IOP NEWSLETTER 120

October 2019

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IOP Logo: The evolution of plant architecture (© by A. R. Hemsley)

Letter from the president

Greetings Members,

This past quarter we have welcomed the publication Festschrifts celebrating our colleagues Hans Kerp (PalZ Paläontologische Zeitschrift, see below) and Gar Rothwell (International Journal of Plant Sciences v 180 nos. 7, 8). Thank you to the teams of editors and authors who have contributed to these issues illustrating the continuing strength of our discipline—and congratulations to Hans and Gar for inspiring such productivity by your admiring colleagues!

Already three years have passed since our gathering for IOPC in Salvador, Brazil in 2016, and now planning is in full swing for next year's meeting in Prague, 12-19 September 2020. This will be the 11th quadrennial meeting of IOP, held concurrently with the 15th International Palynological Conference. Please note the formal announcement in this newsletter (page 12, herein). Nominations for colleagues deserving of honorary membership are welcome at any time.

As the submission of abstracts for IOPC/IPC presentations will be possible soon, we kindly remind the IOP Student Travel Awards. We will financially support about 5 to 7 PhD or MSc students in order to enable them to participate in the conference and present their research results in a talk. Recent PhD graduates will also qualify for these awards, if their completion was less than nine months prior to the time of the conference. IOP will donate about 12.000 USD/EUR and depending on the location of the applicant's home institute the grant will be either 2.500 USD/EUR for non-Europeans or 1.500 USD/EUR for Europeans.

Applications will require a copy of the conference abstract, a short CV, and letter(s) of support, and should by send to the secretary/treasurer by email. The application becomes effective when the abstract is accepted by the scientific committee of IPC/IOPC-2020. IOP Membership is mandatory for applicants. After abstract acceptance by the scientific committee an IOP appraisal committee will decide on the donation of the awards. We would like to hereby inform all supervisors of potential applicants to be aware of this funding opportunity and to encourage their students to apply.

In this newsletter, we continue our series of collection highlights—this time featuring the Cleveland Museum of Natural History thanks to Mike Donovan. Please consider writing a collection overview for your own institution for a future newsletter.

With best regards, Steve
Steve Manchester (Gainesville, FL, USA), IOP President

Elections of IOP Executive Committee 2020 – Call for nominations

The term of office of the current Executive Committee ends during the next International Organisation of Palaeobotany Conference in Prague 2020. As usual, the election of officers should take place at the General Assembly held during the conference. The Executive Committee consists of President, three Vice-Presidents, Secretary/Treasurer, three Members at Large, and Conference/Congress Member. The Conference/Congress Member is chosen by the EC; he/she is usually in charge with the organization of the next IOPC. All other officers will be elected by the members. While the President and the three Vice-Preseidents shall not serve more than one consecutive term of office, the three members at Large and the Secretary/Treasurer can be re-elected for another term.

According to our statute, the Executive Committee shall seek nominations for the eight places by advertising in the newsletter. The call for nominations must be made by the Secretary/Treasurer in the IOP newsletter no later than six months before the conference at which the election shall take place (latest February 2020).

Hereby, we call for nominations for the following positions of the EC:

- President
- Three Vice-Preseidents
- Secretary/Treasurer
- Three members at large

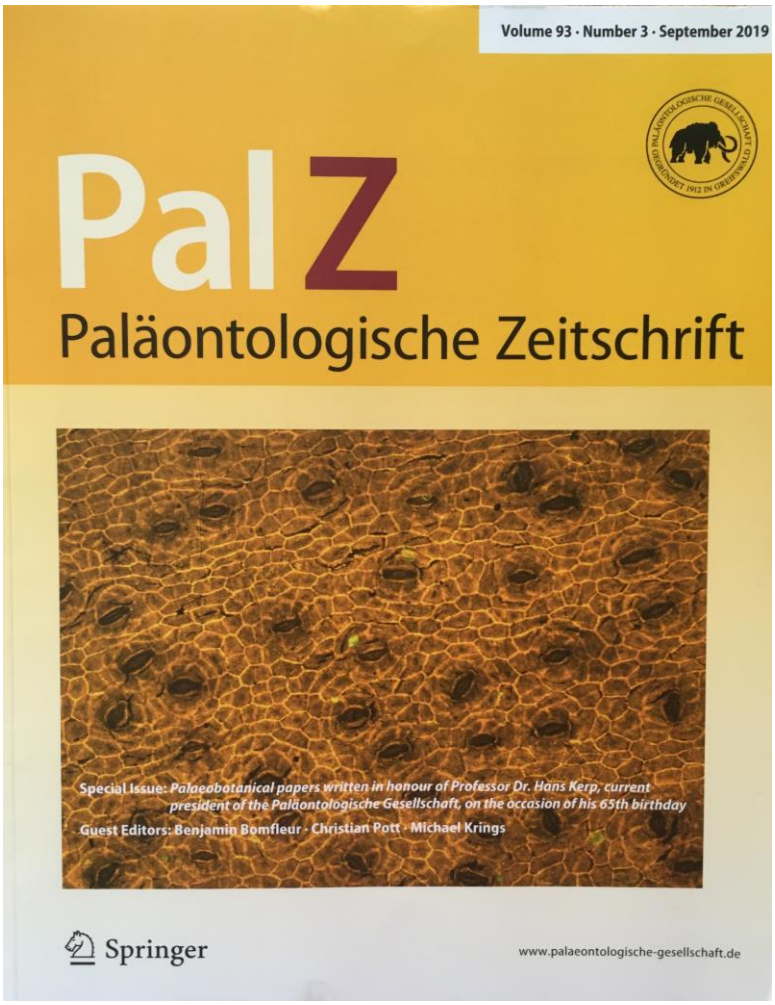
Nominations may be made in writing (e-mail attachment to the secretary/treasurer: Lutz.Kunzmann@senckenberg.de), by any member of IOP. Self-nominations are also possible according to our statute. All candidates must be current members of IOP. If you wish to nominate someone, please make sure in advance that the person is willing to be nominated for a specific officer position. Please note that the current Members at Large and the Secretary/Treasurer are eligible for reelection and therefore could be nominated.

The Executive Committee will determine the status of the all nominees, ascertain that they are prepared to stand for election, and will publish a list, in the form of a ballot in the newsletter in June 2020.

Therefore, your nomination letters are requested latest by March 30, 2020.

Special issue in occasion of the 65th birthday of Hans Kerp.

Open Access link: https://link.springer.com/journal/12542/93/3



Palaeobotanical papers written in honour of Professor Dr. Hans Kerp, current president of the Paläontologische Gesellschaft, on the occasion of his 65th birthday

Issue Editors: Benjamin Bomfleur, Christian Pott, Michael Krings

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   Henk Visscher, Johanna H. A. van Konijnenburg-van Cittert (pp. 373-375)
3. ***Palaeolyngbya kerpii* sp. nov., a large filamentous cyanobacterium with affinities to Oscillatoriaceae from the Lower Devonian Rhynie chert**

Collection Spotlight: Cleveland Museum of Natural History

The Department of Paleobotany and Paleoecology at the Cleveland Museum of Natural History in Cleveland, Ohio, USA curates over 80,000 specimens from the Precambrian to Recent, with a focus on Devonian and Carboniferous compression and permineralized plant fossils from Ohio and the surrounding region. Other strengths include Late Cretaceous Deccan Intertrappean fossil plants from India and Pleistocene-Recent pollen from Africa. Fossil plants have been curated in the museum's paleontological collections since the opening of the museum in 1922, particularly plants from the local Late Devonian Cleveland Shale. In the absence of a paleobotanist, these fossils remained mostly unstudied until 1980, when Dr. Shyamala Chitaley officially founded the department as its first curator. Chitaley, with the help of a small army of volunteers, built up the paleobotanical holdings through field collections and accessioning orphan collections, and focused her research efforts on the Cleveland Shale and Deccan Intertrappean floras.

The Department of Paleobotany and Paleoecology uses the fossil plant collection for research, training, and outreach. Dr. Denise Su, the current Curator and Head of Paleobotany and Paleoecology, studies the paleoenvironments of important hominin sites in eastern Africa to understand human origins and evolution. Long-term field projects have focused on Laetoli, Tanzania (3.6-3.8 Ma). Dr. Mike Donovan, Senior Collections Manager, studies insect feeding on fossil and living plants to examine how major environmental changes affected ancient insect and plant biodiversity, and how those changes have shaped modern ecosystems. Ongoing projects focus on the effects of the Cretaceous-Paleogene extinction and Paleozoic climate change on arthropod herbivory.

Local undergraduate students are involved in the department through internships and the Case Western Reserve University work-study program. We currently have two undergraduate students working within the collections - Serene Pierce, Hoskins Memorial Intern, is reorganizing and rehousing the plant macrofossil collection, and Lindsey Druschel, Collections Assistant, is entering palynological specimen data into the department's database. Volunteers have played a vital role in helping curate the paleobotany collections since the founding of the department. Paulette Hervi Hughes, Volunteer Curatorial Assistant, does a variety of tasks to help facilitate curation and research and has attained deep knowledge of the collection and its history through 17 years of dedicated volunteering. Joe Klunder is currently making specimen labels, and George Baker will soon begin photographing specimens as part of our digitization efforts. Research Associates Dr. Charles Good (The Ohio State University at Lima), Dr. David Jarzen, and Dr. Steven Manchester (Florida Museum of Natural History) are involved in projects focused on coal balls, palynology, and the Deccan Intertrappean flora, respectively.

Fossil plants were curated in the museum long before the establishment of the paleobotany department, and were mostly collected by local paleontologists, geologists, and fossil enthusiasts. The Late Devonian Cleveland Shale is a shallow sea deposit known for its exceptionally preserved sharks and arthrodire placoderms, including the massive predator *Dunkleosteus*. Despite the distance from the paleoshoreline, rare fossil plants are also found in this unit. During the construction of Interstate 71 in Cleveland in 1965-68, construction crews exposed fresh rock with beautifully preserved fish and plant fossils, which were collected by museum staff and volunteers. The Cleveland Museum of Natural History houses the only major collection of Cleveland Shale plant material with over 3000 macrofossils and microslides. After

founding the department, Chitaley and colleagues began describing a number of species from the Cleveland Shale flora, including most strikingly a 1.25 m tall nearly complete lycopsid plant, *Clevelandodendron ohioensis*. *Smeadia clevelandensis* (a herbaceous lycopsid), *Callixylon clevelandensis*, *Prototaxites clevelandensis*, and a palynoflora were also described. Chitaley, officially retiring at age 92, made significant progress in realizing her goal of describing every plant species preserved in the Cleveland Shale, but undescribed plant fossils, including a number of compressed lycopsid axes and strobili, are available for interested paleobotanists to study.

In 1982, the accession of the John H. Hoskins Collection from the University of Cincinnati significantly expanded the paleobotany collections. The Hoskins collection consists of about 25,000 macrofossils, 2000 microslides, and 2000 peels collected by Hoskins and his students, including Drs. Maxine L. Abbott, Arthur H. Blickle, Aureal T. Cross, and Robert M. Kosanke. The collection is worldwide in scope and spans the geologic history of plants, but is focused on Devonian and Carboniferous floras of Ohio and surrounding states. Notable specimens include floras from the Devonian black shales of Ohio; coal balls from Iowa, Illinois, Ohio, and Kansas, including type specimens published in monographic studies of *Bowmanites, Pachytesta*, *Scolecopteris*, and *Selaginellites*; the Upper Freeport Coal flora from the Pennsylvanian of Athens County, Ohio written about by Abbott in a number of papers, including her monograph on *Asterophyllites*, *Annularia*, and *Sphenophyllum* species from the USA; Pennsylvanian floras from Frostburg, Maryland, Vinton, Ohio, and Hazard, Kentucky; and Eocene fossil wood from Hay Ranch, Eden Valley, Wyoming, described by H.O. Kruse. The coal ball peel collection is being actively developed by Good, who is nearly finished with creating a reference collection with taxonomic identifications of all of the coal balls.

The Shyamala Chitaley Deccan Intertrappean Collection from Late Cretaceous localities in India is one of the largest collects of Deccan Intertrappean material outside of India, and includes macrofossils and slides of flowers, fruits, and wood. The collection includes a number of holotypes and paratypes.

The Daniel A. Livingstone palynology collection, which is one of the largest collections of African pollen in the world with more than 35,000 microslides and 30,000 photomicrographs, was donated from Duke University in 2013. The collection includes palynological samples from lake cores from east Africa, which were used by Livingstone, his students, and colleagues to research forest ecology, bioclimatology, and paleolimnology of African lakes. Palynological samples from lakes in Canada and the USA are also represented in the collection. The extensive pollen reference collection is focused on African plants from across the continent and has a broad taxonomic focus. Slides are referenced to vouchered herbarium specimens.

In addition to the pollen collection, we are also home to the Gerhard O. W. Kremp palynology reprint collection, consisting of over 12,200 reprints. The reprint collection provided the original bibliographic foundation for the Palynodata database (https://paleobotany.ru/palynodata).

Other noteworthy collections include the Frank Zimmerman Collection of fossil wood from around the USA, the Dale Zelinski Collection of Hell Creek and Fort Union fossil plants from North Dakota, USA, and the Robert C. Roman Collection (Bowling Green State University) of macrofossils and peels from the midwestern and southwestern USA.

The department recognizes the importance of educational outreach in stimulating interest in science and raising awareness of paleobotany. We curate a teaching collection of over 900 specimens to support outreach efforts at the Cleveland Museum of Natural History. Visitors at educational events are able to interact with fossil plants and learn more about ancient floras

of Ohio, some of which are preserved in their neighborhoods. Specimens from the teaching collection are also available for loan to local K-12 teachers and university professors. Two internship programs enable undergraduates to acquire hands-on experience in paleobotanical research or collections management. The Kirtlandia Research Internship is an eight-week summer program for undergraduates to conduct research projects, including in the Department of Paleobotany and Paleocology (https://www.cmnh.org/researchinternships). The Hoskins Memorial Internship is a yearlong position available to undergraduate students to help in rehousing the John H. Hoskins collections in new cabinets to better preserve the collection (https://www.cmnh.org/research-collections/paleobotany-paleoecology/collection-area-database/john-h-hoskins-memorial-internship).

The Hoskins Grant-In-Aid provides $1000 grants for researchers to visit the paleobotany collections in order to offset the costs of travel, lodging, and meal expenses. Graduate students, early career scientists, and international scholars without available research funds are particularly encouraged to apply. Grant applications are now being accepted on a rolling basis:
https://www.cmnh.org/research-collections/paleobotany-paleoecology/collection-area-database/john-h-hoskins-grant-in-aid-program

Please contact Mike Donovan (mdonovan@cmnh.org) with any questions or for more information regarding our collections, specimen loans, internships, or grants to visit the collections.

Mike Donovan
Senior Collections Manager of Paleobotany and Paleoecology (mdonovan@cmnh.org)

Reflections on the 'Earth Day', 22 April 2019

Our Earth as seen from the Moon, 21 July 1969

'*That's one small step for man, one giant leap for mankind*', Neil Armstrong on taking his first steps on the moon. 2019 is the 50th anniversary of that seminal event and those iconic words. It's now time to take another '*giant leap*' forward—for humankind and for all other species of life that share our world!

'*The Earth was small, light blue, and so touchingly alone, our home that must be defended like a holy relic*.'--Aleksei Leonov (USSR), in '*The Home Planet*' (1988), reflecting on the occasion of the first space walk.

Yes, Earth is surely the most prodigiously beautiful and biodiverse of all possible worlds! We're certainly not aware of another. Consider those photos taken of the '*Earthrise as seen from the moon*' from Apollo II while in lunar orbit the day before that first landing and moonwalk. Witness our exquisite fragile Earth with its light-blue expanse of oceans, and the ever-shifting cloudscape texturing its encircling atmospheric skin.

Find your way down through that atmosphere and venture into the biosphere:
teaming with life of the most startling diversity and clothed in colour touching every nuance of the spectrum—think of the insects (from beetles to butterflies) or the birds (from toucans to parrots) or

the flowering plants. Then there's the endless range of spectacular landscapes, from the polar icecaps to the folded mountain belts and the tree-clad Pacific islands to the tropical jungles! You can fill libraries of books brimming with photos of the most breathtaking corners of the Earth—its life and landscape!

'***Earth Day***', 22 April 2020

Next year, 2020, is the 50th anniversary of Earth Day!
It offers us the ideal symbolic moment to make a global commitment to the most profound change, to a seemingly inconceivable shift! Literally towards '*achieving the impossible*'! Talking from within the scientific fraternity, and having been born into that fraternity, we are on the brink of no return, the very edge of the precipice.

Let us, for instance, call urgently on the school-kids of the world to expand on their climate-change brief of 2019. We adults have failed them inexcusably! Let them, accessing the rapidly expanding network of science and knowledge, call for a total revamp of how we humans, their elders, currently 'mis-govern' the world. Let us call, too, on the school-kids of 50 years hence to express, by proxy, their wishes.
And let us bring the rest of life into the 'democracy'—how would the chimps and gorillas, the elephants, the big cats and the whales vote given a voice? How would the birds and the beetles vote? How would the trees and the grasses vote? Why do we stand so arrogantly alone?

Nationalism, Capitalism, Democracy, The military, The Rule of Law, are recent inventions. Mostly of the past few hundred years. If they worked better in today's world, we'd not be teetering on the edge. They're driving us and the rest of life on Earth over into the abyss of extinction. These un-tuned pillars of governance—think of the Parthenon with its eroded tottering pillars--are clearly impotent in the face of our unprecedented global challenges!

'**Earth Day**', 22 April 2019

This year, 2019, is the 50th anniversary of the UNESCO conference in San Francisco when the proposal was made to set aside a particular day, annually, to honour the Earth and the concept of peace—22 April.

'***20-20 vision***'

In a specific sense, the term refers to perfect vision, sharpness of vision as in seeing numbers of different sizes in testing for one's driving license. In a more inclusive sense, it takes in contrast, tracking moving objects, depth perception, speed of focus, colour vision. Towards Earth Day 2020, let us expand on the metaphor. Let us picture ourselves on the moon looking down at the Earth—with 20-20 vision, in the most holistic objective sense. We can see both across space and time—back to around 300,000 years ago when our species, *Homo sapiens*, arose, as if it were yesterday; back to around 10,000 years ago and the Agricultural Revolution; back to 1769 and the Industrial Revolution.

With our super 20-20 vision, how do we perceive it all? We see an exponential explosion in the human population reaching over 7,2 billion today, and we see their spreading uncomprehending 'footprint' to every corner of the planet, land and sea. We see the rest of life dwindling rapidly in abundance and diversity, in the grip of extinction. We see the Sixth Global Extinction in startling clarity!

Global census of Biodiversity

'*And how many species of organisms are there on earth? We don't know, not even to the nearest order of magnitude. The number could be close to 10 million or as high as 100 million*.'--Edward O. Wilson, '*The diversity of life*' (1992)

'*… in 2015 the number of species known to science passed two million. … It is entirely possible that specialists have discovered only 20 percent, or fewer, of Earth's biodiversity* …' --Edward O. Wilson, '*Half Earth*' (2016)

The 2015 census of the most familiar organisms includes around 5,500 species of mammals, 10,000 of birds, 32,000 of fishes and 270,000 of flowering plants. Even amongst these so richly colourful, best-loved groups, there remains much beyond our knowledge: some 2-3 new species of bird are discovered annually, and estimates put the number of fishes and flowering plants still unknown, for instance, at as many as 10,000 and 80,000 species respectively (Wilson 2016).

The tally of insect species, the most diverse group of organisms known, amounted to 751,000 in 1992, with estimates ranging from 10-30 million still undiscovered.

Our Earth's biosphere is indeed profoundly biodiverse; and we are but one species amongst that mostly still-unknown richness. We are not alone!

The 6th Extinction

The dinosaurs, and over 90% of all other life, died out when an asteroid the size of downtown New York slammed into the Earth some 66 million years ago. We know that cataclysmic event as the **5th Extinction**. Imagine a similar-sized asteroid slamming into the Earth today. '*We humans are that asteroid. Humankind is rapidly bringing about the extinction of life worldwide, irreversibly destroying the natural beauty and diversity of our Earth, impotently converting our planet into a sad, sullen slum. We are forging the Sixth Global Extinction*.'—John M. Anderson, '*Towards Gondwana Alive*' (1999). That was written 20 years ago—and things have got a whole lot worse since.

How fast are we driving species to extinction?—asks Edward Wilson in '*Half Earth*'. Current science suggests an astonishing figure: close to a '*thousand times higher than that before the spread of humanity.*' And all this due to human activity: deforestation and other habitat destruction, the spread of invasive species, hunting, poaching, climate change. It's not only the larger mammals (elephants, rhinos) or birds (everyone knows of the Dodo) at risk, it's all groups of organism down through the pecking order. We humans are the most invasive species ever.

In view of my deep concern for the worsening 6th Extinction, I made a clear decision back in 1998, just prior to our '*International Gondwana Conference*' held that year in Cape Town, to split my research time two ways. Half would be spent on projects tied directly to addressing the global crisis, and the other half to continuing our lifelong study of the Late Triassic Molteno fossil flora. The briefest glimpse into these follows.

'***Gondwana Alive***'-'***Earth Alive***'-'***Africa Alive***' triptych of projects
'***Gondwana Alive***' '*Promoting biodiversity & stemming the Sixth Extinction*', John M. Anderson *et al*., (1999); with endorsements from Nelson Mandela, David Attenborough, Kofi Annan, Edward Wilson and other world leaders in diverse fields. See further on www.gondwanaalive.org

'***Earth Alive***' '*101 strategies towards stemming the 6th Extinction*'
Launched at the UNESCO '***PlanetEarth***' Congress in Arusha, Tanzania, 2008; with 20 scholars from South Africa and Tanzania playing the card game in the conference centre with the delegates filtering by.

'***Africa Alive Corridors***' '*Telling the 4-billion year Biography of the Mother Continent*'
A selection of 20 Corridors (each with 20 Heritage Nodes), spell out the holistic geological-biological-cultural epic story of Africa*. With everyone as custodians of over 4-billion years of unmatched irreplaceable heritage. … Creating a new tomorrow*' (publication aimed at March 2021). Towards the dignity of all humans and all other life sharing our planet.

Molteno Fossil flora: For some 50 years, as a palaeobotanist, I've been digging into pre-human history. A lifetime collecting fossil plants and insects from 100 sites (mostly new) within the Triassic Molteno Formation in the extensive Karoo Basin of South Africa. This was an especially exciting moment in Earth-time, around 230 million years ago, when the biosphere was reinventing itself--following the 3rd Global Extinction ending the Permian Period (252 million years back). It was the earliest days of the dinosaurs, so beloved by so many; the stage on which the beetles burst into

dominance; the heyday of the gymnosperms (cone-bearing plants). There was literally an explosion of new life, and the Molteno offers a unique window onto that distant world.

The world is never still. Whereto from here?

'***Half Earth***', '*Our Planet's Fight for Life*', Edward O. Wilson (2016)
'*In Half-Earth I propose that only by committing half the planet's surface to nature can we hope to save the immensity of life forms that compose it. … I am convinced that only by setting half the planet in reserve , or more, can we save the living part of the environment and achieve the stabilization required for our own survival*.'

We'd better heed Wilson's words. He is surely the Charles Darwin of this past century. E.O., as he likes to be called, is the world's ant expert, and a field naturalist par excellence. In his vast repertoire of research papers and books (all literary masterpieces), he gave us the words biodiversity, biophilia, island-biogeography and many besides. We ignore the very best of science at our peril. There is still time.

John M Anderson
22 April 2019
(slightly adapted for the IOP Newsletter, 26 Sept 2019)
Dr John M. Anderson
Ass. Researcher, Evolutionary Studies Institute (ESI), Witwatersrand University, Johannesburg, SA
Honorary Prof, Nelson Mandela University, Port Elizabeth, SA

Upcoming meetings

15th International Palynological Congress / 11th International Organisation of Palaeobotany Conference (IPC/IOPC-2020) Prague, Czech Republic, 12th to 19th September 2020

Invitation
Since 2009 the world community of palynologists and palaeobotanists has met every four years to discuss the latest research and to exchange experiences. The 15th International Palynological Congress (IPC-XV 2020) and the 11th International Organisation of

Palaeobotany Conference (IOPC-XI 2020) are coming soon. This joint congress will be held in Prague, from 12th to 19th September 2020, hosted by Czech palynologists and palaeobotanists. In 1820 a binomial nomenclature for fossil plants was used for the first time by the Czech "Father of Palaeobotany" Caspar Maria Sternberg when publishing Flora der Vorwelt. We are delighted to dedicate this meeting in honour of 200 years of Palaeobotany.

It will be an excellent opportunity for the Czech Republic (a country rich in plant fossil finds, palynological sites, and palynological and palaeobotanical history) to host the leading experts in various disciplines and to promote scientific innovations. Joint symposia are planned to foster interaction and integration between palynologists and palaeobotanists, as well as plenary sessions of general interest. The meeting is promoted by the collective efforts of the International Federation of Palynological Societies (IFPS) and the International Organisation of Palaeobotany (IOP).
Please complete the pre-registration form on our website:
http://prague2020.cz/registration.php

We look forward receiving your contributions to the conference.

Best wishes,
The Organizing committee
IPC XV / IOPC XI 2020

Location
Prague is the largest city and the capital of the Czech Republic. Situated in the heart of Europe, it is one of the continent's most beautiful cities and the major Czech economic and cultural centre. . It is famous for its historical monuments and sights and has UNESCO World Heritage status. The Charles Bridge (Karlův most) across the Vltava River probably represents the city's most famous landmark. The winding course of the Vltava, with its succession of bridges and changing vistas, contrasts with the ever-present backdrop of the great castle of Hradčany (Prague Castle), which dominates the left-bank region of the city. Prague is famous for its cultural life. Wolfgang Amadeus Mozart lived here, and his Prague Symphony and Don Giovanni were first performed in Prague. In addition, the lyric music of the great Czech composers Bedřich Smetana, Antonín Dvořák, and Leoš Janáček is commemorated each year in a spring music festival.
Venue: The congress will be held in the Clarion Congress Hotel Prague, Freyova 33, Prague 9 (https://www.clarioncongresshotelprague.com/en/). This is an international four-star hotel and a state-of-the-art conference center, providing high-quality services. The hotel is 30 minutes by car from the International Václav Havel Airport and 10 minutes by metro from the historic city centre of Prague. The conference centre is directly on the metro B line, station "Vysočanská".

Visa Policy

Participants from most European countries and the USA can enter the Czech Republic without a visa. Other participants are advised to check requirements at their closest Czech Republic embassy or consulate, and make their own arrangements. Detail information can be found on https://www.mzv.cz/jnp/en/information_for_aliens/general_visa_information/index.html. An official letter of invitation will be sent on request. Such a letter will not grant any financial support.

More **Practical hints** are available online. Please visit http://prague2020.cz

Field trips

Pre-Conference Field trip (three days): Permian of Chemnitz

Mid-Conference Field Trips (one day each):

- Lower Palaeozoic of the Barrandian area
- Late Cretaceous of the Bohemian Cretaceous Basin
- Paleogene and Neogene of North Bohemia
- Postglacial of Šumava National Park
- Modern pollen deposition in relation to Holocene vegetation changes in the Krkonoše Mts.
- Late Pleistocene and the Holocene of Bohemian Paradise

Post-Conference Field Trips (2 days):

- Permian of Bohemia
- Miocene in the Carpathian Foredeep and Quarternary of Moravian Karst

Scientific programme

This will cover all aspects of palaeo- and actuopalynology and palaeobotany including:

- Taphonomy
- Major extinctions and diversifications through time
- Methods in palynology and palaeobotany
- Palaeoecology and adaptive traits
- Pollen/spore morphology
- Palaeobotanical and palynological contributions to the Tree of life
- Aeropalynology, forensic palynology and Melissopalynology
- Quaternary palaeobotany and palynology
- Cenozoic palaeobotany and palynology
- Mesozoic palaeobotany and palynology
- Palaeozoic palaeobotany and palynology
- Proterozoic palynology

15th Climatic and Biotic Ebents of the Paleogene (CBEP-2020) Bremen, Germany, 31th August to 3rd September 2020

CBEP2020

Climatic

and

Biotic Events

of the Paleogene

Bremen, Germany

Aug 31 – Sept 3, 2020

First Circular

Contact

CBEP 2020
Bremen, Germany

www.marum.de/CBEP2020

CBEP2020

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University of Bremen
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Germany

cbep2020@uni-bremen.de

Place and date

The International Conference „Climatic and Biotic Events of the Paleogene (CBEP) 2020" will be held in Bremen, Germany, on the University Campus from Monday, August 31, to Thursday, September 3, 2020.

Optional field trips on Sept 4-5, 2020.

Registration and accommodation

Details will be given in the Second Circular.

Important dates

January 2020 Publication of Second Circular
1 May 2020 Deadline for abstract submission
1 March to 1 May 2020 Early bird registration
before 1 August 2020 Online registration

marum
Center for Marine Environmental Sciences
Universität Bremen

From land to sea

We welcome you cordially to Bremen, a charming modern city with a touch of hanseatic flair located at the banks of the Weser river, close to the North Sea coast.

The Paleogene Period was a time of extremes and transitions, characterized by climatic conditions largely unfamiliar to us today but saw the rise of essentially modern continental configurations, biotic communities, and biogeochemical regimes.

CBEP2020 will provide a multidisciplinary stage with a focus on the exciting themes and topics (see "Scientific themes"). We expect exciting scientific contributions, hot discussions, and new ideas.

The IODP Bremen Core Repository (BCR) at MARUM – Center for Marine Environmental Sciences of the University of Bremen holds sediment cores from over 89 expeditions. Explore beyond the Paleogene at CBEP2020!

We welcome you to participate and are looking forward meeting in in Bremen in late August/early September 2020!

Local organizing committee

Ulla Röhl, University of Bremen
Thomas Westerhold, University of Bremen
Heiko Pälike, University of Bremen

Conference program

The conference will comprise scientific sessions, poster sessions (incl. poster presenters Lightning talks), and field trips. If you are interested in receiving the Second Circular, please send an e-mail to cbep2020@uni-bremen.de.

Scientific themes

- Habitable Planet: Learning from Past Environments
- Climate, Paleoecology and Paleodiversity
- Biogeochemical Cycles
- Tectonics, Surface Environments and Hydrological Processes
- New developments, applications and results of Paleoproxies

Field trips 1-2 days field trips

2020	Sunday Aug 30	Monday August 31	Tuesday Sept 1	Wednesday Sept 2	Thursday Sept 3	Friday Sept 4	Saturday Sept 5
Morning		Opening Oral sessions	Oral session Oral session	Oral session Oral session	Oral session Oral session	Field trips	Field trips
Afternoon		Posters Oral session	Posters Oral session	BCR* visit Informal Meetings	Oral session Posters, Wrap-up	Field trips	Field trips
Evening	Icebreaker		Conference Dinner				

*IODP Bremen Core Repository (BCR)

Hosts

The conference is hosted by:
MARUM – Center for Marine Environmental Sciences, University of Bremen

Scientific organizing committee

Claudia Agnini, University of Padova
Laia Alegret, University of Zaragoza
Steve Bohaty, University of Southampton
Bernard Boudreau, Dalhousie University
Gabe Bowen, University of Utah
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