Canadian Association of Palynologists
Association Canadienne des Palynologues
NEWSLETTER
Volume 46 Number 1 May 2023

President's Message

May 8, 2023

I took over the mandate as President from Florin Pendea this past February. On behalf of all CAP members as well as the CAP Executive I would like to thank Florin for his dedication to the organization. I have been a member of CAP for more than two decades and I am honoured to accept this role to contribute to the organization as President.

I thank the Executive Committee for their continued work for the Association and for supporting me in this new role: Francine McCarthy (Secretary-Treasurer), Terri Lacourse (CAP Councillor to IFPS), Estelle Allan (Newsletter Editor), and Manuel Bringué (Website Editor). I would also like to take the opportunity to sincerely thank Estelle Allan for her role as Newsletter Editor and her hard work at CAP. We are seeking applicants to take over the role of Newsletter Editor in a few months. Please let us know if you are interested in contributing to CAP in this way.

Some of the initiatives at CAP are including changing by-laws at the next Annual General Meeting to formalize a new Outreach Officer position within the Executive. Outreach is of critical importance to growing our community. CAP has launched its own Instagram account and I sincerely thank Diana Tirlea and Nicholas Riddick for leading this initiative. Please follow the CanadianPaly account at https://www.instagram.com/canadianpaly/. Your likes, shares, and comments will promote Canadian Palynology on this social media platform. We currently have 107 followers. If you would like to contribute a post to the Instagram account please contact the Diana Tirlea and Nick Riddick.

As in previous years, this year we again received strong applications for the CAP Annual Research Student Award. I thank Terri Lacourse for adjudicating the selection process. It is my pleasure to congratulate our 2023 awardee Cesar Arturo Vera Florez, who is near completion of his M.Sc. degree in Geographical Sciences at the Université de Sherbrooke (UdS), Sherbrooke, Québec. His work is focusing on a 8,500 year record of vegetation change and human impacts at Baie des Baradères in Haiti using pollen analysis integrated with other proxies of environmental change. I would like to thank all applicants and the evaluation committee for contributing to this competition.

Lastly, I encourage all of you interested in any given position of the Executive Committee to express their interest. Notably, we are seeking applications for a new President-Elect, as well as Newsletter Editor.

Please do not hesitate to use our website, biannual newsletter, twitter, and now Instagram account to share content and opportunities.

With best wishes for the summer
Sincerely,
Jennifer Galloway
Geological Survey of Canada

CAP EXECUTIVE 2023

President: Jennifer Galloway
Newsletter Editor: Estelle Allan
Secretary-Treasurer: Francine McCarthy
Website Editor: Manuel Bringué
IFPS Councillor: Terri Lacourse
Outreach team: Diana Tirlea & Nick Riddick

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Editor's Notes

Thanks a lot to all who contributed material for this edition of the CAP Newsletter: M. Bringué, A. Limoges & N. Van Nieuwenhove, and C. A. Vera Florez.

Deadline for Next CAP Newsletter

Please submit items for the next issue of the CAP Newsletter (Volume 46, Number 2, December 2023) by December 15, 2023. Conference reports, announcements, field trip reports, notices of new books, dissertation abstracts, book reviews, news, and essays on topics relevant to Canadian palynology, in English or French, are all welcome.

Estelle Allan
CAP *Newsletter* Editor
estelle.allan@mcgill.ca

Table of Contents

Newsletter Editor's Message

Dear CAP members,

Since December 2020, I have enjoyed editing the CAP newsletter, big thanks all for your feedback and your participation in the newsletter. Unfortunately, I must leave my position for personal reasons. It has been a great experience and I will be helping the next editor, sharing my knowledge of the position and how to write the newsletter. If you like being in the loop of the palynological world and if you like writing and formatting documents, this position is for you. Do not hesitate to contact me for more information at estelle.allan@mcgill.ca!

Chers membres de l'ACP,

Depuis décembre 2020, j'ai eu beaucoup de plaisir à éditer le bulletin de l'ACP. Un grand merci à tous pour vos commentaires et votre participation aux bulletins d'information. Malheureusement, pour des raisons personnelles, je dois quitter la position. Ce fut une expérience formidable et j'aiderai le ou la prochain(e) éditeur/éditrice, je partagerai mes connaissances sur la position et sur comment rédiger le bulletin d'information. Si vous aimez être au courant de ce qui se passe dans le monde de la palynologie et si vous aimez écrire et formater des documents, cette position est fait pour vous. N'hésitez pas à me contactez-moi pour plus d'informations estelle.allan@mcgill.ca!

Bien à vous
Estelle Allan, Ph.D
Postdoctoral research fellow, McGill University

Cesar Vera Florez Receives the 2023 CAP Student Research Award

We are pleased to announce that Cesar Arturo Vera Florez, a MSc student at the Université de Sherbrooke supervised by Drs. Matthew Peros and Frédéric Bouchard, is this year's recipient of the CAP Student Research Award. This Award was established in 2009 to recognize contributions by students to research in palynology. The Award consists of $500 in funds to support student research as well as a three-year membership in CAP. Cesar received the award for his research project, "**An 8500-year record of vegetation change, climate, and human impacts from Baie des Baradères, Haiti, using pollen analysis and XRF core scanning.**"

Cesar A. Vera Florez
Université de Sherbrooke

The Insular Caribbean is a region sensitive to multiple climate stressors, including hurricanes, droughts and sea-level changes. Such is the case for Haiti, a country located in the circum-Caribbean region, that has also been affected by extensive anthropogenic land use, rendering much of its landscape devoid of vegetation and increasing its vulnerability to erosion and floods. Despite this, there is limited long-term environmental data from Haiti to provide critical baseline data to assess modern-day and future environmental risk.

To address this, I undertook the analysis of a sediment core from a shallow bay adjacent to the delta of the Baradères River in southwestern Haiti, to reconstruct vegetation and climate changes as well as human impacts, in the area during the last 8500 years. I did this primarily using fossil pollen identification and analysis, and we also used high-resolution XRF core scanning to document the sedimentary context of the core and identify periods or events when terrestrial sediment input into the bay was especially pronounced. The chronology of the core was established with over 25 AMS dates.

I analyzed a total of 63 levels from the core, resulting in over 180 pollen taxa, including over 36 different trilete and 20 monolete spores. The preliminary results show evidence of sea-level rise from 7000 to ~3500 cal yr BP, based on high percentages of mangroves and coastal plants at the base of the core, which progressively decrease in abundance toward the top. Changes in arboreal taxa reflect a shift from dry-adapted to moist-adapted taxa starting at 4000 cal yr BP, consistent with overall moister conditions for the middle Holocene in the Insular Caribbean. After 3000 cal yr BP, there is evidenced for the onset of drier conditions based on high percentages of Euphorbiaceae pollen and the pollen of dry-adapted trees such as *Pinus*, *Spondias* and Sapotaceae. Prominent peaks in titanium (based on the XRF data) occurred in at least five sections of

the core, starting at ~1500 cal yr BP, and probably represent terrestrial erosion from inland flooding due to hurricane precipitation. The pollen results show that these peaks are associated with high percentages of herbs (e.g., Asteraceae) and ferns, along with the low percentages of arboreal taxa (mainly dry-adapted species), indicating a vegetation response to these disturbance events.

Over the last 1000 years, there is a drying trend reflected by a progressive increase in dry-adapted taxa such as *Pinus*, Sapotaceae and Fabaceae, as well as other shrub families sensitive to arid conditions such as Euphorbiaceae. However, at ~700 cal yr BP (1250 CE), there is a peak in titanium that seems to reflect an increase in precipitation. Interestingly, during this time some plant taxa with edible species start to appear in the pollen record and/or increase in frequency, such as Cucurbitaceae (pumpkin family), Anacardiaceae (cashew family), Vitaceae (grape family) and *Ipomea* (the genus that includes sweet potato). Hence, the pollen record could be indicative of prehistoric farming in the Baradères River watershed, although this is still to be confirmed. Finally, large quantities of fern spores and herb pollen such as *Zea mays*, Asteraceae, *Myrica*, Poaceae and *Borreria* are dominant in the upper sediments of the core and likely reflect extensive human-impacts on the Haitian landscape over the last few hundred years as a result of colonization. Collectively, these are exciting results as they represent one of the few palynological studies to date from Haiti and also one of the few studies to show a clear vegetation response to storm impacts in the Caribbean.

SLN PaleoLab workshop, GSC-Calgary, March 14-16

Applied Paleontology remains a pillar for geoscience and innovation at the Geological Survey of Canada. The GSC's long standing expertise, a stronghold in Canada's research ecosystem, actively supports GSC programs, provincial and territorial (P-T) geological surveys, and universities, and advances innovation through collaborations with internal and external partners.
PaleoLab, part of the GSC's Science Laboratories Network, hosted a 3-day Applied Paleontology workshop in Calgary in March 2023. The hybrid event gathered 25 GSC participants (20 onsite) from Dartmouth, Iqaluit, Ottawa, Calgary and Vancouver, including research scientists, lab technicians, and collections and Information Management (IM) specialists.

The main objectives were:

- to meet, get to know facilities and paleontology labs across divisions, and share current research,
- to discuss best practices, cutting-edge innovation, challenges, opportunities and solutions,
- define our vision for Applied Paleontology at the GSC and strategize on ways to implement it.

The event was organised by Manuel Bringué, SLN PaleoLab co-lead and CAP Website Editor, and participants included CAP President Jennifer Galloway as well as past Presidents Rob Fensome and Graham Williams. Canadian palynology was one the main fields discussed, together with conodont biostratigraphy and various applications of ichno- and macrofossil research. GSC palynologists, including postdoctoral researcher Dr. Vania Correia at GSC-Atlantic, presented and discussed recent advances in, and their contributions to the fields of taxonomy, biostratigraphy, paleoenvironments and much more. Palynology in Canada remains strong and more innovative than ever!

Respectfully,
Manuel Bringué
Calgary, AB, Apr. 14, 2023

The PaPER lab at the University of New Brunswick

The laboratory for **Pa**st Primary **P**roduction and Environmental **R**econstructions (PaPER) at the Department of Earth Sciences, University of New Brunswick (Fredericton) is dedicated to the study of Late Pleistocene to (sub)recent organic-walled (dinoflagellates and their cysts, pollen and spores), siliceous (diatoms) and calcareous (foraminifera) microfossils. Headed by Prof. Audrey Limoges with technical assistance by Dr. Nicolas Van Nieuwenhove, the research of the lab revolves around the use of skeletal and geochemical remains of microplankton preserved in sediments to reconstruct changes in climatic, environmental and oceanographic conditions in the Arctic and sub-Arctic, on time scales ranging from decades to millennia.

The current research projects of the PaPER lab zoom in on 4 areas in particular. Primary producing diatoms and dinoflagellates are in the (microscope's) limelight in the Lincoln Sea-Nares Strait-North Water Polynya corridor with the projects of PhD students Kelsey Koerner (co-supervised with Dr. André Rochon, UQAR-ISMER) and Joshua Evans (co-supervised with Dr. Gary Saunders, UNB). Kelsey is looking into late Holocene assemblage changes in sedimentary dinocyst and diatom records, to evaluate the impact of fluctuations in freshwater and sea-ice input on the primary production regime of northern Baffin Bay, while Josh uses sedimentary ancient DNA (sedaDNA) to look into past sea ice concentrations and diatom production in the area. Their research is part of the ArcticNet project *Arctic Seafloor Mapping Data Processing and Dissemination and Rapidly changing ecosystem dynamics in the Arctic Ocean's Last Ice Area (RED-AO),* respectively.

Downstream along the Arctic waters, organic-walled microfossils are also the study subject of MSc students Brayden Harker and Margaret Atkinson (co-supervised with Dr. Alexandre

Normandeau, GSC Dartmouth). They are working on sediment cores that were collected over the last few years in the Nain area (Nunatsiavut, Labrador), an Inuit community rich in archeological sites several centuries to millennia old. Their goal is to investigate how local primary production and sea-ice conditions have fluctuated in the past, and the impact this may have had on subsistence resources for local coastal communities. Their work is supported by the *Ocean Frontiers Institute* and the Institut Nordique du Québec Sentinel North project *Nunatsiavut Coastal Interactions Project (NCIP): Climate, environment and Labrador Inuit subsistence strategies.*

A third research component of the PaPER lab derives from the RQM-MEOPAR project *Monitoring natural hazards during coastal to offshore sediment remobilization and its impact on primary productivity dynamics in the Lower St. Lawrence Estuary.* Here, MSc student Hannah Sharpe (co-supervised with Dr. Owen Sherwood, Dalhousie University) analyzes the microplankton content and geochemical composition of material collected by sediment traps deployed offshore Pointe-des-Monts (Quebec) to evaluate the influence of hydrodynamic and sedimentary processes in a submarine canyon system on the basis of the local food web.

Finally, the PaPER lab is also active in Hudson Bay, through its involvement in the MEOPAR-funded Southampton Island *Marine Ecosystem Project (SIMEP)* and the ArcticNet-funded project *Community-based research on winter water modifications in the coastal domain of Hudson Bay: Implications for freshwater-marine coupling, biological productivity and the carbon cycle.* Lead by Dr. C.J. Mundy and Zou Zou Kuzyk from the University of Manitoba, these projects have the objective of obtaining a food-web based understanding of the present and past ecosystem productivity and nutrient cycling of these coastal areas of Hudson Bay. The PaPER lab is responsible for the microfossil and paleo-facet of the work.

The lab is well equipped to handle sediment samples through all steps of microfossil analysis. Core and sample storage is covered by a FisherbrandTM IsotempTM 3-door refrigerator, an Eppendorf CryoCube® -80°C freezer, and a Labconco Freezone® freeze dryer. A fume hood for acid digestion (Mott Manufacturing), two Eppendorf centrifuges, two JeioTech Lab Companion multiposition magnetic stirrers and an Elma ultrasonic bath with temperature control provide a safe working environment and efficient residue handling. Finally, high quality microfossil observation and imaging is guaranteed thanks to 3 Olympus upright microscopes (BX43 and BX53), one Olympus CKX53 inverted microscope, and a Leica M125C stereomicroscope – all of these with mounting capacity for a Leica MC170 HD digital camera – as well as a Hitachi TM4000 tabletop scanning electron microscope and Hitachi MC1000 ion sputter coater. These facilities are used not only for internal research purposes but also to offer external contract services for sediment sieving, foraminifer picking for radiocarbon dating, palynological and diatom sample preparation, imaging, and foraminiferal and palynological census analysis – feel free to contact us for any inquiries!

Dr. Audrey Limoges
Dr. Nicolas Van Nieuwenhove

International meeting

55th Annual Meeting of AASP-TPS Joint with the Commission Internationale Microflore Paléozoique (CIMP), will take place at the University of Kentucky from 6-10 June 2023. The meeting will have a hybrid format (in-person/online).

Important dates
Abstracts submission: Up to May 15th, 2023
Registration: from February 27th to May 20th, 2023

For more information: https://palynology.org/

XVth International Palynological Congress/XIth International Organization of Palaeobotany Conference, **200 Years of Palaeobotany** event will be held in Prague from May 27th–31st, 2024.

Important dates
Call for symposia – 01 JUNE 2023
Abstract submission – December 01, 2023
Early registration – December 01, 2023
Regular registration & Accommodation (early bird reservation) – December 01, 2023

For more information: www.prague2020.cz

Recent Publications

** denotes a CAP member*

Audet, T., *de Vernal, A., Mucci, A., Seidenkrantz, M. S., Hillaire-Marcel, C., Carnero-Bravo, V., & Gélinas, Y. (2023). Benthic Foraminiferal Assemblages from the Laurentian Channel in the Lower Estuary and Gulf of ST. Lawrence, Eastern Canada: Tracers of Bottom-Water Hypoxia. *Journal of Foraminiferal Research, 53*(1), 57-77.

Davies, M. A., McLaughlin, J. W., Packalen, M. S., & *Finkelstein, S. A. (2023). Using Holocene paleo-fire records to estimate carbon stock vulnerabilities in Hudson Bay Lowlands peatlands. *Facets, 8*(1), 1-26.

Falardeau, J., *de Vernal, A., Seidenkrantz, M. S., Cronin, T. M., Gemery, L., Chassiot, L., ... & Archambault, P. (2023). Microfaunal Recording of Recent Environmental Changes in the Herschel Basin, Western Arctic Ocean. *Journal of Foraminiferal Research, 53*(1), 20-48.

*Finkelstein, S. A., Doherty, C., & Loder, A. L. (2023). Safety Net Ontario: Ontario's outsized role in the "Global Safety Net" for climate and biodiversity. *FACETS, 8*(1), 1-17.

*Gajewski, K & M Briere. 2023. Holocene human-environment interactions across the Northern American prairie-forest ecotone. *Anthropocene 41*: 100367

*Galloway, J. M., Grasby, S. E., Wang, F., Hadlari, T., Dewing, K., Bodin, S., & Sanei, H. (2023). A mercury and trace element geochemical record across Oceanic Anoxic Event 1b in Arctic Canada. *Palaeogeography, Palaeoclimatology, Palaeoecology, 617*, 111490.

Giuliano, C., & *Lacourse, T. (2023). Holocene fire regimes, fire-related plant functional types, and climate in south-coastal British Columbia forests. *Ecosphere 14*(2): e4416.

Harrison, S., Villegas-Diaz, R., Cruz-Silva, E., Gallagher, DKesner, ., D., Lincoln, P., Shen, Y., Sweeney, L., Colombaroli, D., Ali, A., Barhoumi, C., Bergeron, Y., Blyakharchuk, Tv., Bobek, P., Bradshaw, R., Clear, J.,

Czerwinski, S., Daniau, A-L., Dodson, J., Edwards, K., Edwards, M., Feurdean, A., Foster, D., *Gajewski, K., Gałka, M., *Garneau, M., Giesecke, T., Gil Romera, G., Girardin, M., Hoefer, D., Huang, K., Inoue, J., Jamrichová, E., Jasiunas, N., Jiang, W., Jiménez-Moreno, G., Karpinska-Kołaczek, M., Kołaczek, P., Kuosmanen, N., Lamentowicz, M., Lavoie, M., Li, F., Li, J., Lisitsyna, O., López-Sáez, J., Luelmo-Lautenschlaeger, R., Magnan, G., Katalin Magyari, E., Maksims, A., Marcisz, K., Marinova, E., Marlon, J., Mensing, S., Miroslaw-Grabowska, J., Oswald, W., Pérez-Díaz, S., Pérez-Obiol, R., Piilo, S., Poska, A., Qin, X., Remy, C., Richard, P., Salonen, S., Sasaki, N., Schneider, H., Shotyk, W., Stancikaite, M., Šteinberga, D., Stivrins, N., Takahara, H., Tan, Z., Trasune, L., Umbanhowar, C., Väliranta, M., Vassiljev, J., Xiao, X., Xu, Q., Xu, X., Zawisza, E., Zhao, Y., Zhou, Z., & Paillard, J. 2022. The Reading Palaeofire database: an expanded global resource to document changes in fire regimes from sedimentary charcoal records. *Earth System Science Data 14*: 1109–1124.

Li, Z., *Pospelova, V., Mertens, K. N., Liu, L., Wu, Y., Li, C., & Gu, H. (2023). Evaluation of organic-walled dinoflagellate cyst distributions in coastal surface sediments of the China seas in relation with hydrographic conditions for paleoceanographic reconstruction. *Quaternary International*.

Loder, A. L., Gillespie, A., Ardakani, O. H., & *Finkelstein, S. A. (2023). Drivers of high rates of carbon burial in a riverine-influenced freshwater marsh in the Lake Erie watershed of southern Ontario, Canada. *Authorea Preprints*.

Marshall, J. E., Mangerud, G., *Bringué, M., & Bujak, J. (2022). Devonian palynoevents in the circum-Arctic region. *Atlantic Geoscience, 58,* 307-328.

*Mathewes, R. W. (2023). Plant macrofossils as indicators of vegetation and climate change in the Northern Black Forest of Germany during the last millennium-with focus on the Little Ice Age. *Vegetation History and Archaeobotany, 32*(2), 111-123.

*Mathewes, R. W., Greenwood, D. R., & Reichgelt, T. (2023). Plant Megafossils, Palynomorphs, and Paleoenvironment from the Late Middle to Late Eocene Burnaby Mountain Flora, Huntingdon Formation, British Columbia, Canada. *International Journal of Plant Sciences, 184*(3), 214-235.

Obrezkova, M. S., *Pospelova, V., & Kolesnik, A. N. (2023). Diatom and dinoflagellate cyst distribution in surface sediments of the Chukchi Sea in relation to the upper water masses. *Marine Micropaleontology, 178*, 102184.

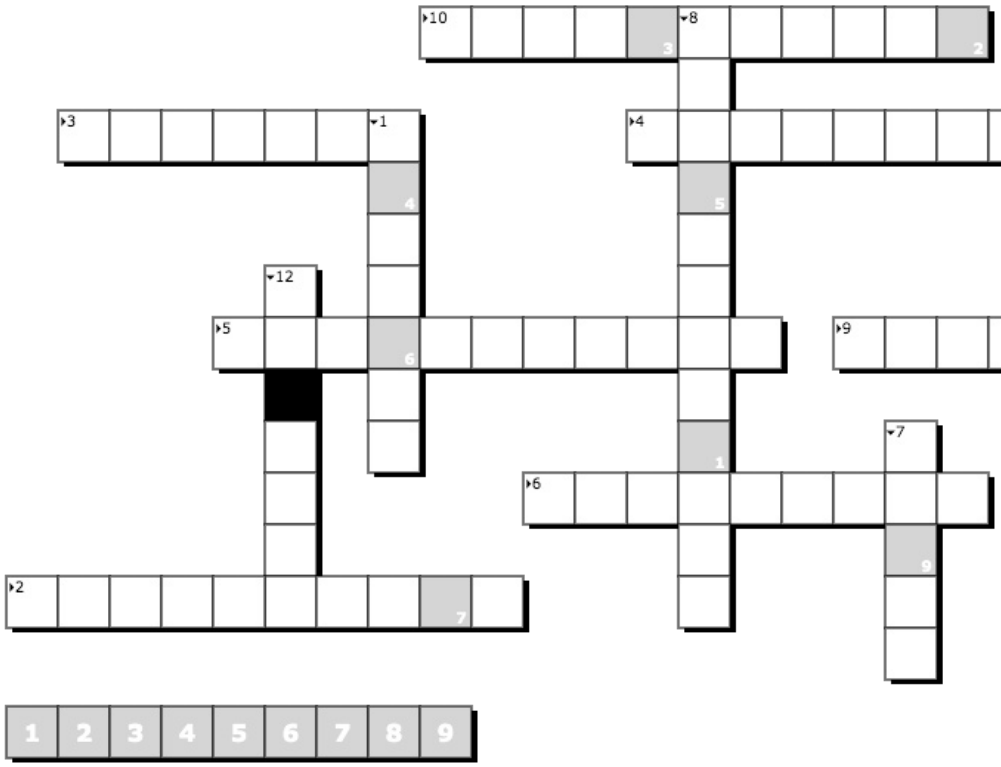
Patterson, R. T., Nasser, N. A., Reinhardt, E. G., Patterson, C. W., Gregory, B. R., Mazzella, V., ... & *Galloway, J. M. (2022). End-Member Mixing Analysis as a Tool for the Detection of Major Storms in Lake Sediment Records. *Paleoceanography and Paleoclimatology, 37*(11), e2022PA004510.

Vickers, M. L., Jelby, M. E., Śliwińska, K. K., Percival, L. M., Wang, F., Sanei, H., ... & *Galloway, J. M. (2023). Volcanism and carbon cycle perturbations in the High Arctic during the Late Jurassic–Early Cretaceous. *Palaeogeography, Palaeoclimatology, Palaeoecology, 613*, 111412.

Editor's Game

1. Geological process in which the surface of the earth's materials is worn away and transported by natural forces such as wind or water.
2. Conversion of the energy in food to energy available to run cellular processes.
3. Spores, having a 3-pronged scar on the wall.
4. Any product of the condensation of atmospheric water vapor that falls from clouds due to gravitational pull.
5. Geological epoch that lasted from c. 2.58 million to 11,700 years ago.
6. Area or ridge of land that separates waters flowing to different rivers, basins, or seas.
7. Taxonomic rank used in the biological classification of living and fossil organisms as well as viruses.
8. Single-celled organisms (protists) with shells or tests. Depending on the species, the shell may be made of organic compounds, sand grains or other particles cemented together, or crystalline $CaCO_3$ (calcite or aragonite).
9. A biological community of interacting organisms and their physical environment.
10. Biologically produced sedimentary structures that include tracks, trails, burrows, borings, fecal pellets, and other traces made by organisms.
11. A complex network of interconnecting and overlapping food chains showing feeding relationships within a community.
12. Climate pattern that describes the unusual warming of surface waters in the eastern equatorial Pacific Ocean.

French word: The act or process by which something blossoms.



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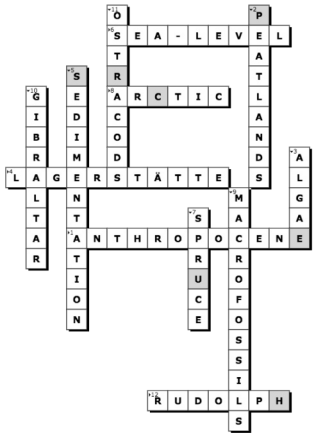
Created with XWords – the free online crossword puzzle generator
https://www.xwords-generator.de/en

December 2022 solutions



Created with XWords – the free online crossword puzzle generator
https://www.xwords-generator.de/en

CAP Membership Form

Canadian Association of Palynologists / Association Canadienne des Palynologues (CAP) membership is open to all members of the palynological community in Canada and others with an interest in Canadian palynology. The Association is dedicated to the advancement and encouragement of all aspects of palynology in Canada and the promotion of co-operation between palynologists and those engaged in related fields of study. Membership dues include two issues a year of the CAP Newsletter, to which all members are invited to contribute. CAP is affiliated with the International Federation of Palynological Societies (IFPS) and members receive two issues of the IFPS newsletter (PALYNOS) each year.

CAP membership dues are $15 per year in Canadian or US funds payable at the beginning of the year. Lapsed members are removed from the mailing list after one year, following a reminder. Members may, if they wish, pay for up to three years in advance for a reduced amount of $40.
You have two options to join or renew:

(1) fill out the online form at https://capacp.wordpress.com/membership/ and send an e-transfer to CAP Secretary-Treasurer Francine McCarthy (fmccarthy@brocku.ca)

(2) is to complete and print this form and attach a cheque (Canadian bank only) or money order payable to CAP, and mail the form and payment to the following address:

Prof. Francine McCarthy, Dept. of Earth Sciences, Brock University
St Catharines, ON, L2S 3A1, CANADA

Name:
Affiliation:
Address:
Tel: Fax:
E-mail:

Research interests:

Do you want to make a donation towards the Annual CAP Student Research Award?
Yes ☐ No ☐ Amount:

New membership ☐ Renewal ☐ Total amount enclosed:

If you are the head of a palynology laboratory in Canada, may we include your name/address/research interests/webpage in the online "Directory of Canadian Palynology labs" on the CAP website? Yes ☐ No ☐

Lab page URL:
Do you permit your name/address/email address to be included in the printed "World Directory of Palynologists" being compiled by IFPS? Yes ☐ No ☐