PURDUE UNIVERSITY | Department of Earth, Atmospheric, and Planetary Sciences

EAPS WEEKLY NEWSLETTER

April 25, 2022

Facebook Twitter LinkedIn Instagram Website

EAPS MEETINGS & EVENTS

EAPS FACULTY MEETINGS 3-5pm

- **May 3** (Primary Committee)
- **May 10 (tentative)**

PURDUE CALENDAR 2021-22

EAPS K-12 OUTREACH CALENDAR OF EVENTS

REPORT YOUR OUTREACH AND ENGAGEMENT ACTIVITIES

OUTREACH NEWS

This semester we are scheduling live events for K-12 students again! For both our Hands-on Purdue Science programs (HOPS and AP Fridays) we are offering classrooms the following themes

Wednesdays and Fridays in April: Atmospheric Chemistry

Wednesdays and Fridays in May: Investigating Water Quality

Check out the online labs and resources outreach has created.

Social sites:

TikTok SuperHeroesofScience
Facebook EAPS Outreach
Facebook Superheroes of Science
Twitter EAPS departmental outreach web page
Instagram

Like to learn new things about Science? A new **1 minute science video** is released every Monday – Friday on the Superheroes of Science YouTube channel and on our TikTok.

The 1 minute video with the most views is EAPS grad student Angela Burke *Why some planets have seasons*

Students want to know what you study in your major. Record a **vertical** video that is under 1 minute and send the video to Steven Smith (mrsmith@purdue.edu). You can use your phone or get with Steven and he can record/edit for you in the outreach lab! **Let's take a minute and tell the world what we study!**

PUBLICATIONS

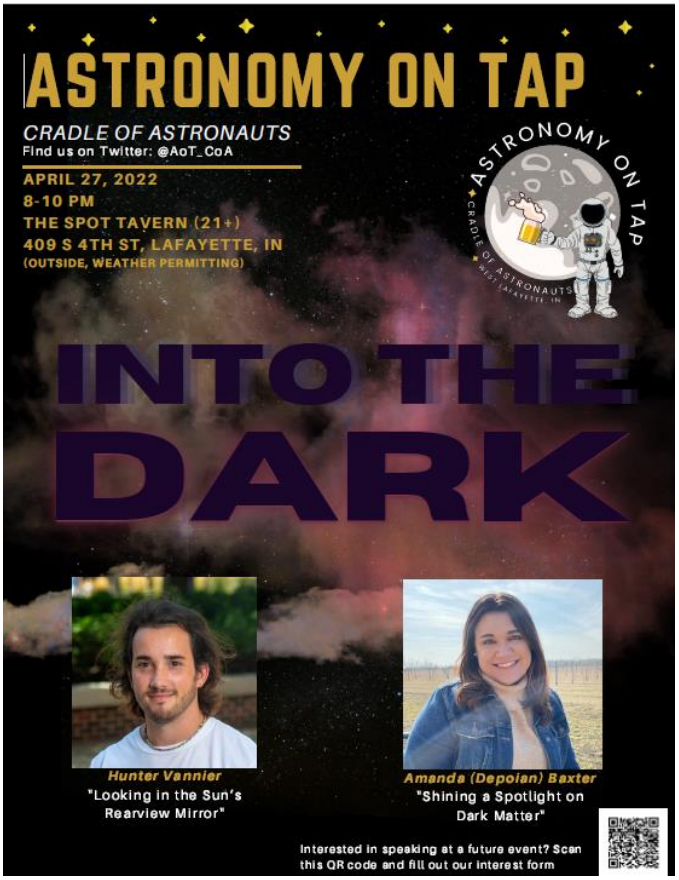
- **Sori, M.M.,** P. Becerra, J. Bapst, S. Byrne, and **R.A. McGlasson** (2022), Orbital forcing of Martian climate revealed in a south polar outlier ice deposit, Geophys. Res. Lett. 49, e2021GL097450.
- **Dickson, L.H**. and **M.M. Sori** (2022), The origin of mascons on Ceres as constrained by crater morphology, *Icarus*, 115024.
- Da Silva, M. P. A., F. Rocadenbosch, **R. L. Tanamachi**, and U. Saeed, 2022: Motivating a synergistic mixing-layer height retrieval method using backscatter lidar returns and microwave-radiometer temperature observations. *IEEE Trans. Geosci. Remote Sensing*, **60**, 1–18, https://doi.org/10.1109/TGRS.2022.3158401.
- Jianzhong Xu*, Anusha Priyadarshani Silva Hettiyadura, Yanmei Liu, Xinghua Zhang, Shichang Kang, and Alexander Laskin* "Atmospheric Brown Carbon on the Tibetan Plateau: Regional Differences in Chemical Composition and Light Absorption Properties," ACS Publications, https://doi.org/10.1021/acs.estlett.2c00016
- Yue Zhou, Christopher P. West, Anusha P. S. Hettiyadura, Wei Pu, Tenglong Shi, Xiaoying Niu, Hui Wen, Jiecan Cui, Xin Wang*, and Alexander Laskin*, "Molecular Characterization of Water-Soluble Brown Carbon Chromophores in Snowpack from Northern Xinjiang, China," ACS Publications, https://pubs.acs.org/doi/abs/10.1021/acs.est.1c07972

NEWS/OPPORTUNITIES

CONGRATS TO THE GRADUATING SENIORS AND STUDENTS, FACULTY, AND STAFF WHO WERE AWARDED OR RECOGNIZED AT THIS YEARS ANNUAL EAPS AWARDS BANQUET!

For photos from the event and a list of awardees, click here. Photos will be posted later today. If you are a student who was unable to attend and need to pick up your award, please see the front desk at HAMP 20169.

ASTRONOMY ON TAP – CRADLE OF ASTRONAUTS
April 22, 8-10 pm, Spot Tavern



APOPHIS T-7 YEARS: KNOWLEDGE OPPORTUNITIES FOR THE SCIENCE OF PLANETARY DEFENSE

Call for Abstracts and Registration Now Open!
May 11-May 13, 2022
Virtual

The Apophis T-7 Years: Knowledge Opportunities for the Science of Planetary Defense virtual workshop is scheduled for May 11--13, 2022.
This workshop will explore the dynamic details and corresponding science opportunities presented by the April 13, 2029, near-miss passage of the asteroid Apophis.
Registration: Registration fees are being collected for this virtual workshop. Only registered attendees will receive an email from Houston Meeting Info with virtual connection information.
Registration is available through May 13, 2022.
For more information, contact: Meeting and Publication Services, USRA/Lunar and Planetary Institute meetinginfo@hou.usra.edu

METEORITICAL SOCIETY TRAVEL GRANTS AVAILABLE FOR METSOC2022 MEETING IN GLASGOW, UK

Students and ERCs are the future of our society. Thanks to the continued generosity of our supporters, more than $100,000 will be available to support travel to this year's MetSoc2022 meeting in Glasgow, UK. The travel awards committee will provide as much financial support as possible to each individual who applies. Awards are often for the full amount requested, and typically in excess of $1,500 per person. We hope this can offset some of the additional costs for attendees, which have resulted from increased venue costs and the expense of running a fully hybrid conference.
Grant requests are due no later than May 10, 2022.
Learn more and apply here.

85TH ANNUAL MEETING OF THE METEORITICAL SOCIETY

August 14–19, 2022, Glasgow, Scotland

The 85th Annual Meeting of The Meteoritical Society will take place August 14–19, 2022, at the Scottish Event Campus in Glasgow, Scotland. The meeting is hosted by the University of Glasgow planetary science research group. The meeting is an excellent opportunity to present and discuss your research and learn about the state-of-the-art advancements in our fields. We will be hosting a hybrid meeting, with in-person and virtual participation options.
Call for Abstracts- Oral and poster contributions on any aspect of meteoritics and planetary science are invited. **Abstract Submission Deadline: May 9, 2022, 5:00 p.m. U.S. Central Daylight Time (GMT -5).**
Society Events -

- **Sunday, August 14:** Meeting registration and a welcome reception begin at 5:00 p.m. British Summer Time (BST) at the Hunterian Museum housed within the historic main building of the University of Glasgow.
- Oral and poster sessions, plenary sessions, and the Barringer Invitational Lecture will take place at the Loch Suite of the Scottish Event Campus.
- **Wednesday, August 17:** Excursions to explore both the city and the neighboring countryside will be offered. The meeting banquet with ceilidh will be held in the evening at the magnificent Kelvingrove Art Gallery and Museum, the U.K.'s most popular museum outside London. The Kelvingrove is home to internationally important natural history and archaeological collections, as well as artwork by

Salvador Dalí, Van Gogh, Whistler, Monet, and Botticelli.

- Several pre-meeting workshops (August 13–14, 2022) and post-meeting excursions (starting August 20, 2022) will be offered. See the meeting website for more information.

Accommodations - Rooms have been reserved in multiple hotels, offering a range of prices. The Scottish Event Campus is located in the center of Glasgow, with six hotels within easy walking distance and many more just a stroll away. For hotels a little further away, public transportation in Glasgow is frequent and reliable, and the Scottish Event Campus has its own train station, bus stops, and taxi ranks.

Glasgow is undoubtedly one of Europe's most dynamic cultural capitals, steeped in culture, rich in history, and alive with excitement. It is also an easy destination to reach and travel around, with three international airports within an hour's drive and good rail, subway, and bus links.

For more information, visit the meeting website.

20TH MEETING OF THE VENUS EXPLORATION ANALYSIS GROUP (VEXAG)

November 7-9, 2022

Pasadena, California/Virtual

To include as any participants as possible and consider the possible impact of COVID-19 on in-person attendance, components of the meeting will be available virtually. Election Day in the U.S. is November 8 -- remember to vote early if you plan to attend the meeting in person.

The annual meeting is a forum for scientists and engineers to discuss NASA/U.S. exploration of Venus.

Important: To be added to the mailing list to receive additional information about this meeting, submit an indication of interest.

EAPS GRAD STUDENT RESEARCH OPPORTUNITIES

If you are interested in an EAPS grad research opportunity, click here for more information.

ANCIENT VENUS CONFERENCE JULY 25-27, 2022

Lunar and Planetary Institute

Houston, Texas/Virtual

The conference will be hybrid -- in-person at the Lunar and Planetary Institute (LPI) in Houston, Texas and virtual. As a prelude to the flotilla of spacecraft that will target Venus in the next decade, the LPI's Venus Science Initiative aims to consolidate our understanding of that veiled planet, explore new hypotheses from the data in hand, and encourage innovative ways to exploit measurements from upcoming spacecraft.

Venus's origin and history remain enigmatic -- current data appear inadequate or of insufficient precision to provide unambiguous answers to many fundamental questions, including how Venus formed and whether it ever had oceans and/or habitable environments. The high temperature of Venus's surface allows rapid reactions between the planet and the atmosphere, implying system-level feedbacks among its atmosphere, surface, and interior. Further, Venus is our best local example of other terrestrial exoplanets, permitting a stronger understanding of other solar systems and their formation processes. In this initiative of four conferences, we will address these and other questions about Venus and provide a forum for scientific anticipation of coming spacecraft data.

Objectives: Venus is now shrouded in a thick, hot greenhouse atmosphere. What was Venus before the greenhouse, or has it always been this way? As Venus aged, how have the exchanges among its interior, surface, and atmosphere changed, and how did each of these reservoirs evolve? Thematically, the conference will focus on four main topics, while cementing the discussion around our knowledge of ancient Venus:

1. Accretion history of Venus
2. Evolution of the volatile inventory and climate on Venus
3. Habitability of ancient Venus
4. Geodynamics and surface processes through time

Call for Abstracts: Abstract Deadline - May 11, 2022, 5:00 p.m. U.S. Central Daylight Time (GMT -5)

Important: To be added to the mailing list to receive additional information about this conference, submit an indication of interest by May 23, 2022. More info.

MS AND PHD EAPS STUDENTS BROADEN YOUR GRAD EXPERIENCE

For those MS and PhD students in EAPS that would like to broaden their graduate experiences while at Purdue, EAPS is affiliated with the Computational Interdisciplinary Graduate Programs (CIGP) at Purdue. While working toward a graduate degree in EAPS, graduate students can also have a concentration (specialization) in the area of Computational

Science and Engineering (CSE). For more information, click here. A short video about the CIGP/CSE program can be found here.
Fall Application Deadline: October 1
Spring Application Deadline: March 1

EXOPLANETS IN OUR BACKYARD 2
NOVEMBER 2-4, 2022
Pasadena, CA/Virtual

The Venus Exploration Analysis Group (VEXAG) meeting is scheduled two days after the Exoplanets workshop. As it becomes available, more information regarding the VEXAG meeting will be posted on the VEXAG website.
Exoplanets in Our Backyard 2 is a workshop hosted by the Venus Exploration Analysis Group (VEXAG), Outer Planets Assessment Group (OPAG), Exoplanet Exploration Program Analysis Group (ExoPAG), Mars Exploration Program Analysis Group (MEPAG), and Mercury Exploration Assessment Group (MExAG). The goal of the workshop is to examine and discuss exoplanet-solar system synergies on planetary properties, formation, evolution, and habitability. Topics include comparative planetology on worlds near and far; solar system studies as a baseline for studies of extrasolar planetary properties and evolution; and lessons learned on planetary statistics, demographics, and system architectures from extrasolar planetary systems. This workshop aims to foster and build new collaborations among scientists in the solar system and exoplanet communities and to help guide the direction of future exploration and observations of worlds in the solar system and beyond. More info.
For more information, contact: Meeting and Publication Services, USRA/Lunar and Planetary Institute, meetinginfo@hou.usra.edu

METEOROIDS 2022 CONFERENCE
June 13-17, 2022
Virtual

The Meteoroids 2022 local organizing committee has closely watched ongoing developments of the COVID-19 pandemic and met to reconsider in-person delivery in Huntsville, Alabama. Given the recent sharp increase in positive cases and the unpredictable appearance of new variants, the committee has decided to shift the conference from in-person to fully virtual. Although it is disappointing not to be able to meet in person, the health and safety of all participants is our top priority.

Registration deadline - June 17, 2022
Visit the Registration page at the conference website for more information. Before the conference, registered attendees will receive an email from Houston Meeting Info with virtual connection information.
Meteoroids 2022 is the eleventh international conference in a triennial series of meetings on meteoroids, their origins, and their associated phenomena. Past conferences have featured a combination of invited and contributed talks and posters covering topics such as meteor observational techniques, meteorite recoveries, meteoroid stream dynamics, ablation physics and airbursts, impacts on airless bodies, the production of dust and meteoroids by asteroids and comets, space missions, and spacecraft anomalies.
We look forward to planning a successful conference and to seeing you virtually!

APOLLO 17 – ANGSA WORKSHOP
October 26–28, 2022
Lunar Planetary Institute
Houston, Texas

The 3-day workshop is currently planned as an in-person workshop, October 26–28, 2022, at the Lunar and Planetary Institute in Houston, Texas.
The 50th anniversary of the Apollo 17 mission is in Dec. 2022. By every metric, this mission to the Taurus-Littrow Valley (TLV) was the most accomplished of any of the Apollo missions to the moon, leading to 50 years of extensive, continuing analytical investigations of its observations, samples, photography, and geophysical data.
The goals of this workshop are:

- revisiting the TLV by integrating new geologic and exploration context, new ANGSA sample data, orbital observations, and the full breadth of data sets from all six Apollo landed missions for a fuller understanding of the moon, the sun, and the earth
- establishing links among multiple generations of lunar scientists and engineers as we prepare for our future on the moon
- focusing on scientific and design lessons learned from both Apollo and from ANGSA in preparation for near-term human exploration of the moon.

We will also focus on specific topics, with short reports expected from the breakout groups and presented during the workshop. Presentations and results of the workshop will form the basis of a special issue in a peer-reviewed journal. Manuscripts for this special issue will be due within three months after the workshop.

ANNUAL MEETING OF
PLANETARY GEOLOGIC MAPPERS
June 22–23, 2022
Flagstaff, Arizona/Virtual

The Annual Meeting of the Planetary Geologic Mappers is scheduled to be held on June 22–23, 2022, at the Northern Arizona State University in Flagstaff, Arizona, with virtual participation available.

The annual meeting will bring together community members to report progress on geologic mapping projects, discuss a wide range of mapping strategies, and coordinate map-based scientific investigations of planetary surfaces at multiple scales. Specific attention will be focused on how geology-based site characterization can support human exploration. Abstracts are solicited for topics, including progress reports on active mapping investigations, mapping strategies, mission support, community resources, and education. Group discussions will address map data standardization and dissemination, map-based investigations of geologic processes, ways to modernize and improve geologic maps for human and robotic exploration, and the use of geologic maps to support exploration.

Important: To be added to the mailing list to receive additional information about this meeting, submit an indication of interest.

SCIENCE OBJECTIVES FOR HUMAN EXPLORATION OF MARS WORKSHOP

NEW DATES: May 4-6, 2022
Denver, Colorado

The Science Objectives for Human Exploration of Mars Workshop will be delivered on May 4-6, 2022 (new dates) in Denver, Colorado, with some components available virtually.

The workshop is co-sponsored by NASA's Science Mission Directorate and the Human Exploration and Operations Mission Directorate to actively engage the scientific community to determine what science could be done by human crews on the Martian surface and how it can be achieved. This workshop will discuss the highest priority science objectives for a first human mission to Mars and then develop several different possible concepts of operation that will enable that science. With the Artemis missions, humans will return to the Moon using innovative technologies to explore the lunar surface. We will use what we learn on and around the Moon to send the first astronauts to Mars. A human mission to Mars will be a landmark achievement and a golden opportunity to conduct groundbreaking science on Mars. The potential scope of the science activities is extraordinary.

Virtual registration deadline - May 6, 2022

Registration fees are not being collected for this workshop, but registration is required. Before the workshop, registered attendees will receive an email from Houston Meeting Info with virtual connection information.

WORKSHOPS ON IN SITU EXPLORATION OF THE GIANT PLANETS II

July 12-14, 2022
Johns Hopkins Univ. Applied Physics Laboratory, Laurel, Maryland

The Workshop on In Situ Exploration of the Giant Planets II will build upon the results of the Workshop for In Situ Exploration of the Ice Giants held in Marseille in February 2019 addressing in situ exploration of the ice giants.

Call for Abstracts: Deadline - April 28, 2022, 5:00 p.m. U.S. Central Daylight Time (GMT -5)

Registration: Registration on-site will be limited to 100 attendees, with pre-registration required. No onsite registration will be available. Registration details will be posted at a later date. Registered attendees will receive an email from Houston Meeting Info with virtual connection information. For more information, contact: Meeting and Publication Services, USRA/Lunar and Planetary Institute, meetinginfo@hou.usra.edu

BRINES ACROSS THE SOLAR SYSTEM: ANCIENT BRINES

September 12–15, 2022
Reno, Nevada

The Brines Across the Solar System: Ancient Brines conference will focus on integrating diverse fields of study, including but not limited to geology, mineralogy, (astro)biology, chemistry, planetary science, and physics. Of particular interest are the intersections of these fields as they apply to understanding the formation, location, and potential habitability of ancient brines on planetary bodies and any possible biosignatures that may be observed today. Thematically, the conference is focused on four main topics:

1. Evidence for ancient brines
2. Formation of brines on early planetary bodies
3. Habitability of ancient brines

4. Role of brines in the origins of life

Important: To be added to the mailing list to receive additional information about this conference, **submit an Indication of Interest by May 16, 2022. More info here.**

POSITIONS AVAILABLE- CAREER OPPORTUNITIES

METEOROLOGIST POSITIONS AVAILABLE

TEGNA

Multiple meteorology positions are open with TEGNA. **Betsy Kling**, Chief Meteorologist and an anchor for WKYC-TV The Land (Cleveland), is also a Weather Team leader and the lead weather talent recruiter for Tegna, her station's parent company, that owns more than 60 stations across the country. She hoping to make connections now that can be beneficial to those soon-to-be meteorologists as well as the stations in her company looking for budding talent. She is happy to answer any questions you might have about the industry or the job search. She is an AMS-CBM and NWA sealed four-time Emmy winner now in her 25th year in the business.

MRCC HIRING TWO CLIMATE DATA PROGRAMMERS

External Link Internal Link

Job Summary

The Midwestern Regional Climate Center (MRCC) is an operational climate services center supported primarily by a federal contract with the National Oceanic and Atmospheric Association. Its primary role is to provide historical and near-real-time climate data through informational resources that can be applied to a broad range of decision-making stakeholders. Online data monitoring, delivery, and decision-support tools are the most visible means of communicating climate services throughout the 9-state MRCC region that includes Minnesota, Wisconsin, Michigan, Iowa, Illinois, Missouri, Indiana, Ohio, and Kentucky.

Stakeholder engagement is critical for the MRCC to continually meet the climate services needs of the region, promote climate data resources and information, and solicit ideas for how the MRCC can continually improve its stakeholder support. Applied climate research and monitoring by the MRCC helps support the evolving understanding of the regional climate and its impacts on society. Under the guidance of the MRCC / Indiana State Climate Office Director, you will build scientific decision-support and informational tools, modify and enhance pre-existing code and scripts at the MRCC, and work with climate data for the MRCC website, presentations, and relevant reports. You will also contribute to the development of figures and diagrams, perform statistical data analysis, and contribute to other computational needs within the MRCC. Additional duties will include:

- Create and/or modify programming and visualization code that can manipulate atmospheric and environmental datasets (both gridded and station/point).
- Create climatologically relevant figures and diagrams using atmospheric and environmental datasets
- Perform statistical analyses on atmospheric and environmental data using statistical software and programs
- Contribute to the technical / scientific reports for service and / or research projects as needed
- Help support website development and design

Required:

- Bachelor's degree in either an atmospheric or computer science discipline
- 4 years of relevant experience with at least (1) of those years working with observational scientific data that utilized statistical and exploratory data analysis skills
- Development of online tools and/or resources that utilized observational scientific data
- Demonstrated ability to follow and/or develop deadlines and follow through in timely and efficient manner
- Contribute to overall project deliverables

Preferred:

- Master's degree in atmospheric science or related discipline
- 3 years of experience working with observational atmospheric data that utilized statistical and exploratory data analysis skills
- *Development of online tools that utilize data access routines (e.g., APIs) and JSON, GRIB, and netCDF formats
- Experience with JavaScript libraries like HighCharts or Tableau and Tablesorter
- Webpage development
- GIS Server skills
- MySQL (or SQL) database experience

BRYAN ENVIRONMENTAL CONSULTANTS

Homewood, IL

SEEKING PART-TIME TO FULL-TIME POSITIONS

- Bachelor's or Master's degree in environmental engineering, civil engineering, geotechnical engineering, geology
- Knowledge of State and Federal environmental regulations a plus
- Experience with Phase I and II Environmental Site assessments a plus
- Strong writing skills
- Proficient in all Microsoft Office applications
- Must have cell phone and computer (laptop)
- Valid Driver's License

POST-DOC OPPORTUNITY - AIR FORCE SCIENCE & TECHNOLOGY FELLOWSHIPS

The National Academies of Sciences, Engineering, and Medicine administers postdoctoral and senior research awards at the U.S. Air Force Research Laboratory (AFRL), the U.S. Air Force Institute of Technology (AFIT), and the U.S. Air Force Academy (USAFA) under the Air Force Science & Technology Fellowship Program (AF STFP).
Seeking highly qualified candidates who are U.S. citizens and hold, or anticipate earning, a doctorate in a variety of fields of science or engineering.
Application deadline dates (four annual review cycles): February 1, May 1, August 1, November 1
Awardees have the opportunity to:

- Conduct independent research in an area compatible with the interests of the Air Force laboratories
- Devote full-time effort to research and publication
- Access the excellent and often unique Air Force research facilities
- Collaborate with leading scientists and engineers
- Awardee benefits:
- Base stipend starting at $76,542; may be higher based on experience
- Health insurance (including dental/vision), relocation benefits, and a professional travel allowance

Applicants should contact prospective AFRL, AFIT and USAFA Research Adviser(s) at the lab(s) prior to the application deadline to discuss their research interests and funding opportunities.
For detailed program information, to search for AFRL, AFIT, and USAFA Research Opportunities, and to contact prospective Research Adviser(s), visit www.nas.edu/afstfp.

PURDUE ENVISION CENTER (UNDER ITAP) RECRUITING EAPS STUDENTS

At the Envision Center looking to recruit EAPS students with background and interest in weather visualization. Details on the job opening can be found here.

ASTROCAMP

AstroCamp is looking for graduating students (undergraduate or graduate) for a full-time program instructor position for physical sciences and astronomy concepts at their outdoor science school in California. Link to job here.

POSITIONS AVAILABLE IN METEOROLOGY AND ATMOSPHERIC SCIENCE

View current career listings

AGI GEOSCIENCE JOB CENTER

Check listings here.

GRADIENT CORP
MULTIPLE OPPORTUNITIES

Please feel free to contact Qianlai Zhang if you are interested in applying and/or have any questions about the company and the opportunities.

POSTDOC IN STABLE ISOTOPES AND REACTION KINETICS – INDIANA UNIVERSITY

Applications are invited for a Postdoctoral Research Associate at Indiana University, USA. The project aims using non-traditional stable isotopes to measure reaction rates and understand the mechanisms of mineral-aqueous solution reactions. See our recent publications for details (Zhu et al., 2016, Chemical Geology; Zhu et al, 2020, 2021, GCA). The project will employ a combined experimental, analytical, theoretical, and modeling approach.
The successful candidate will hold a Ph.D. in earth sciences or a closely related field. A strong background in either stable isotopes or kinetics and thermodynamics is required. Experience performing aqueous geochemical experiments, and using geochemical equilibrium and kinetics models is highly desirable.
Salary is competitive and includes fringe benefits. The initial appointment will be for one year, with the expectation of renewable for another two years, subject to performance and funding availability. The candidate will be based on the Bloomington campus of Indiana University, and will have access to an extensive suite of analytical

tools, including MC-ICP-MS, TIMS, ICP-OES, ICP-MS, FESEM, and FETEM.

NATIONAL WEATHER SERVICE POSITIONS AVAILABLE

Check here for available positions with the National Weather Service.

NEWSLETTER INFO

IMPORTANT NOTICE ABOUT THIS NEWSLETTER

This newsletter is used as the primary information source for current and upcoming events, announcements, awards, grant opportunities, and other happenings in our department and around campus. Active links to additional information will be provided as needed. Material for inclusion in the newsletter should be submitted to Cheryl Pierce **by 5:00pm on Thursday of each week for inclusion in the Monday issue.**

For answers to common technology questions and the latest updates from the EAPS Technology Support staff, click here. As an additional resource for information about departmental events, seminars, etc., see our departmental calendar.