Greetings to all! With a bit of a delay (assuming all responsibility) the 2022 Year-in-Review is finally here to reminisce on our section’s on-goings this past year. Being at an executive term end, it is also the occasion to assess what we have done, where we are and to welcome the new team at the helm. As communities worldwide emerged, each at their own paces, from the pandemic we witnessed through 2021 and 2022 more and more glimpses of a return to normalcy, accompanied by a healthy dose of adaptation and novelty.

The Fall Meeting is the time and place we can get together, share our science and build bridges between generations and scientific communities. It is also the time when we can bring recognition to colleagues. You can (re)discover the 2022 honorees from student travel awardees to the Fleming Medalist in the following pages. Launched in 2022, for a second year in a row, the GPE post-doc grant brings much satisfaction. The “limbo” years after completing a PhD and before securing a longer-term position (academic or non-academic) can be difficult to manage. The section is proud of this new initiative and grateful to Lauren Keaton and Bill Goodman of 2G Enterprises (www.2genterprises.com) for their continued support, and specifically for their sponsorships at the 2500 USD$ level these past two year supporting the GPE Post-doc grant program.

Much effort has also been deployed over the last two years around the topic of ethics in fieldwork and sample collection. Suzanne and I report (on page 9) actions taken in 2022 on behalf of the GPE community, which cumulated in a half-day workshop at the Fall Meeting. A round up of the GPE Program coordinated by Paul Bedrosian, our section secretary and Fall Meeting Program Committee rep and assisted by Claire Nichols, GPE Early Career rep, for the scheduling, is presented later in this year-in-review newsletter. While the post-pandemic hybrid meeting-format allows for broad and diverse participation it also presents challenges based on attendee feedback. Tweaks were made going into the 2022 Chicago meeting to enhance the experience of all. Your thoughts on your experience are important to AGU and us. You will find the numerous ways you can get in contact with section leaders and stay in touch with the GPE community at large in the following pages.
The GPE community is vibrant, welcoming and united. While membership numbers over the last ten years are declining across AGU (15% from 2013 to 2022), GPE membership both primary and secondary affiliations have declined nearly twice as much (see graph). As one of founding disciplines of AGU and despite our relatively small size as a section, irrelevant of the current decline in numbers, GPE members have been and are present across the Union, in various roles and capacities, in proportions well beyond its size. If the present trend in membership continues, our road, as a community, will surely be paved by challenges. Challenges that, with great confidence, our in-coming president Suzanne McEnroe and president-elect Steven Constable and their executive committee will know how to navigate us through, providing guidance and assistance for herding in all GPE science enthusiasts.

Hope you enjoy travelling through the Flux Line 2022 Year-in-Review, which closes with some special thoughts of those who are no longer with us and for their families, friends, and colleagues.

Best wishes to all, it was a pleasure and a privilege to serve and represent this wonderful group of people – an extended scientific family – which is being left in very capable hands. See you in December in San Francisco in-person or on-line, if not sooner.

France Lagroix (GPE past-president)

2021-22 GPE Executive Committee
- Catherine Johnson (Past President)
- France Lagroix (President)
- Suzanne A. McEnroe (President-elect)
- Paul Bedrosian (Secretary)
- Jiayia Sun (Fluxline & Web Editor)
- Ankit Barik (Social Media & Web Editor)
- Claire Nichols (Early Career Rep.)
- Brendan Cych (Student Rep.)

Fellows and William Gilbert Award Committee
- Suzanne McEnroe (chair), Mike J. Jackson, Steven Constable

Fall Meeting Program Committee
- Paul Bedrosian

Canvassing Committee
- Catherine Johnson (chair), Andrew Roberts, Monika Korte

2022-23 GPE Executive Committee
- France Lagroix (Past President)
- Suzanne A. McEnroe (President)
- Steven Constable (President-elect)
- Paul Bedrosian (Secretary)
- Ankit Barik (Social Media & Web Editor)
- Claire Nichols (Early Career Rep.)
- Rashida Doctor (Student Rep.)

Fellows and William Gilbert Award Committee
- Steven Constable (chair), Mike J. Jackson, Laurie Brown

Fall Meeting Program Committee
- Paul Bedrosian

Canvassing Committee
- France Lagroix (chair), Andrew Roberts, Catherine Johnson
Stay in touch with the GPE community

There are a few ways to stay connected with the GPE community.

If you have a Twitter account, please follow @AGUMagnetism. This way, you won’t miss any tweet from us! Also, if you tweet something that you think is relevant to the GPE community, please add @AGUMagnetism in your tweet. This way, we will immediately see your tweets once you post them and we can retweet your message to reach a broader community.

The second way of staying connected is through AGU Connect. If you have not already, you can join today at https://www.agu.org/Register. Once you join, you will receive news and announcements, and you can post questions or comments and help build our community. Non-AGU members can join. It’s free, open to all and customizable, so you can also connect with other sections and stay up to date on the latest in the Earth and space sciences.

You can also visit our AGU-GPE Website at https://connect.agu.org/gpe/home for contact information of the Executive committee members as well as section updates & resources.

Finally, a note to Facebook users: We stopped maintaining and updating our GPE Facebook (Meta) account a little over a year ago. Please stay connected with us and with the larger GPE community via Twitter or AGU Connect or both!

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The Global Boundary Stratotype Section Point (GSSP) for the Ediacaran Period (600 to 543 Ma) at Enora Creek in the Flinders Ranges of South Australia.

All previous GSSP had been allocated to fossils. For the first time in 2003 after ten years of lobbying, characteristics of a rock was conferred GSSP status, and almost immediately jeopardized by careless drilling.

Photo courtesy of Phil Schmidt and George Williams.
GPE Recognitions, Honors & Awards
presented at the 2022 AGU Fall Meeting GPE Reception

2021 GPE section Outstanding Student Presentation Award (OSPA)

<table>
<thead>
<tr>
<th>Joseline Chica</th>
<th>Craig Martin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yachay Tech University, Ecuador</strong></td>
<td><strong>Massachusetts Institute of Technology, USA</strong></td>
</tr>
<tr>
<td>Presentation Title: Paleomagnetic and Rock Magnetic Study to Determine the Emplacement Temperatures of the ~3580 BC Chachimbiro Pyroclastic Deposits, Ecuador.</td>
<td>Presentation Title: Paleomagnetic Constraints on the Multi-Stage India-Eurasia Collision.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sarah Letaïef</th>
<th>Rachel Elise Maxwell</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Université de Montpellier, France</strong></td>
<td><strong>University of California – Santa Cruz, USA</strong></td>
</tr>
<tr>
<td>Presentation Title: Environmental magnetism and citizen science in the service of air quality measurements.</td>
<td>Presentation Title: Mars Paleopole Locations From Crustal Magnetic Anomalies</td>
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</table>

2022 Student Travel Grants

<table>
<thead>
<tr>
<th>Student name</th>
<th>Presentation title</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Saurodeep Chatterjee</strong></td>
<td>Rock Magnetic Properties vis-à-vis Thermal Gradient in Volcanic Provinces: Studies from Rajmahal Traps, India</td>
</tr>
<tr>
<td>PhD student – Indian Institute of Technology</td>
<td></td>
</tr>
<tr>
<td><strong>Muhammad Bin Hassan</strong></td>
<td>A Magnetic and Geochemical Approach to the Changing Sedimentation Patterns in Response to Glacio-eustatic Changes at the Great Barrier Reef</td>
</tr>
<tr>
<td>Graduate student – Universidade de São Paulo</td>
<td></td>
</tr>
<tr>
<td><strong>Frederick Lacombe</strong></td>
<td>Changing Patterns in Core-Mantle Boundary Heat Flux Throughout the Past Billion Years of Earth’s History</td>
</tr>
<tr>
<td>Graduate student – University of Florida</td>
<td></td>
</tr>
<tr>
<td><strong>Zain Kamal</strong></td>
<td>Impact-Induced Demagnetization in Martian Crust Using High-Resolution MAVEN Data</td>
</tr>
<tr>
<td>Undergraduate student – Rutgers University New Brunswick</td>
<td></td>
</tr>
<tr>
<td><strong>Monica Rawat</strong></td>
<td>Lithospheric Anomaly Map of Indian Region Derived from Swarm and Champ Satellite Data</td>
</tr>
<tr>
<td>PhD student – Indian Institute of Geomagnetism</td>
<td></td>
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2022 GPE Post-doc Grants

The GPE Post-doc Grant aims to support post-doctoral scholars attending the AGU Fall Meeting by covering their full registration cost. Support is made possible by the generous sponsorship of Lauren Keaton and Bill Goodman of 2G Enterprises (www.2genterprises.com). The GPE section thanks you for your support and congratulates the 2022 GPE Post-doc Grant Recipients.

<table>
<thead>
<tr>
<th>Name of Recipients</th>
<th>Institution of affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clara Maurel</td>
<td>CEREGE, Aix-en-Provence, France</td>
</tr>
<tr>
<td>Daniele Thallner</td>
<td>University of Florida, USA</td>
</tr>
<tr>
<td>Martin Fillon</td>
<td>Cooperative Institute for Research in Environmental Sciences (CIRES), USA</td>
</tr>
<tr>
<td>Courtney Wager</td>
<td>Smithsonian National Museum of Natural History, USA</td>
</tr>
</tbody>
</table>

To all post-docs → keep an eye out for the 2023 call prior and during abstract submission period.

2022 GPE section Bullard Lecturer

Congratulations to Catherine Constable on being named the 2022 Bullard Lecturer!

Cathy is a Distinguished Professor of Geophysics at UCSD’s Scripps Institution of Oceanography. Her exceptional scientific career has been recognized by the Royal Astronomical Society, the American Association for the Advancement of Science, and the American Geophysical Union — having been elected Fellow to all three organizations.

At the 2022 Fall Meeting in Chicago, Catherine Constable delighted both in-person and virtual attendees with the Bullard lecture titled Earth’s Dynamic Magnetic Field: Centennial to Million Year Time Scales.

Catherine Constable (right) is presented with the Bullard Lecturer Certificate by the GPE section president, France Lagroix (left).

Photo taken by Suzanne McEnroe
2022 John Adam Fleming Medalist

Congratulations to Denis V. Kent from the Lamont Doherty Earth Observatory of Columbia University.

Denis received the 2022 Fleming Medal for his many distinguished contributions to paleomagnetism that have had extensive and fundamental impact in the wider Earth sciences.

At the 2022 Fall Meeting AGU Honors and Awards ceremony, Denis delivers his acceptance speech (top) and poses with the 2021 Fleming medalist, David Dunlop, during the celebratory cocktail (left).

Photos courtesy of Andrew Roberts.

2022 William Gilbert Award

Congratulations to Courtney Sprain, the 2022 recipient of the GPE Section Gilbert award!

Dr. Sprain is an assistant Professor at the University of Florida and is recognized for “outstanding contributions to geochronology including radiometric and paleomagnetic methods to solve persistent problems in the Earth sciences.” Her research focuses on a better understanding of important aspects of Earth’s evolution, ranging from the origin and nature of deep interior processes to ones that have affected Earth’s surface and life on it. She represents the best of us in her highly integrative and creative research and her generous and collegial approach to science.

Congratulations Courtney!
**GPE Honorees Tuesday Evening diner @ AGU22 Fall Meeting**

*Photo of people at a dinner*

_Dinner at Café Bionda with (clockwise from front left) the 2020 Bullard Lecturer (Andrew Roberts), the incoming GPE president-elect (Steve Constable), the GPE president-elect (Suzanne McEnroe), the GPE president (France Lagroix), the 2022 Bullard Lecturer (Cathy Constable), the GPE Past-president (Catherine Johnson) and the GPE (Paul Bedrosian)._

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**Canvassing for 2022**

We warmly thank the 2021-2022 GPE Canvassing committee chaired by Catherine Johnson, alongside Andrew Roberts and Monika Korte for their diligence in seeking out nominees and supporting nominators in need of assistance. There are many opportunities at AGU for recognizing our fellow GPE peers at all career stages at the Union level (Fellowship of the AGU, the Fleming Medal, the Macelwane Medal and the Joanne Simpson Medal) and at the section level (the Gilbert Award, the Bullard lecturer, the GPE post-doc grants, AGU student grants, OSPA). Any time throughout the year, if you have suggestions of people who you think would be great nominees, please reach out to any of the us on the 2023-24 GPE Canvassing Committee: France Lagroix ([lagroix@ipgp.fr](mailto:lagroix@ipgp.fr)), Andrew Roberts ([andrew.roberts@anu.edu.au](mailto:andrew.roberts@anu.edu.au)) or Catherine Johnson ([cjohnson@eoas.ubc.ca](mailto:cjohnson@eoas.ubc.ca)).
The GPE Fall meeting officially kicked off on Sunday evening with the Student and Early Career Event masterfully organized by Brendyn Cych and Claire Nichols, our student and early career representatives, respectively. Unfortunately, Brendan had to sit out the event isolated in his hotel room after stepping down from his plane in Chicago with a little extra baggage! Happy to report that Brendan is healthy as ever and take this opportunity to thank Brendan for his service on the GPE Executive Committee these past two-years.

GPE hosted 8 topical sessions, co-organized 3 sessions with the Near Surface Geophysics section and the Space and Atmospheric Sciences sections, and coordinated a workshop on the Saturday prior to the main meeting week on Ethics During Field Work and Sample Collection (See below). All together approximately 190 contributions were presented in these sessions. We warmly thank all the presenters and conveners who made the 2022 in-person and virtual meeting a success even though participation was in slight decline from. Travel concerns and responsible travelling are likely to continue to impact meeting in-person and virtual meeting participation. GPE and AGU are actively looking for feedback on the AGU Fall meeting (both in-person and virtual components) as we all begin preparing for a return to San Francisco in December of 2023.

Abstract submissions will open early June and close August 2\textsuperscript{nd} 2023!
Ethics in Fieldwork and Sample Collection

Following the late breaking Townhall session at AGU21 Fall meeting co-convened by the GPE section with GSA and AGU’s Ethics and Equity Center a Town Hall session on “Ethics During Field Work and Sample Collection: Case Study of Lessons Learned and an Educational Opportunity for All”, a joint AGU-GSA working group was put in place to continue efforts. Over 2022, three actions were coordinated by members of working:

1. An article Co-Creating Ethical Practices and Approaches for Fieldwork was published in AGU Advances (https://doi.org/10.1029/2022AV000762).

2. A geoscience community wide survey on the Culture and Ethics of Geologic Sampling was conducted in the Fall. Motivation for the survey and its contours were presented in GSA Today (https://doi.org/10.1130/GSATG542GW.1).

3. A workshop at the 2022 Fall meeting on Ethics During Field Work and Sample Collection.

The first part of the workshop included presentations from Marjorie A. Chan, reporting the preliminary results of the survey on culture and ethics of geological sampling, from Tom Heldal accounting a Norwegian perspective of transitioning from sampling disasters to geosite management, and from New Mexico’s Office of Archeological Studies Director Eric Blinman, Archeologist and Educator Mary Weahkee, and Supervising Researcher and Educator Shelby Jones sharing their experiences in the line of their work of when science and heritage clashes. The second part of the workshop centered on group discussions around case studies that could, in the future, be used in courses or workshops addressing ethics in science and seeking to be inclusive of ethical field work and sample collection.

All presenters are warmly thanked for their participation and presentation. The workshop was recorded and presentations will be made available soon!

Video captures of workshop co-conveners (top from left to right) France Lagroix and Suzanne McEnroe and invited speakers (bottom from left to right) Marjorie A. Chan, Tom Heldal, Eric Blinman, Mary Weahkee and Shelby Jones.
The GPE section sends its most sincere condolences to all of the families, friends and colleagues that have lost loved, respected and admired ones in 2022.

Hans Zijderveld passed away peacefully at home on February 26th 2022 at the age of 88 years. Hans was the first head of the Paleomagnetic Laboratory Fort Hoofddijk (Utrecht University, The Netherlands) established by professors M.G. Rutten (geology) and J. Veldkamp (geophysics) in 1963. Hans is widely known in the paleomagnetic community and beyond for his seminal work “A.C. Demagnetization of rocks: Analysis of results” in 1967 in which he introduced what is now called the Zijderveld diagram, the standard method, to this day, for how to view and interpret the different superimposed NRM components during progressive stepwise demagnetization. Hans was elected Fellow of AGU in 1993.

Özden Özdemir passed away suddenly and unexpectedly on June 23rd 2022, a day short of her 76th birthday. Life and science partner in crime with David Dunlop for over 40 years, Özden’s scientific footprint is so much bigger than the one left behind by her actual feet in this picture. The insightful and meticulous experiments conducted on magnetite, titanomagnetite, hematite, maghemite and goethite of various grain sizes and stoichiometries throughout her career constitute a significant part of the state of our knowledge today on how these minerals behave magnetically, allowing their identification in complex rocks and dirty sediments and how they may record the earth magnetic field.
In Memoriam

James Ransom Heirtzler passed away in Silver Spring, Maryland, on 15 July 2022, at age 96. James studied magnetic anomalies over the sea floor and in particular showed from the Reykjanes Ridge that European and American Plates were separating from each other at a rate of about 1 cm per year. That was the first clear evidence for what is now called Plate Tectonics. James was a fellow of the American Geophysical Union, the Geological Society of America, and the American Physical Society. He was GP president in 1982-1984.

Phil Wannamaker passed away suddenly on August 22, 2022 while at the Energy and Geoscience Institute where he worked for over thirty years. With a first degree in geology and a graduate degree in numerical computation, Phil was just as comfortable with debating petrology, as he was with designing and building MT acquisition equipment, or developing and implementing forward and inverse numerical EM solutions, or tectonically interpreting the conductivity models derived by his inversion codes.

Photo of Phil Wannamaker taken from the MTnet info website.