

Proposed symposia for IPC/IOPC 2012

Program committee reviewed pre-proposals submitted until the 2nd deadline 31 August, 2011, and has been accepted following symposia. If you are interested in the symposium, please contact the organizer(s). One person would be able to do two presentations at the maximum. Call for abstracts will be started in January, 2012.

- **Palynological electronic resources and methods of palynological data processing and summarization**

Organizers: D. A. Britski & O. A. Gavrilova

Contact email address: dmibri@mail.ru

Purpose: The great volumes of extremely valuable information concerning the pollen morphology of different taxa of modern and fossil plants as well as different applied and theoretical aspects of palynology was accumulated in laboratories of palynology around the world.

The digitization of available data and bringing them into a form available for a wide range of specialists makes it possible:

- 1) to avoid recurrent studying of the same material;
- 2) to prevent material loss due to natural aging of collections;
- 3) to present results of investigation in full mode, without constriction of ordinary journal publication and
- 4) make laboratory's archives accessible for scientific community.

In the nearest future the separated electron resources will be obviously united in the integrated information system that could bring applied and fundamental palynological studies up to the new standard by accumulation of information.

Methods, technologies, and approaches to development of informational systems and their integration are suggested to be discussed.

- **Cross-reactivity of pollen allergy**

Organizers: Terumi Midoro-Horiuti, Yasuto Kondo

Contact email address: tmidoro@UTMB.EDU

Purpose: Many pollens in related families have cross-reactive allergens and also these allergens cross react with phylogenetically far allergens. We will discuss the recent findings in pollen allergy from clinical and basic science research.

- **Uplift of the Himalaya and its impact on the climatic and vegetational changes in East**

Asia

Organizers: Zhou Zhekun, Arata Momohara

Contact email address: zhouzk@mail.kib.ac.cn

Purpose: The uplift of the Himalayas is one of the most outstanding geological events in the Cenozoic. This event has dramatically changed the geological and physiognomic aspects of Asia, and in turn has greatly affected the atmospheric circulation pattern, thus cause the onset and evolution of the East Asian monsoon system. In turn, this monsoon system has deeply impacted the East Asian vegetations and climates from continental to local scales. Researches into these aspects have remained so hot that a great number of papers and books have been published recently. However, some key issues are still highly in debate, those of which include the details of time and rate of the uplift of Himalayas, the onset and subsequent evolution of the East Asian monsoon, and the vegetational evolution under this dramatic climate change along the Cenozoic. Exploring these questions keeps an enduringly attraction to paleobotanists, botantists , palynologists and geologists worldwide. The research field is very active and new findings are reported with a remarkable speed. We anticipate a number of interesting contributions to this symposium which will focus on all aspects of Palynology, Paleobotany, geology ecology, and biogeography.

- **Tropical coastal environments: Drivers and consequences of ecological change in the late Quaternary**

Organizers: Ulrike Proske, Hermann Behling

Contact email address: ulrike.proske@anu.edu.au

Purpose: Coastal ecosystems, such as peat forests, mangroves and salt marshes, play a key role along tropical shorelines. Due to their position as link between the terrestrial and the marine system, these ecosystems are known to prevent the erosion of sediments and thus stabilise coastlines, dampen the impact of storm surges, cycle nutrients, store carbon and provide a unique habitat for numerous marine and terrestrial organisms. Throughout the late Quaternary changes in a variety of local, regional and global parameters as well as human impact forced these ecosystems to adapt constantly to new environmental conditions. The continuous reconfiguration of these ecosystems is reflected in their biodiversity pattern and the variance of their spatial extent, which in turn had consequences for the coastal system as a whole.

This session welcomes contributions from scientists researching the palaeoecology and palaeoenvironment as well as drivers and consequences of ecological change in pan-tropical coastal ecosystems.

- **Late Quaternary environments in Southeast Asia**

Organizers: Janelle Stevenson, Ulrike Proske, Zhen Li, Nguyen Thi Mai Huong

Contact email address: Janelle.Stevenson@anu.edu.au

Purpose: Southeast Asia hosts a wide range of ecosystems, from montane rainforest to coastal mangroves. Throughout the late Quaternary these ecosystems were subjected to drastic changes in environmental conditions which acted on different temporal scales (millennia to decades) and were controlled by global (e.g. sea level and climate) and local drivers (e.g. fire, alterations in geomorphology and human activity). These fluctuations in environmental parameters induced profound changes in the landscape leading to spatial and compositional adaptations of the different ecosystems. By investigating late Quaternary palaeoecological records, drivers and feedback mechanisms of ecological change become apparent which allow us to better understand ecosystem dynamics under changing environmental conditions.

This symposium invites contributions investigating the development of late Quaternary landscapes throughout Southeast Asia. It aims to bring together researchers investigating spatial and ecological ecosystem evolution and the drivers behind environmental change.

- **"Into the Icehouse" - climate and vegetation change at the end of the Pliocene (a joint ROCEEH and NECLIME symposium)**

Organizers: Torsten Utescher, Angela A. Bruch

Contact email address: utescher@geo.uni-bonn.de

Purpose: The drastic global change from Neogene warm to Quaternary ice house climate took place to a large extent during the Pliocene. Marine records give evidence for a globally severe cooling and/or increasing aridity during Pliocene and towards the Pleistocene. There is evidence from various palaeobotanical records that this change involved a distinct loss in biodiversity, and for the first time, plant associations are recorded that are close to modern ecosystems. However not many details are known yet about the spatial and temporal distinctions in terrestrial climate evolution, influencing the vegetation cover differently in different parts of the continents.

Our symposium aims to discuss the late Pliocene to early Pleistocene terrestrial climate record, its spatial differentiation and influence on vegetation development. Contributions to quantitative vegetation and climate reconstructions based on all kinds of plant fossils, macro remains as well as pollen, and from all parts of the world are welcome to provide an overview of temporal and spatial changes at the Pliocene/Pleistocene transition.

- **Quantitative reconstructions of past vegetation/land cover at local to continental spatial scales using pollen records– potentials and limits**

Organizers: Marie-José Gaillard, Shinya Sugita, Jack Williams

Contact email address: Marie-jose.gaillard-lemdahl@lnu.se

Purpose:

Background

The Landscape Reconstruction Algorithm (LRA) (Sugita 2007a, b), a new framework of vegetation/land-cover reconstruction, overcomes the difficult issues related with the non-linear nature of pollen-vegetation relationships by correcting for biases due to differences in pollen dispersal and deposition properties between plant species, landscape characteristics, species composition of vegetation, and site size and type (bog or lake). The LRA consists of two separate models, REVEALS and LOVE (LOCAL Vegetation Estimates), allowing vegetation abundance to be inferred from pollen percentages at the regional (104–105 km² area) and local (<100 km² area) spatial scale, respectively. Extensive simulations support the theoretical premise of the LRA (Sugita, 1994, 2007a, b). The effectiveness of REVEALS has been empirically tested and was shown to be satisfactory in southern Sweden (Hellman et al., 2008a, b), central Europe (Soepboer et al., 2010), and the upper Great Lakes region of the US (Sugita et al., 2010). Reliable estimates of pollen productivity (PPEs) are required for application of the LRA (Broström et al. 2008). Through the POLLANDCAL's (NordForsk network 2001-2005) and LANDCLIM's (NordForsk network 2009-2011) activities (coordinated by M.-J. Gaillard), the number of plant taxa for which PPEs are available has rapidly increased in many parts of NW and W Europe N of the Alps (e.g. Broström et al. 2004; Nielsen 2004; Soepboer et al. 2007; Mazier et al. 2008; van Stedingk 2008).

The application of REVEALS and the LRA has great potential in several research fields including research questions that require quantitative reconstructions of past vegetation/land-cover. A particularly relevant area is that of climate modelling and the study of land cover-climate feedbacks. Other research areas for which quantitative reconstruction of past vegetation may provide essential information are long-term environmental and vegetation dynamics, the palaeoecology-ecology/conservation/landscape management interface, and archaeological sciences. Moreover, quantitative vegetation reconstructions inferred from pollen records are a mean to evaluate scenarios of past land-cover based on other types of land-use modelling (e.g. Kaplan et al., 2010; Klein Goldewijk, 2010). Further, REVEALS reconstructions may be compared to the results of other methodologies using pollen records (e.g. several papers by Brewer et al., Davis et al, Tarasov et al., Williams et al), providing a mean of cross-evaluation of the methods/models used.

The first REVEALS-based reconstructions of Holocene regional vegetation in southern Sweden and the Swiss Plateau indicate that the cover of openland through the Holocene is heavily underestimated by percentages of Non Arboreal Pollen (NAP – pollen from herbaceous plants). Thus, human impact and the effect of other disturbances (i.e. grazing by wild animals, fire) on land cover appear to have been much more profound than changes in pollen percentages alone would suggest (Sugita et al. 2008; Soepboer et al. 2010). The outcome of the first generation of REVEALS reconstructions over NW and W Europe produced by the Swedish research project LANDCLIM 6000-200 and the NordForsk network LANDCLIM 10 000 (Gaillard et al. 2010) show the same

pattern. Therefore, spatial structure and openness of vegetation caused by both natural and anthropogenic disturbances over the last 10000 years may have been more substantial, and thus have played a more important role on the land surface-atmosphere interactions and feedbacks - i.e. on the regional climate and other environmental factors - than previously assumed.

Aims and goal of the symposium

1. Gather together all scientists developing methods to describe past land-cover at the regional-continental and local spatial scales and its changes through time
2. Gather together scientists who attempt quantitative reconstruction of past vegetation/land-cover in order to answer specific research questions
3. Review the progress in quantitative reconstructions of past vegetation in the different parts of the world
4. Discuss collaborative strategies to achieve high quality, quantitative descriptions of past land-cover over the globe for the purpose of climate modeling and a better understanding of past environmental changes and their causes
5. Discuss the potential of quantitative reconstructions of vegetation at the local spatial scale for research questions at the palaeoecology-ecology/conservation/landscape management interface.

● **Climatically-forced vegetation changes short-termed (a NECLIME symposium)**

Organizers: Andrea K. Kern, Torsten Utescher

Contact email address: andrea.kern@nhm-wien.ac.at

Purpose: Cenozoic studies around the globe allow us to draw substantial conclusions about Earth's evolution related to climatic changes. At the very best, proxy data based spatial reconstructions considering palaeovegetation or palaeoclimatic parameters can be compared with results obtained from adequate modeling studies which are highly useful to create an overall image. However, vegetation change caused by short-term climate variability usually remain concealed due to the delimited time resolution such studies permit.

Our symposium aims to discuss climate-vegetation interactions from decadal- to millennial-scale. This information is in great extent only supplied by high-frequency palynological analyses. Focusing on local vegetation dynamics climatic events and transitions can be deciphered and, if possible, compared with other geological and environmental proxy estimations. Besides, thematic priority lies on finding a potential climate-vegetation-equilibrium of fossil plant communities as well as up to what temporal extent, changes within the studied assemblage can be resolved. Only due to a deeper understanding of past short-term events, recent and future climate change and biotic response can be conceived.

We invite all contributions referring to high-resolving, quantitative vegetation and climate reconstructions in the Cenozoic.

- **Quantifying Cenozoic vegetation – new developments in standardized approaches (a joint ROCEEH and NECLIME symposium)**

Organizers: Angela A. Bruch, Elena Vassio

Contact email address: Angela.Bruch@senckenberg.de

Purpose: Standardized methods for vegetation reconstructions are crucial tools to obtain comparable results for fossil floras from different regions and independent from the scientist using the method. Regional or global vegetation reconstructions are a base for as different objectives as landscape reconstructions or climate modeling. Depending on the scale of the objected vegetation unit to be reconstructed, a method has to meet special preconditions and therefore can vary considerably in its theoretical setting.

Several methods were developed during the last years which are based on different philosophies (taxonomic or physiognomic) and approaches (semi - quantitative to statistical), cover different spatial scales of the reconstructed vegetation units (local, regional, or global), or rely on different fossil plant remains (macro or micro floras). Each of those has specific advantages for specific scientific applications.

Our symposium aims to give an overview to the state of the art of methods available and their latest developments. It is NOT meant to be a competition to find “the best method” but to stress the necessity of standardized vegetation reconstructions, to promote their application, and to provide a tool box for various crucial scientific questions.

- **Exine development and pattern formation, unifying ultrastructural and genetic approaches**

Organizers: Stephen Blackmore, Nina Gabarayeva, Michael Hesse

Contact email address: S.Blackmore@rbge.ac.uk

Purpose: The science of palynology is founded entirely upon the extraordinary organisational diversity and resistance to decay of the exine. Not surprisingly therefore, there has always been great interest in understanding how the complex, elaborate and often taxon-specific patterns of exine organisation are developed and have evolved. Traditionally these questions have been addressed by microscopy: first optical microscopy and later electron microscopy. There has also been a strong interest in the theoretical basis of pollen and spore symmetry control, number and placement of germination sites, and surface pattern formation. However, in spores the control of perispore (or perine) sculpturing remains poorly understood with more information urgently needed. More recently, there have been dramatic advances in the molecular genetics of pollen development based on insights from the model plant, Arabidopsis. Much of this new research has been undertaken in Japan.

The symposium aims to bring together experts from the ultrastructural, theoretical and genetic

research areas in order to develop a unified understanding of exine organisation. In doing so it hopes to overcome the tendency in modern science for disciplines to specialise and diverge, each developing its own audience and terminology. Whilst the symposium will be primarily of interest to those with an interest on the development of pollen grains and spores, the insights it generates will also assist in interpreting forms encountered in palaeopalynological or systematic investigations.

- **Paleozoic Plant Physiology**

Organizers: Walton A. Green, Cindy Looy

Contact email address: wagreen@bricol.net

Purpose: Since their disciplinary origins, paleontology and paleobiology have been concerned with basic questions of uniformitarianism: whether the past should be assumed to be the same as the present (unless proven otherwise) or whether, if some changes have been observed, comparable changes in variables that cannot be directly observed should be assumed. Physiology is a particularly difficult area in this regard because it is seldom directly observable without experimental manipulation. In this session we hope to foster a debate about what characteristics of physiology should be considered constant throughout the Phanerozoic and when an 'upward outlook' and receptivity to non-analog arguments is needed. Our focus will be on Paleozoic plant ecosystems, but we welcome contributions from different eras, organisms, or ecosystems that are thematically related to the question of what is uniform about physiology.

- **Amber and the fossil record**

Organizers: Alexander Schmidt, Leyla Seyfullah

Contact email address: leyla.seyfullah@geo.uni-goettingen.de

Purpose: To bring together current research on amber, and to explore the role of resins in the fossil record. Amber and copal are fossilized resins that represent a unique preservational mode, and can give us rare insights into fossil ecosystems that cannot be gained through other media (e.g. tree top and bark microcosms).

This symposium will focus on palaeobotanical insights gained from using amber and the various techniques used to get the data. It will also summarise the problems of amber preparation and what further work needs to be considered.

- **East Asian vegetational responses in the critical climate change events of the Cenozoic**

Organizers: Yusheng (Christopher) Liu, Cheng Quan

Contact email address: liuc@etsu.edu

Purpose: It is now clear that during the Cenozoic Era, climates have dramatically been changed both in the sea and on land. To name a few, these climatically transitional events in a descending order of

geological time include the Paleocene-Eocene Thermal Maximum (PETM, aka Eocene Thermal Maximum1 [ETM1]), Eocene Thermal Maximum2, Early Eocene Climatic Optimum (EECO), Mid Eocene Climatic Optimum, Eocene-Oligocene Transition (EOT), Mid Miocene Climatic Optimum, and Early Pliocene Warming Period. The formation of modern vegetations on Earth has been a product of environmental change and biotic response during the Cenozoic. East Asia occupies an important portion of land in the Northern Hemisphere and is a home to a great number of Tertiary relicts. Therefore, Cenozoic (micro- and mega-) plant remains in East Asia provide essential materials to be studied to better understand how the responses of diverse vegetations to the dramatic climate changes could be. Although much work still remains to be done in East Asia, East Asian Cenozoic Paleobotany has achieved much progress in the past decade. This symposium aims to combine the efforts of paleobotanists and alike worldwide who are interested in the geological history of East Asian vegetations to get insights on the East Asian vegetational responses in the critical climate change events of the Cenozoic.

- **Ancient DNA analysis of pollen and macrofossils: Current research and future prospects**

Organizer: Lynn L. Carpenter

Contact email address: landersn@umich.edu

Purpose: The merging of disparate scientific fields can provide the most exciting and challenging aspects of research. The combination can often give new results and solve long-standing questions that neither field could address alone. For example, the combination of ancient DNA and palynology can provide taxonomic identification for morphologically similar species. Differentiating these species can often give a finer-scale resolution of shifting geographic ranges. Additional investigation can elucidate genetic change over time and give insight to implications for plant response to shifting climates. This research is not without its challenges, and the technical implications must be addressed in parallel with this new data. For example, contamination is a constant problem, particularly as the concentration of DNA within a sample of interest decreases with time.

The purpose of this session is to bring together ancient DNA with the fields of palynology, paleoecology and paleobotany. There are several researchers that would be well-suited to present at this session.

- **The evolutionary history of conifers that are now endemic to Asia**

Organizers: Atsushi Yabe, Ben A. Lepage

Contact email address: hemitraps@hotmail.com

Purpose: Most of the conifer genera that are now endemic to Asia have once distributed widely across the different continents in the Northern Hemisphere during the Quaternary, "Tertiary," and

even Cretaceous period. Despite large amount of fossils have so far been described, history of these paleoendemics, such as the biogeographic patterns of dispersal, habitat of early representatives, are not fully understood well. This symposium is intended to synthesize the current advances in the study of these conifers that are now endemic to Asia to better understand their evolutionary history. The symposium can include systematic relationship, ecology, phytogeography, and any other topics related to those conifers.

- **Impact of Climate change on airborne pollen OR Impact of Climate Change on Aeroallergens**

Organizer: AB Singh

Contact email address: Singha49@hotmail.com, singha49@igib.res.in

Purpose: It is now well established that green house gases such as Co₂, ozone and also global temperature is increasing all over the world. Records from long term data on pollen monitoring from several countries particularly Europe and USA reveal that the concentration and duration of airborne pollen in the air are increasing and this could be due to early and prolonged flowering season of allergenic pollen. The greater increase in concentration and duration leads to increased exposure of patients with respiratory problems with acute and sever respiratory problems. The increased incidence of respiratory allergic diseases all over the world including developing countries is also partially suspected to be due to global warming.

It is therefore the Conference will provide an International Forum to present and discuss this important issue affecting millions of patients across the world.

- **Holocene Palynology and Tropical Palaeoecology**

Organizers: K.P.N.Kumaran, Ruta B. Limaye

Contact email address: kpnkumaran@gmail.com

Purpose: There is considerable concern on the changing scenario of the monsoon pattern and its effects on the vegetation. The phenological pattern, pollen production and dispersal aspects can be decoded using the preserved pollen as signatures in the sediments. Since Holocene constitutes the latest geological epoch and also concerned with our environment in which the interactions of both the biosphere and Geosphere, application of Palynology will be an effective tool to understand how the vegetation responded to climate change/monsoonal variations.

- **Palaeoecology of Cenozoic conifers – limits of actualisms?**

Organizers: Martina Dolezych, Lutz Kunzmann, Wilfrid Schneider

Contact email address: Lutz.Kunzmann@senckenberg.de

Purpose: Cenozoic conifers are often regarded as crucial for reconstructing of ancient ecosystems

including lignite-forming swamp vegetation and mixed broad-leaved polar forests. The purpose of this symposium is to elucidate methods for palaeoecological investigations and to evaluate their validity for the reconstruction of palaeoecosystems.

Special focus will be on:

(1) Taphonomical investigations:

Plant taphonomy has a great potential for palaeoecological reconstructions.

In-situ plants and (par-)autochthonous assemblages provide a direct insight into the structure of the ancient phytocoenoses.

(2) Vegetational reconstruction:

Cenozoic conifers are common in zonal mesophytic forests of nearly all palaeolatitudes as well as in azonal vegetation types including swamps and riparian forests. Not all of the fossil conifers may provide decisive environmental information based on the ecological requirement of the next living relative species. Autecology of present-day species that are typical relicts surviving in niches do often not match the habitat of their Cenozoic ancestors. The interpretation of autecology of extinct taxa is of particular interest.

● **Progress and future direction in automated palynology**

Organizers: Kat Holt, Keith Bennett

Contact email address: k.holt@massey.ac.nz

Purpose: Nearly all branches of palynology require the palynologist to spend countless hours at the microscope recognizing, identifying, counting, measuring and describing pollen. The needs and prospects for automation of palynology were first heralded in the 1960's, but after 50 years of continuing technological advancement, virtually all pollen counting is still done manually. However, in more recent years there have been an increasing number of groups working towards automation of various aspects of palynology and the field is starting to see some genuine progress. In this session we will draw together those groups who are actively involved in developing methods to partially or completely automate any aspect of the pollen-counting process. The primary purpose is for those involved in automated palynology to share ideas and advancements between groups and to expediate the development of a robust, reliable automated pollen counting and classification system. Of equal importance, will be presentation of the state of play of automated palynology to all branches of the palynology community, and to demonstrate that automated palynology is achievable and has the potential to deliver significant benefits in terms of time savings, more accurate counts, repeatable counts, larger counts, and high taxonomic resolution.

All branches of palynology stand to benefit from partial or complete automation of the palynology process, so the proposed session will be of interest to all those who attend the conference.

- **Recent advance in pollen information service in the world**

Organizer: Hidetoyo Teranishi

Contact email address: hiterani@med.u-toyama.ac.jp

Purpose: Allergic diseases, especially pollinosis, increase world-wide. Information services are provided to the allergic people to prevent disease. Purpose of this symposium is to know such information services in different countries and regions, and discuss several new findings. Aerobiological networks within the International Association for Aerobiology recently cover relatively world-wide regions, and support several regional trials. We would be happy if this symposium could provide some new suggestions and more comprehensive views for the world-wide people especially in Asian countries.

- **Tracing the history of extant angiosperm clades with paleobotanical data**

Organizers: Steven R. Manchester, Kathleen Pigg

Contact email address: steven@flmnh.ufl.edu

Purpose: Fossils showing the diagnostic characters of various living angiosperm families and orders provide important insights into the such aspects of evolutionary history as character evolution, minimal ages of divergence and former biogeographic patterns. Although some families are well known from the fossil record, new evidence has only recently emerged for other groups that are rarely preserved or seldom recognized. Our purpose is to bring to light the results of recent and ongoing studies that trace the fossil history of angiosperm clades that have received only limited paleobotanical study in the past. Contributions to this symposium will emphasize such areas as new systematic data, new understanding of clade divergence time, paleobiogeography, and /or the particular obstacles inherent in the study of a given taxonomic group.

- **Advances in paleoenvironmental reconstruction using fossil plants**

Organizers: Daniel Peppe, Scott Wing

Contact email address: daniel_peppe@baylor.edu

Purpose: The distribution and form of plants are strongly influenced by environment and climate, and for more than a century paleobotanists have used the taxonomic composition of fossil floras and the morphology of fossil plants to reconstruct paleoenvironmental and paleoclimatic conditions. Approaches to paleoenvironmental reconstruction have often been considered to belong to two types: taxon-based (e.g., nearest living relatives), and morphological (e.g., leaf physiognomy). Taxon-based methods use the environmental preferences of living relatives of fossil plants to infer past conditions. Morphological methods rely on correlations between environmental parameters and morphological or anatomical traits of modern plants that are presumed to be independent of taxonomic affinities. Recent research has advanced paleoenvironmental reconstruction by: 1)

discerning new relationships of plant anatomy, morphology, and chemistry to environmental and ecological parameters, 2) testing and improving the quantification of known correlations between plant features and the environment, 3) improving analytical methods for synthesizing modern plant distributions, 4) developing a phylogenetic context for analysis that reveals fundamental similarities between the taxonomic and morphological approaches to paleoenvironmental reconstruction.

This session seeks to highlight the techniques developed over the past several years, including those applied to macrofossils, microfossils, and biomarkers, and also to feature new analytical methods that explicitly incorporate a phylogenetic framework as they explore the relationships between plants and the environment.

- **Palynological processing in the 21st Century: innovative, safer, non-acid based techniques for processing palynology samples**

Organizers: Vladimir Torres, Niall W. Paterson, Yow-Yuh Chen, John H. Carter, James B. Riding, Jen O'Keefe

Contact email address: vladimir.torres@exxonmobil.com

Purpose: The purpose of the proposed symposium is to discuss recent advances in the processing of palynology samples, especially those related to laboratory safety improvements and the use of environmentally friendly chemicals. Traditionally, palynological processing has relied upon the use of inorganic chemicals, such as hydrofluoric acid (HF), nitric acid (HNO₃) and hydrochloric acid (HCl). Recent publications have demonstrated that palynomorphs may also be extracted by the use of various alternative techniques and chemicals, obtaining comparable or superior palynomorph recovery. Globally, increasingly strict environmental safety regulations create the incentive for transition towards alternative methods which mitigate the exposure of lab personnel to hazardous chemicals and reduce their impact upon wildlife and communities. We welcome contributions for methods applicable to recent and fossil material of all ages.

- **Paleofloristic and paleoenvironmental changes in Asia throughout the Mesozoic : palynological and fossil wood evidence**

Organizers: H. Nishida, M. Philippe, J. Legrand

Contact email address: jlegrand@snv.jussieu.fr

Purpose: Paleobotany of the Mesozoic period is a rich and expanding field of research in Asia. Cross studies on macro- and microremains in various fields of research such as palynology, xylology or cuticular anatomy bring new advances in the understanding of past ecosystems and climates. Several models of paleofloristic provinces have been suggested for Asia, and a variety of point of views allows discussion concerning its biogeography and the relations between its components, as well as a global comparison.

Moreover, Mesozoic also includes the key period of Angiosperm diversification and worldwide expansion, and Asia has important clues to discover what happened at the beginning of the "vegetational revolution".

- **Application of digital visualization methods to advance paleobotanical studies**

Organizers: Selena Smith, Margaret Collinson

Contact email address: sysmith@umich.edu

Purpose: Tomography, or imaging by section, has a long history in paleobotany, especially in the reconstruction of plants preserved as petrifications (e.g., coal balls). The use of computers has improved visualization in long established methods such as serial-grinding, serial-sectioning and serial peeling. Further innovations have come from novel imaging techniques such as non-invasive and therefore non-destructive methods (e.g., synchrotron radiation x-ray microscopic tomography, microscopic x-ray computer tomography, confocal laser scanning microscopy, Raman imaging, laser scanning). These methods are of particular interest in researching fragile, unstable or unique specimens and microfossils and provide a novel way of visualizing fossil plants and understanding morphology. This symposium will provide a forum for a technical overview of a wide range of selected methods, highlighting recent technical advances, advantages and disadvantages, and the application of these methods to various types of preservation. Examples will be given to show how these 3D visualization techniques provide insight into structures and morphologies that would otherwise remain unknown – information that can be crucial to accurate taxonomic and paleoenvironmental interpretations.

- **IOP Presidential Symposium: new concepts and discoveries in plant paleontology**

Organizer: Gar W. Rothwell

Contact email address: rothwell@ohio.edu

Purpose: This symposium will focus on important new concepts and discoveries in plant paleontology over the past decade, and will include presentations by the current IOP President and several past-Presidents of IOP, as well as a number of important contributors to the development of the field from around the world. The purpose is to highlight the breadth of new approaches and conceptual advancements that currently are, or recently have been developed in the field.

- **Detection and characterisation of millennial-scale climate variability in Quaternary pollen records (INQUA IFG ACER symposium)**

Organizers: William Fletcher, Maria Fernanda, Sanchez Goñi

Contact email address: will.fletcher@manchester.ac.uk

Purpose: Millennial-scale variability is increasingly recognized as a recurrent feature of Quaternary

climates. Following more than a decade of intensive research into Dansgaard-Oeschger cycles and Heinrich events of the last glacial, it is clear that palynology has a vital role to play in understanding biosphere responses to millennial-scale variability and in constraining spatial variability in the impacts of this variability. These insights can lead in turn to better understandings of the underlying mechanisms and drivers of millennial-scale climatic changes. We welcome contributions related to the investigation of millennial-scale climatic variability in palynological records, in particular related to: palynology as part of multiproxy investigations of long terrestrial or marine sediment sequences; constraining the timing and nature of millennial-scale variability during the last or earlier glacial-interglacial cycles; vegetation-climate interactions on millennial timescales. This symposium is part of the activities of the INQUA International Focus Group ACER (Abrupt Climate Changes and Environmental Responses).

- **Late Cenozoic to modern marine palynology of the circum-Pacific Ocean**

Organizers: Fabienne Marret, André Rochon, Anne de Vernal

Contact email address: f.marret@liv.ac.uk

Purpose: Over the last decades, deep-sea sediments from the Pacific have revealed the strong potential of marine palynology to reconstruct past environmental changes on long- and short terms. For instance, the NE side of the Pacific has been relatively well investigated for the recent distribution of dinoflagellate cysts as a tool for past sea-surface reconstructions. Longer records are also available, combining pollen and dinoflagellate cysts, enabling a comprehensive picture of the regional climate dynamics. However, the Pacific Ocean is still understudied compared to the Atlantic Ocean, although it is an important component of the global atmospheric-ocean coupled system. The biological affinity of many palynological taxa from the Pacific still needs to be documented. Moreover, there are modern organic-walled dinoflagellate cysts that are endemic to the Pacific Ocean (for ex., *Dalella chathamense*, *Echinidinium* spp.). Therefore, it is timely to shed some light on the marine palynology of the Pacific realm.

- **Advancing High-Resolution, High-Throughput Research in Paleoecology**

Organizers: Surangi W. Punyasena, Feng Sheng Hu

Contact email address: punyasena@life.illinois.edu

Purpose: This session aims to bring together researchers in palynology and paleobotany that are developing or experimenting with novel methods that seek to fundamentally transform the nature of paleoecological research. We focus on approaches designed to provide high-resolution, quantitative analyses of paleoecological, paleoclimatic, and biostratigraphic data using new computational techniques, microscopic methods, genetic analysis, and biogeochemical advances. These methods expand the hypotheses that can be addressed in palynology and paleoecology by increasing the

taxonomic, temporal and spatial resolution of paleoecological data across both Quaternary and pre-Quaternary timescales.

- **Ecological insights from palynological and macrofossil analysis**

Organizers: Simon C. Brewer, Thomas Giesecke

Contact email address: simon.brewer@geog.utah.edu

Purpose: Palaeoecology offers the long time-perspective to ecological processes. However, ecological theory continues to be seldom addressed with palaeoecological data. While experiments are difficult to design as we reconstruct processes that have already occurred, hypothesis can be tested for example by using multiproxy datasets, comparing several datasets of the same proxy or selecting a site in a specific location with a known history of environmental change.

The need to evaluate the impact of global change scenarios on the natural environment requires an understanding of processes and changes occurring over long time periods and palaeoecology is in a unique position to provide a long-term perspective of how ecosystems respond to environmental shifts. Palaeoecological data can and have demonstrated the introduction and spread of alien species, the postglacial recolonisation of previously glaciated terrain. They show examples for non-linear responses to environmental change past rates of ecosystem change as well as ecosystem stability in the face of well-documented environmental changes. Also the concepts of ecosystem resilience, alternative stable states and tipping points are equally relevant to palaeoecological data.

Thus we invite contributions where palaeoecological data is used to test or explore ecological theory. This may include meta-analysis as well as single site studies as well as reviews and theoretical contributions.

- **An environmental research with a Burkard sampler in the area hit by Great East- Japan Earthquake**

Organizers: Hiroyuki Namba, Tsutomu Etani, Hideshige Takada, Satoshi Suzuki, Mitsuhiro Okano, Kunihiro Hukushima, Norio Sahashi

Contact email address: hnamba@cc.matsuyama-u.ac.jp

Purpose: Immediately after the earthquake on, there have been so many patients with cough symptoms among the inhabitants near Minato Elementary School in Ishinomaki City, Miyagi Prefecture.

Much sludge from the sea has been accumulated, followed by the dust in the air. According to the measurements of the air pollutants such as SPM by the atmospheric observatory center in Ishinomaki, there is no difference between the data before and after the earthquake. The cause of the cough still remains unknown.

The purpose of this research is to clarify what is responsible for this disease through our

environmental research with a Burkard sampler.

- **Recent airborne pollen grains and spores research using volumetric samplers in Japan and adjacent regions**

Organizers: Norio Sahashi, Oh. Jae-Won

Contact email address: sahashi@phar.toho-u.ac.jp

Purpose:

- **Pollen in rivers and oceans: its source, dispersal and indication to paleoenvironments in Quaternary**

Organizer: Chengyu Weng

Contact email address: weng@tongji.edu.cn

Purpose: Pollen analysis method was first developed from lake sediments. In recent years, this method is more frequently applied to sediments from rivers and oceans. However, it is more difficult to identify the source of pollen and how they were transported in rivers or to oceans, which limits the accurate interpretation of pollen data from these sediments. It is necessary to stimulate researchers to do more theoretical exploration so that people may better understand the source and dispersal of pollen in rivers and oceans, and therefore pollen data from these areas could be well interpreted and more accurate information could be inferred.

- **Palaeozoic Palynology: the state of the art (CIMP-sponsored Symposium)**

Organizer: Marco Vecoli

Contact email address: marco.vecoli@univ-lille1.fr

Purpose: This Symposium is intended to receive contributions from all palynologists working in the Palaeozoic and dealing with all the different aspects of Palaeozoic worlds and all different kinds of Palaeozoic palynomorphs. The different aspects of Palaeozoic palynology (e.g., palynostratigraphy, taxonomy, palaeoecology, palaeoenvironmental reconstructions, oceanography, evolution of terrestrial environments) will be dealt with in dedicated sub-sessions of this Symposium.

We would like to invite all contributors intending to present a talk dealing with any aspects of Palaeozoic palynology to this symposium in order to gain maximum visibility to our community.

- **Recent methodology for pollen dispersal forecast**

Organizer: Motoo Suzuki

Contact email address: E-mail:moto@jmbosc.or.jp

Purpose: Currently, pollen allergy has become a worldwide problem. It is important to improve pollen dispersion forecast accuracy in order to avoid pollen exposure. This symposium purposes

summarize the recent and advanced forecasting method of the pollen dispersion in the world and discuss both these advantages and disadvantages for the information accuracy and handling simplicity. And then we hope that these results will be induced to be useful in the treatment of symptoms of the pollinosis and the control in the patients increase.

- **Recent Research on Cenozoic Macrofloras of the Americas**

Organizers: Elizabeth J. Hermsen, María A. Gandolfo

Contact email address: ejh23@cornell.edu

Purpose: The study of fossil plants in the Americas has a history spanning the several centuries, with discovery of new localities occurring throughout that time. Although the earliest attempts to understand these floras include many cases of mistaken identity, incorrect age interpretations, and now-defunct theories about the ecology of the fossil floras, they laid the foundation for future work. Today's investigators use more rigorous methods—including careful comparative anatomy and morphology, 3-D imagining techniques, cladistics, and quantitative methods for estimating climate based on leaf morphologies—to understand the floras of the past. In this symposium, we seek to highlight exciting discoveries and advances in understanding the Paleogene and Neogene vegetation of the Americas through the study of macrofloras. Talks in this symposium will emphasize interesting taxonomic or systematic findings, analysis of floras from a paleoclimatic or paleoecological perspective, and/or biogeographic connections of paleofloras representing different regions of the Americas.