changing World: Prospects and Challenges*”. The sub-themes included (i) palynology, taxonomy and biodiversity conservation, (ii) aeropalynomorphs and public health, (iii) Human palaeoecology and sustainable

development, (iv) Palynology in petroleum exploration: how far and how well?, (v) Forensic palynology and national security, (vi) Palynology and the global climate change challenge, and (vii) Pollen grains in nutraceuticals: an emerging development in the food and drug industry. The President of PAN, Dr Peter Adeonipekun (University of Lagos) gave the welcome address while the immediate Past Vice Chancellor of the University of Ibadan, Professor Abel I. Olayinka FAS, FNMGS was the keynote speaker.

The conference had both virtual and physical participants who presented papers from various sub-disciplines of palynology from Universities within and outside Nigeria. In addition, PAN enjoyed generous support from her diaspora representatives who are currently in institutions such as the Universities of Columbia, Oregon, and Michigan (USA), Witwatersrand-Johannesburg (South Africa), Sunderland (United Kingdom), and Helsinki (Finland).

The 2-day conference featured 37 fascinating oral paper presentations that covered areas in the seven sub-themes listed earlier. The oral presentations were by graduate students, early and mid-career researchers as well as senior faculty members. It is worth mentioning that in compliance with the zero-carbon emission agenda, the PAN conference announcements, invitations and book of abstracts were paperless. This is part of the association's conscious way of reducing carbon emissions in the country. One of the highlights of the conference was the presentation of prestigious awards to two noble foundational and pioneer Nigerian palynologists namely Professor M. Adebisi Sowunmi and Professor C.O.C Agwu for their excellent contributions to palynology teaching and research and mentorship to palynology students in Nigeria and West Africa over the past five decades. The conference came to a climax with a business session where issues such as the promotion and conduct of innovative research and empowering budding palynologists for more ground-breaking were deliberated.



Figure 1. 1. Palynological Association of Nigeria members at Day 1 of the 12th biennial conference, 2. Conference materials, 3. The keynote Speaker, Prof A.I. Olayinka (former VC of the University of Ibadan, second left) and some members of the PAN executives, 4. Prof M. A. Sowunmi, PAN foundation president, giving a speech after receiving an award.

One of the exciting news about the conference was that proceedings of the conference would be published as a Special Issue of the Journal – *Palynology* hosted by The Palynological Society, American Association of Stratigraphic Palynologists (AASP) in 2024. This is about the first time PAN would have such collaboration with the journal, *Palynology*.

The next biennial conference will be hosted by the Department of Botany, University of Lagos, Akoka, Lagos, Nigeria.

PHD THESIS COMPLETION

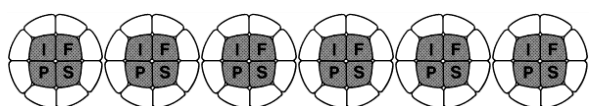
Dr Olatoyan Jerry: *Palynological Insights into an 11,700-year sequence of vegetation change in Mashishing, Mpumalanga, northeastern South Africa*, Nov 15th, 2023, School of Geography, Archaeology and Environmental Studies (SGAES), University of Witwatersrand, South Africa. The thesis was supervised by an advisory board comprising Prof. Alex Schoeman, Prof. Frank Neumann, Dr Emuobosa Orijemie, Dr Christine Sievers and Dr Mary Evans.

Dr. Oyelami Ayobami: *A Palynostratigraphic study of Environments and Thermal Maturation of Onshore Oredo Field, Niger Delta*’, Nov 17th 2023, Department of Botany,

University of Ibadan, Nigeria. The thesis was supervised by Prof. M. A. Sowunmi, the matriarch of Nigeria's Palynology

Dr. Angela Charles Effiom: *Late Quaternary studies at Lake St Lucia, KwaZulu Natal*. December, 2023. Evolutionary Studies Institute, University of the Witwatersrand, South Africa. The thesis was supervised by Prof Marion Bamford and Dr Frank Neumann, Evolutionary Studies Institute, University of the Witwatersrand, South Africa.

Orijemie, Emuobosa Akpo and Obigba Sylvester, O.
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NEWS FROM MEMBERS

PALEOGENE OCEANOGRAPHY AND CLIMATE OF THE NORTH ATLANTIC

by Dr Jonathan Bujak

PART 2. CLIMATE: FROM GREENHOUSE TO ICEHOUSE

This is the second of a two-part story looking at the impact of Greenland's mantle plume on the North Atlantic Paleogene oceanography.

In our last article (published in the previous newsletter: PALYNOS Vol.46 Issue 2), we saw the Greenland mantle plume's impact on the oceanography of the North Atlantic. Now let's look at its effect on climate.

Paleocene- Early Eocene greenhouse and hyperthermals

The Late Cretaceous greenhouse climate continued into the Paleocene despite the Yucatán bolide impact that devastated the

Earth's fauna and flora 66 million years ago (Ma).

The Paleocene was punctuated by a series of hyperthermal (HT) events when increased air and sea-surface temperatures enabled the temporary migration of warm-water dinoflagellates from the Tethys into higher latitudes.

The earliest HT (WD1) resulted from the Yucatán bolide impact and followed cooling that lasted 'several decades at most' when solar radiation was reduced by dust and sulphur aerosols ejected by the impact (Vellekoop et al. 2014).

Increased levels of the greenhouse gas carbon dioxide (CO₂) from vaporised carbonate rocks then raised air and sea-surface temperatures for about 100,000 years (Coccioni et al. 2010), enabling the dinoflagellates *Manumiella* and *Trithyrodinium* to migrate into higher latitudes (Figure 1). This corresponds to the Dan-C2 global HT listed in Arreguín-Rodríguez et al. (2021).

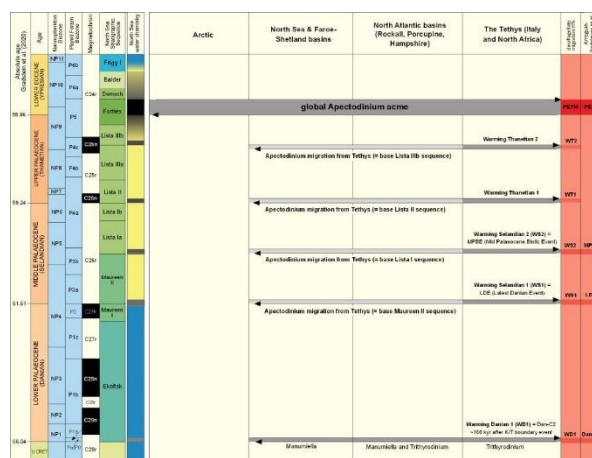


Figure 1. Paleocene hyperthermals and northern hemisphere migration events. Figure from Bujak (2023). Apectodinium migrations from Bujak & Brinkhuis (1998). *Manumiella* migration from Mudge & Bujak (2001).

WD1 was followed by four Middle to Late Paleocene (Selandian-Thametian) HTs when the warm-water dinoflagellate *Apectodinium* migrated from the Tethys into mid-latitudes, and the earliest Eocene PETM when its global migration included the Arctic. All of these 'dinoflagellate migration HTs' correspond to North Sea / Faroe-Shetland sequence boundaries and four equate with global HTs

listed by Arreguín-Rodríguez et al. (2021) (Figure 1).

The five HTs occurred during uplift of the Greenland mantle plume and development of the North Atlantic Igneous Province (NAIP) which extruded between six and ten million cubic kilometres of magma, mostly as flood basalts.

CO₂ emitted during volcanic eruptions and vented underground magma would have raised air and sea-surface temperatures that were then increased by methane (CH₄) released from sub-sea methane hydrates (clathrates), resulting in the succession of HT events.

The largest of these, the PETM, was previously placed in the Late Paleocene, but re-assignment of the P-E boundary at the base of the PETM now places it in the earliest Eocene (see Gradstein et al. 2020).

Paleocene-Eocene Thermal Maximum (PETM)

The PETM is significant today because it indicates how the climate may change in the near future due to anthropogenic emissions of greenhouse gases:

‘The Paleocene-Eocene Thermal Maximum (PETM) at 56 million years before present is arguably the best ancient analog of modern climate change. The PETM involved more than 5 °C of warming in 15-20 thousand years (actually a little slower than rates of warming over the last 50 years), fueled by the input of more than 2000 gigatons (a gigaton is a billion tons!) of carbon into the atmosphere... As a consequence, surface ocean temperatures at the peak of the event were extremely warm, especially in the high latitudes. Off the coast of Antarctica, a location today that is close to freezing, the oceans were about 20 °C (68 °F) at the peak of the PETM!... Temperatures off the coast of West Africa were 36 °C which is 97 °F.’ (Penn State University 2023).

The PETM began 56 million years ago and lasted for approximately 170,000 years, with data from a coeval hydrothermal vent beneath the Norwegian-Greenland Sea providing a detailed record of events that occurred at that time. These include a large and rapid initial

pulse of CH₄ release followed by up to 12 more pulses.

Frieling et al. (2016) calculated that 1,500 billion tonnes of carbon were released from submarine vents during the PETM, concluding that ‘CH₄ from the Norwegian Sea vent complexes was likely the main source of carbon during the PETM’.

Global warming was not uniform during the PETM. Land areas warmed more than oceans, and polar regions (60-90° N) warmed by 8 °C compared to low latitudes (30oS to 30oN) that warmed by 5 °C (Tierney et al. 2022). Warming was particularly marked in Antarctica and reached 12 °C in the interior of the continent which had no ice cover at that time (Figure 2).

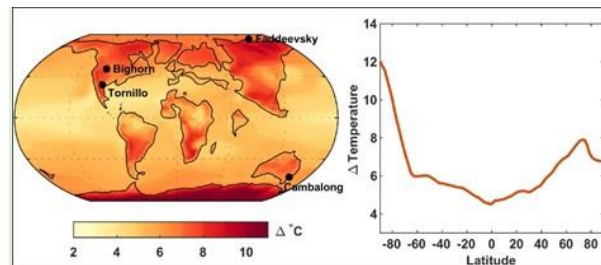


Figure 2. Temperature changes during the PETM. Left: globe showing some of the examined locations. Right: Latitudinal transect of temperature change. From Tierney et al. (2022).

This gives us an insight into the possible future effect of today’s climate change if atmospheric CO₂ continues to increase, triggering the release of methane from Arctic and sub-Arctic permafrost and submarine sediments.

Today’s methane release

Methane is a potent greenhouse gas that is mostly oxidised in the atmosphere to CO₂ and water within 8 to 12 years, but it can remain in the stratosphere for about 120 years. On a 100-year timescale it has 28 times greater Global Warming Potential (GWP) than CO₂ and is 84 times greater on a 20-year timescale (European Commission 2023). (GWP is a measure of how much infrared thermal radiation a greenhouse gas will absorb relative to CO₂.)

This is concerning because today’s warming has resulted from anthropogenic emissions of CO₂ (76%), methane (16% mainly from rice

paddies and ruminants) and nitrous oxide (6%), but the amount of methane may soon increase, as it did during the PETM.

‘Scientists estimate that five times as much carbon might be stored in frozen Arctic soils as have been emitted by all human activities since 1850’ (Voland 2016).

Like the PETM, today’s initial trigger is increased atmospheric CO₂, but high Arctic and sub-Arctic temperatures are now melting permafrost and releasing methane from shallow clathrates (Figure 3).

On 29 May 2020, melting permafrost resulted in the worst oil spill in Russia’s Arctic history as a fuel tank collapsed, emptying more than 20,000 tons of diesel fuel into the Ambarnaya River.

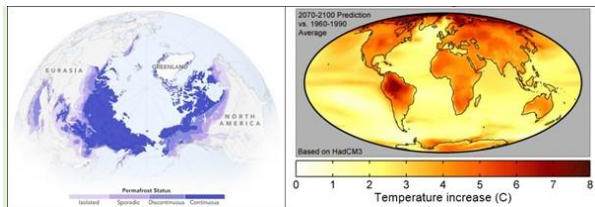


Figure 3. Left: 23 million square kilometres (nearly one tenth of the ice-free land) in the northern hemisphere has permafrost beneath it. NASA Earth Observatory map by Joshua Stevens, using data from the National Snow and Ice Data Center (Voland 2016). Right: Temperature increase in 2070-2100 compared to 1960-1990 indicated by the UKs Hadley Centre Coupled Model version 3 (HadCM3).

Three weeks later, on Sunday 21 June, temperatures in the northeast Russian town of Verkhoyansk reached 38 °C (100.4 °F), the highest ever recorded north of the Arctic Circle, with Alaska and northern Canada also having anomalously high temperatures in regions of extensive permafrost (Figure 3) (from ‘The Azolla Story’, Bujak & Bujak 2020).

Wildfires had ravaged large areas of Siberia, Alaska, Greenland and Canada in 2019 and continued into 2020, as ‘zombie fires’ spread from peat that had smoldered during the winter, releasing an estimated 100 megatons of CO₂ between 1 June and 21 July and thawing more permafrost which continued into 2021.

‘For the second year in a row (2021), NOAA scientists observed a record annual increase in atmospheric levels of methane’ to 1,895 ppb,

162% greater than pre-industrial levels, and this will increase as more permafrost melts and sub-sea clathrates are released due to ocean warming (Amos 2019).

There is therefore imminent danger that a positive CO₂-CH₄-CO₂ feedback loop may result in a climatic tipping point beyond which we will not be able to control the increase in atmospheric greenhouse gases, global temperatures, extreme weather events and sea-level rise as Antarctic and Greenland continental ice melts. And this is occurring as our population increases by a million every three days.

From greenhouse to icehouse

The PETM was followed by the Early Eocene Climatic Optimum (EECO) and at least two more Early Eocene HTs: Eocene Thermal Maximum 2 (ETM2, aka ELMO) and H2 which, like the earlier HTs, ‘can provide insight into a future, warmer world’ (Rush et al. 2023).

The Early Eocene and its greenhouse climate lasted for approximately eight million years, followed by the Arctic Azolla Event (49.3-48.1Ma) which reduced atmospheric CO₂ by at least 195 ppm based on calculations of azolla’s Arctic Ocean biomass during the event (Bujak & Bujak 2020, Speelman et al. 2009), similar to values indicated by CO₂ proxies (Rae et al. 2021).

Subsequent oceanic and tectonic processes reduced atmospheric CO₂, with brief periods of CO₂ increase and warming in the Middle Miocene and Pliocene. Antarctic and Arctic glaciation began approximately 33.7 and 2.6 million years ago (Pagani et al. 2011) leading to today’s bipolar icehouse world. The pre-industrial value of 280 ppm has now increased to 417 ppm, the highest since the Pliocene when there was no Arctic Ocean ice.

The question we face today is this: will levels of CO₂ increase in the near future to those of the Eocene, moving the climate back to full greenhouse? Only time will tell – that of the geological past and our possible future.

DR JONATHAN BUJAK

Bujak Research Ltd: <http://bujakresearch.com>

Dr Jonathan Bujak was a research scientist with the Geological Survey of Canada in the 1970s and early 1980s, publishing the definitive biostratigraphic zonal schemes and stratigraphy of more than 100 key wells in offshore eastern Canada with Graham Williams.

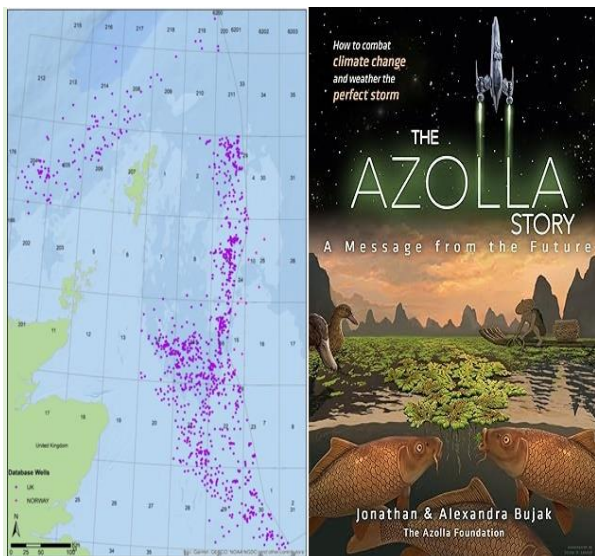
He then worked with Petro-Canada International Aid Corporation (PCIAC), training geologists in Colombia, Jamaica and Venezuela, and leading paleontological expeditions into the interior of South America, before founding Bujak Research International in 1985.

Jonathan returned to the UK in 1990 and published the bio- litho- and sequence stratigraphy of the North Sea and Faroe-Shetland Basin with [David Mudge](#) who sadly passed away in 2020.

Jonathan was involved with the only two geological expeditions to the North Pole: [the Lomonosov Ridge Experiment \(LOREX\)](#) in 1979 and the [Arctic Coring Expedition \(ACEX\)](#) that discovered the [Arctic Azolla Event](#) in 2004, through his collaboration with [Henk Brinkhuis](#) and colleagues at Utrecht University's [Department of Marine Palynology and Paleoecology](#).

Jonathan set up the non-profit Azolla Foundation in 2012 with his environmental scientist daughter, Alexandra, with whom he published '[The Azolla Story](#)' as an e-book and paperback in 2020, available from [Amazon](#). The book has been translated into French, Spanish and Vietnamese where the Azolla Foundation and Minh Pham Gia promote the use of azolla biofertiliser to double the yield of paddy rice.

Jonathan's [non-exclusive well database](#) documents the Paleogene stratigraphy and absolute ages in 1155 offshore UK and Norwegian wells, including the oceanographic and climatic changes described in these articles. Contact Jonathan Bujak or Helen Bone for details: jonathanbujak@outlook.com / helen_bone@merlinenergy.co.uk



Left: Map of the offshore well database, as shown on

[Merlin's website](#). Right: Front cover of the Azolla Story. Graphic design by [Victor Leshyk](#).

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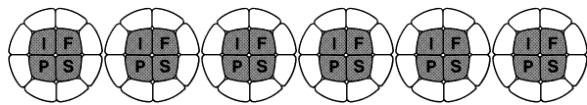
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IFPS-FUNDED EARLY CAREER RESEARCHERS: IPC/IOPC CONFERENCE REPORTS

JAQUELINE CALERO



Dear International Federation of Palynological Societies (IFPS), it is a pleasure to detail through this report, the experience acquired in the last congress held in Prague, XV International Palynological Congress, XI

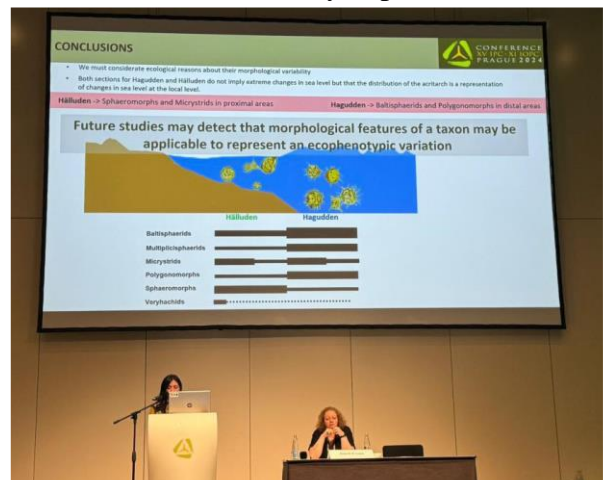
International Organization of Palaeobotany Conference.



The congress proved to be a rewarding experience. In which different researchers from all over the world converged to demonstrate their important research. All week, I have been surprised and amazed by the knowledge I have acquired in the field of palynology.



As my field of interest is polymorphs, the International Commission of the Palaeozoic Microflora (CIMP) Palaeozoic palynology sections have fulfilled my expectations.



Concerning my presentation, I had excellent feedback (according to my supervisor) and although there were no questions from the

audience the importance of the contacts I have made at the Congress are of utmost importance in my professional life.

I reiterate my thanks for the opportunity to support me financially.

Jaqueline

ANGELO PLATA-TORRES



Opening ceremony in Prague.

The last IPC-IOPC Prague 2024 conference was a long-awaited event for the palaeobotanical and palynological community of the world, as it was planned for 2020 and postponed due to the pandemic, which meant a wait of 8 years after IPC-IOPC Salvador de Bahia, Brazil 2016. As a participant of this event, I had some impressions of this event.

During the welcome, I was moved by the minute of silence to commemorate the passing of some scientists and researchers. It made me think about the legacy they left behind, and that part of that legacy was sitting in this room looking at the photos of their now absent mentors. It was fascinating to see that the role of women in science is becoming more visible in the talks, with Carina Hoorn and Marion K. Bamford giving keynote speeches at the opening of the conference.

It was interesting to see the scope of the call, as well as the response and participation of many researchers around the world, showing the progress of their research and suggesting the path of future research, from the inclusion of artificial intelligence and neural networks to proposals for cleaner and safer methods of material preparation and reducing environmental impact. I was struck by the opening of spaces where science and art come together so that scientific artists can exhibit their works. In the poster session I was able to

observe a new and growing generation of palynologists and paleobotanists, as well as spectacular compilations that summarize decades of research, for example the posters of Prof. H. Hooghiemstra and his students in the Colombian Andes.



Left: C. Hoorn talk about her research in the Amazon. Middle: Poster session. Right: Lunch with typical Czech food.

The efforts of the organizing team allowed the event to flow and develop without any setbacks. The support during the daily life of the event made us find a friendly and easy Prague in terms of mobilization and security. The food during the event was strategic, since apart from being delicious, varied and inclusive, it made the participants stay throughout the day enjoying paleobotany and its advances.



Talk by F. Herrera about historic specimens of plants fossils and new advances.

Finally, I think that all the participants agreed that Prague was an unforgettable experience, the captivating city, the very native food, the closeness of the natives despite the language, and the interaction between scientists and researchers always left our batteries recharged.

We will see you in Calgary, Canada 2028, adding a printed program with the talks for everyone's ease, please.



Neogene. This is the first time that the true morphological variation in Poaceae pollen has been revealed, and after the talk I had many interesting discussions that would inspire more research interests in the future.

Thank you again for supporting me to attend this wonderful congress!



Kind regards.

Caixia Wei (Email: [c.wei\(at\)uva.nl](mailto:c.wei(at)uva.nl))

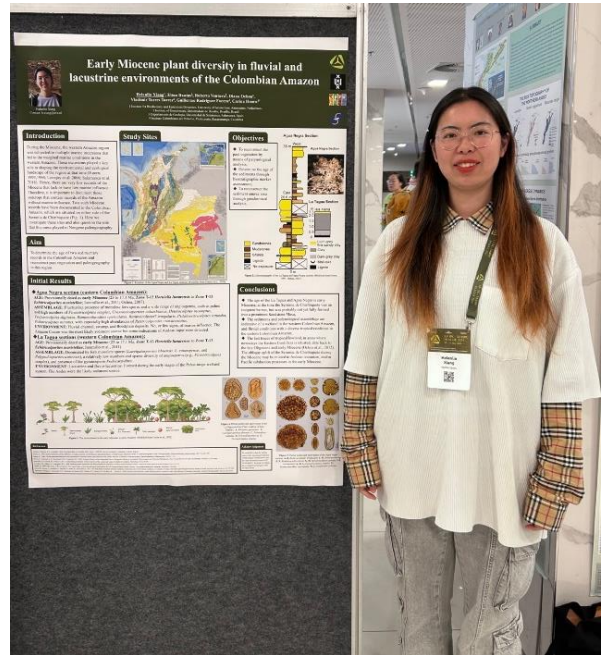
Angelo

CAIXIA WEI



Dear IFPS members, here is Caixia Wei, who will be delighted to receive the IFPS travel grant to attend the XV IPC & XI IOPC Congress. I gave an oral presentation on how grass pollen morphology has evolved through time in South America and around the globe. In my project we hypothesise that changes in grass pollen morphology since the early Miocene have been driven by evolutionary processes (evolutionary drift and/or directional selection) and possibly by migration on a continental scale. The high diversity of surface ornaments is probably related to their evolutionary success in the

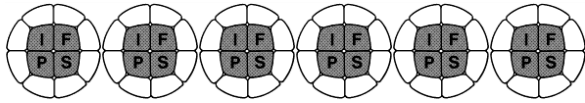
HELANLIN XIANG



I am Helanlin Xiang, a first-year Ph.D. student at the University of Amsterdam. With the additional funding support of IFPS, I attended the IPC held in Prague, Czech Republic, in May 2024. The title of my poster is <Early Miocene plant diversity in fluvial and lacustrine environments of the Colombian Amazon>. I just started my Ph.D. process, and this is the first conference that I attended as a Ph.D. student. This every-4-year conference gives me a precious chance to show my

research results and communicate with other scientists to get suggestions and inspiration.

Helanlin



FUTURE MEETINGS

2024

2024 MEDITERRANEAN PALYNOLOGY SYMPOSIUM (MEDPALYNOS 2024), SALAMANCA, SPAIN, JULY 17–19, 2024

We are pleased to announce on behalf of the Asociación de Palinólogos de Lengua Española (APLE), the Gruppo di Palinologia e Paleobotanica della Società Botanica Italiana (GPPSBI) and the Association des Palynologues de Langue Française (APLF) that Mediterranean Palynology Symposium 2024 (MedpalynoS 2024) congress will take place in Salamanca (Spain) from 17th to 19th July this year.

MedpalynoS 2024 will be held in Salamanca (Dioscórides Building, Faculty of Biology), a modern teaching building equipped with the appropriate facilities for this type of event.

The Symposium will cover the following thematic blocks:

- o Aerobiology
- o Archeopalynology
- o Melissopalynology
- o Paleopalynology
- o Pollen Biology

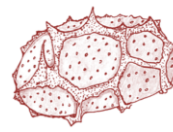
The official language will be English, but French, Italian and Spanish will continue to be permitted for oral communications, as in previous editions.

The organizing and scientific committees, as well as information on registration, accommodation, venue, field trip, etc., are available at the official webpage <https://medpalynos2024.org/>

There is not much time left to see you all in Salamanca, we are waiting for you!

With our best regards,

The Organizing Committee



MedPalynoS
2024

Salamanca (Spain) 17-19 July

Mediterranean
Palynology
Symposium

medpalynos24(at)usal.es

2024 INTERNATIONAL BOTANICAL CONGRESS, MADRID, SPAIN, JULY 21–27, 2024

Earlier this year it was announced that due to the pandemic the next International Botanical Congress will be delayed one year and held in Madrid, Spain in July 2024. The dates for the rescheduled Botanical Congress are as follows:

- Nomenclature Section, July 15-19, 2024
- Congress, July 21-27, 2024

The officers of the IBC Organizing Committee are Gonzalo Nieto Feliner (President), Juan Carlos Moreno (Vice-President) and Marcial Escudero (General Secretary). The Congress website is now live and additional details about the Congress will be added as they become available: <https://ibcmadrid2024.com/>

The organizers look forward to welcoming everyone to Madrid in July, 2024!

2024 THE 37TH INTERNATIONAL GEOLOGICAL CONGRESS (IGC), BUSAN, REPUBLIC OF KOREA, AUGUST 25–31, 2024

The 37th International Geological Congress will take place at, Busan, Republic of Korea, from August 25–31, 2024, at the Busan Exhibition & Convention Center (BEXCO). Details can be found at:

<http://www.igc2024korea.org>

2025

2025 20TH CONFERENCE OF THE INTERNATIONAL WORK GROUP FOR

**PALAEOETHNOBOTANY (IWGP),
GRONINGEN, THE NETHERLANDS,
JUNE 1–7, 2025**

The next IWGP conference will be organised by Sonja Filatova, Otto Brinkkemper, Mans Schepers, Ana Smuk, Arnoud Maurer, Merit Hondelink at the Groningen Institute of Archaeology (University of Groningen), likely from June 1–7, 2025. More information available at: <https://archaeobotany.org/>

**2025 13TH BIENNIAL INTERNATIONAL
CONFERENCE OF THE
PALYNOLOGICAL ASSOCIATION OF
NIGERIA, 2025**

The next biennial meeting will be held in the Department of Botany, University of Lagos, Akoka, Lagos, Nigeria. More information available in due

2026

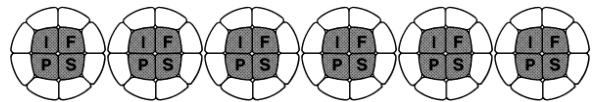
**2026 12TH EUROPEAN
PALAEOBOTANY AND PALYNOLOGY
CONFERENCE (EPPC), 2026,
MÜNSTER, GERMANY**

The next EPPC Conference will take place in Münster, Germany, in 2026, co-hosted by the Palaeobotany Group (University of Münster) and the LWL-Museum of Natural History in Münster, Westphalia, Germany. More information will be available here in due times.

2027

**2027 XXII INQUA CONGRESS IN
LUCKNOW, INDIA, FEBRUARY 2027**

The next INQUA Congress will take place Lucknow's Birbal Sahni Institute of Palaeosciences in February, 2027. More information will be available at <https://www.bsip.res.in/> in due times.



CURRENT IFPS AFFILIATED SOCIETIES AND COUNCILLORS

The current list of the IFPS officers and IFPS councillors is provided below. The IFPS president (James B. Riding), IFPS secretary-treasurer (James B. Riding, temporary), IFPS editor of *PALYNOS* (Encarni Montoya), and the IFPS Web-Master (Sandra Brügger) should be informed of any errors or necessary changes. Please inform the IFPS Officers of possible website or email address changes.

IFPS Officers	Affiliation	Email
IFPS President James B. Riding	British Geological Survey, UK	jbri@bgs.ac.uk
IFPS Past President Jean Nicolas Haas	University of Innsbruck, Austria	Jean-Nicolas.Haas@uibk.ac.at
IFPS Secretary-Treasurer: Fabienne Marret-Davies	University of Liverpool, UK	F.Marret@liverpool.ac.uk
IFPS Editor of <i>PALYNOS</i> Encarni Montoya	Institute of Geosciences Barcelona, Spain	encarnacionmontoya@gmail.com
IFPS Web-Master Sandra Brügger	University of Basel, Switzerland	sandra.bruegger@unibas.ch
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Arbeitskreis für Paläobotanik und Palynologie	APP https://www.palaeontologische-gesellschaft.de/ueber-uns/arbeitskreise/ak-palaeobotanik-palynologie/	Olaf Lenz
Arbeitskreis für Vegetationsgeschichte der Reinhold-Tüxen-Gesellschaft	AVRTG http://www.reinhold-tuexen-gesellschaft.de/	Lyudmila Shumilovskikh
Asociación Latinoamericana de Paleobotánica y Palinología	ALPP http://www.ufrgs.br/alpp	Mercedes di Pasquo
Asociación de Palinólogos de Lengua Española	APLE https://aple.csic.es/	Pilar S. Testillano
Association des Palynologues de Langue Française	APLF https://assoaplf.wixsite.com/website	Marie-Pierre Ledru
Canadian Association of Palynologists	CAP https://capacp.wordpress.com/	Vera Pospelova
Collegium Palynologicum Scandinavicum	CPS www.palynology.info	Julia Gravendyck
Commission Internationale de Microflore du Paléozoïque	CIMP http://cimp.weebly.com/	Jiří Bek
Gruppo di Palinologia della Società Botanica Italiana	GPSBI http://www.societabotanicaitaliana.it/gruppi/gruppo-palinologia-e-paleobotanica-gpp-sbi/21	Assunta Florenzano
International Association for Aerobiology	IAA https://iaerobiology.wordpress.com/	Dorota Myszkowska
Linnean Society Palynology Specialist Group	LSPSG http://www.linnean.org/	Barry Lomax
Organisation of Czech and Slovak Palynologists	OCSP http://www.ocsp.eu/	Petr Skupien
Palynological Association of Nigeria	PAN https://www.facebook.com/Palynological-Association-of-Nigeria-168093586579093/	Emuobosa Orijemie
Palynological Society of China	PSC http://www.chinapsc.cn/zyfh/bfxfh/en/about	Jianguo Li
Palynological Society of Japan	PSJ http://www.psj3.org/	Naoko Sasaki
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International Union of Biological Societies	IUBS	Jean Nicolas Haas
Former Societies of the IFPS:		
International Association for African Palynology	AIPA/IAAP	
Palynological and Palaeobotanical Association of Australia	PPAA	
Palynologists and Plant Micropalaeontologists of Belgium (until 2024)	PPMB https://ininet.org/palynologists-and-plant-micropalaeontologists-of-belgium.html	
Philippine Palynological Society	PPS	

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We welcome news items, reports on society activities, reviews etc. and members should forward these to the newsletter editor:

Encarni Montoya
encarnacionmontoya(at)gmail.com

