

# EAPS WEEKLY NEWSLETTER

March 7, 2022

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## EAPS MEETINGS & EVENTS

### EAPS FACULTY MEETINGS 3-5pm

- **March 22**
- **March 29** (Primary Committee)
- **April 12** (College of Science Faculty Meeting)
- **April 19**
- **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

Did you know, faculty use the Superheroes of Science [YouTube](#) channel for broader impacts on their grants and in their instruction? The channel has had over 10,000 views this year so far. Help us continue to grow the channel and increase the impact by subscribing and sharing videos.

The Purdue University Superheroes of Science Podcast is on most podcast players as well as [YouTube!](#)

### Social sites:

[TikTok SuperHeroesofScience](#)

[Facebook EAPS Outreach](#)

[Facebook Superheroes of Science](#)

[Twitter EAPS departmental outreach web page](#)

[Instagram](#)

### Tell us about your major. #1minscience

We are giving prizes each month to an entry for the 1 Minute Science Challenge. One of the most

popular #1minscience videos we have is Ryland's "What is Environmental Science? 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](mailto: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!

You know that Superheroes of Science is a podcast too, right? **The most downloaded Superheroes of Science podcast episode is our very own Mike Baldwin.** If you haven't listened to it yet, [check it out](#). Also, please leave a positive review to help the rankings.

## PUBLICATIONS

- Alvarez-Campos, Odiney, Elizabeth J. Olson, Lisa R. Welp, Marty D. Frisbee, Sebastián A. Zuñiga Medina, José Díaz Rodríguez, Wendy R. Roque Quispe, et al. "Evidence for High-Elevation Salar Recharge and Interbasin Groundwater Flow in the Western Cordillera of the Peruvian Andes." *Hydrology and Earth System Sciences* 26, no. 2 (January 31, 2022): 483–503. <https://doi.org/10.5194/hess-26-483-2022>.
- Xi, X., Gentine, P., Zhuang, Q., & Kim, S. (2022). Evaluating the variability of surface soil moisture simulated within CMIP5 using SMAP data. *Journal of Geophysical Research: Atmospheres*, 127, e2021JD035363. <https://doi.org/10.1029/2021JD035363>.
- Liu, L., Zhuang, Q., Zhao, D., Zheng, D., Kou, D., & Yang, Y. (2022). Permafrost degradation diminishes terrestrial ecosystem carbon sequestration capacity on the Qinghai-Tibetan plateau. *Global Biogeochemical Cycles*, 36, e2021GB007068. <https://doi.org/10.1029/2021GB007068> PDF
- Wang, S., M. Zhou, K. Adhikari, Q. Zhuang, Z. Bian, Y. Wang, X. Jin, Anthropogenic controls over soil organic carbon distribution from the cultivated lands in Northeast China, *CATENA*, Volume 210, 2022, 105897, ISSN 0341-8162, <https://doi.org/10.1016/j.catena.2021.105897>.

## NEWS/OPPORTUNITIES

### CLOUD MODELING SPECIAL SEMINAR

**Dr. Osinachi Ajoku**

Assistant Professor Howard University

[Website](#) [Curriculum Vitae](#)

**Public Seminar:** The Impacts of Biomass Burning Produced Aerosols on Summertime African Climate Dynamics and potential feedbacks

[Zoom link](#)

**Date: Monday, March 7, 2022 Time: 10:30 AM – 11:30 AM Location: HAMP 2244**

**Abstract:** Aerosols emitted during biomass burning have the potential to be transported more than 10,000 km downwind of emissions sources, with 50% of all aerosol emissions originating from anthropogenic fires. During boreal summer and the peak of the West African monsoon season, biomass burning is prevalent in southern Africa. These aerosols are advected towards the Gulf of Guinea via south easterly trade winds where they impact location radiation balances and thermodynamics. This talk covers my recent research on how biomass burning produced aerosols from southern Africa influence large-scale cloud structure over the equatorial Atlantic and precipitation rates over southern West Africa. Lastly, I will discuss future research directions including how recent trends in biomass burning may potentially influence precipitation trends and how reductions in biomass burning emissions associated with Shared Socioeconomic Pathways (SSP's) can help influence monsoonal rains in southern West Africa.

**Bio:** Dr. Osinachi Ajoku was born in Los Angeles and as a first generation Nigerian-American, he has become the first in his family to attain a PhD. He obtained his Geology degree from California State University, Dominguez Hills in 2011 where he engaged in paleoclimate research with Dr. Ashish Sinha. After taking a year off, he went on to obtain a master's degree from the University of California, Riverside in Geosciences with Dr. Robert J. Allen. Here, his research focused on how man-made greenhouse gases and aerosols may potentially influence the width of the tropical belt through the end of the 21st century. Finally, he obtained his PhD from Scripps Institution of Oceanography where he was co-advised by Dr. Arthur Miller and Dr. Joel Norris. His dissertation focused on the impact that biomass burning produced aerosols in southern Africa have on the West African monsoon and nearby air-sea interactions. Outside of research, he worked on many endeavors related to equity, diversity, and inclusion (EDI) including roles as the vice president of EDI within the graduate student association and a community EDI-fellow within his home department. As an ASP postdoctoral fellow, Osinachi worked with colleagues within the Atmospheric Chemistry Observation and Modeling team at NCAR where he worked with regional and global climate models driven by chemistry. Currently, Osinachi research focuses on observing and modeling aerosol-cloud interactions using a combination of available satellite and field campaign data as well as climate models with various resolutions.  
Co-Host Contact: [Lisa Welp](#) and [Matt Huber](#).

### **CLOUD MODELING SPECIAL SEMINAR**

**Dr. Israel Silber, Assistant Research Professor**  
**Pennsylvania State University**  
[Website](#) [Curriculum Vitae](#)

**Public Seminar:** A Day in the Life(cycle): From Inception of Polar Supercooled Clouds to Precipitation Formation

[Zoom link](#)

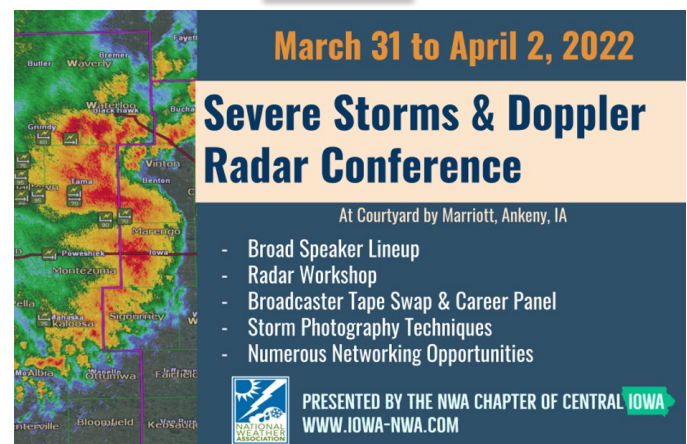
**Date: Thursday, March 10, 2022 Time: 3:30 PM – 4:30 PM Location: HAMP 1252**

**Abstract:** Supercooled clouds substantially impact polar surface energy budgets but large-scale models often underestimate their occurrence, which motivates accurately establishing metrics of basic processes. A polar stratiform cloud's lifecycle is determined by a set of complex interactions and feedbacks between different micro-physical and macro-

physical processes, some of which are not fully understood or quantified, leading to uncertainty in climate predictions. These polar clouds are commonly presupposed as being turbulent as a result of intense cloud-top longwave radiative cooling, while experiencing desiccation dominated by precipitating ice. In this talk, I examine some of these underlying assumptions and provide applicable guidance for large-scale model evaluation. I first present observations of persistent formation of drizzle drops at cloud temperatures below -25 °C detected over McMurdo Station, Antarctica. These supercooled drizzle observations supported by large-eddy simulations (LES) used to examine the cloud's formation and evolution under initially stable, nonturbulent conditions, suggest that drizzle can be common over polar regions and serve as the main cloud moisture sink even well below the freezing temperature. A persistent nonturbulent cloud state suggested by the LES leads to the examination of nonturbulent cloud occurrence in observational datasets from Arctic and Antarctic ground-based sites. Such stable, nonturbulent conditions, surmised to prevail in a quarter of cloud occurrences over these polar sites. I use LES sensitivity tests to examine how short to intermediate period gravity waves, which are supported by such stable conditions, may catalyze turbulence formation when aerosol particles available for activation are sufficiently small. The observational datasets are also utilized to examine ice precipitation processes, and show that the vast majority of polar supercooled clouds are at least weakly precipitating ice at the cloud base even when they are not seeded from above, consistent with commonly observed supercooled cloud longevity. These results indicate that supercooled cloud layers are a sustained source of ice precipitation, and suggest that ground-based statistics offer valuable guidance for large-scale models. Finally, I briefly describe using these results and the Earth Model Column Collaboratory (EMC<sup>2</sup>) instrument simulator and subcolumn generator to evaluate polar cloud representation in the NASA GISS E3 climate model.

**Bio:** Dr. Silber is an assistant research professor at the Pennsylvania State University. He received a Ph.D. in Geophysical, Atmospheric, and Planetary Sciences from Tel-Aviv University, Israel in 2016. His research interests include cloud processes, their climate impact, and their representation in large-scale models, with an emphasis on stratiform clouds and their interaction with aerosols. His work includes the synergistic utilization of remote sensing measurements, models, and reanalysis data products, as well as the development of tools that can bridge cloud observations with models of different types.

Co-Host Contact: [Lisa Welp](#) and [Matt Huber](#).



**March 31 to April 2, 2022**

## **Severe Storms & Doppler Radar Conference**

At Courtyard by Marriott, Ankeny, IA

- Broad Speaker Lineup
- Radar Workshop
- Broadcaster Tape Swap & Career Panel
- Storm Photography Techniques
- Numerous Networking Opportunities

PRESENTED BY THE NWA CHAPTER OF CENTRAL IOWA  
[WWW.IOWA-NWA.COM](http://WWW.IOWA-NWA.COM)

**PUMA EVENTS ALL THIS WEEK.**  
**CHECK HERE FOR EVENTS**  
[PUMA bio link here.](#)



environment while getting an in-depth, first-hand look at mission design, life cycle, costs, schedule & the inherent trade-offs. Engineering students close to completion of their MS degree, science & engineering doctoral candidates, recent PhDs, postdocs, & junior faculty who are U.S. Citizens or legal permanent residents (and a very limited number of Foreign Nationals from non-designated countries) are eligible. Applicants from diverse backgrounds are particularly encouraged to apply- we highly value diversity, equity, and inclusion.

**Session 1: May 9-Aug 5**  
**Session 2: May 23-Aug 19**

With workload of a rigorous 3-hour graduate-level course, participants act as a planetary science mission team during the first 12 weeks of preparatory webinars, with the final culminating week mentored by JPL's Advance Project Design Team for refining the mission concept design & presenting it to a mock expert review board. The culminating week is typically at JPL, but in 2022 it is likely virtual due to COVID-19 pandemic concerns. [Register here](#) . [For more information and to apply.](#)

**EAPS GRAD STUDENT RESEARCH OPPORTUNITIES**

If you are interested in an EAPS grad research opportunity, [click here](#) for more information.

**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.

**Call for Abstracts:** Abstract submission deadline- March 23, 2022, 5:00 p.m. U.S. Central Daylight Time (GMT -5)

**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.



Sign up with QR code above or [click here](#)

**NASA Planetary Science Summer School Applications Due March 30, 2022**

Offered by the Jet Propulsion Laboratory in Pasadena, CA, PSSS is a 3-month long career development experience to learn the development of a hypothesis-driven robotic space mission in a concurrent engineering

For more information, contact: Meeting and Publication Services, USRA/Lunar and Planetary Institute [meetinginfo@hou.usra.edu](mailto:meetinginfo@hou.usra.edu)

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**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

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**GROUNDWATER SUMMER INTERNSHIP**

The Indiana Department of Environmental Management (IDEM) Groundwater Section's summer internship positions have been posted. The Groundwater Section works with water quality related to drinking water from groundwater sources for both public water supplies and private water wells. This summer our interns will get experience doing field work with Harmful Algal Bloom (HABs), Groundwater Monitoring Network, and PFAS sampling projects. The Groundwater interns are based out of Indianapolis, Indiana and work 37.5 hours a week at \$13.21 an hour. We have had both undergraduate and graduate students and recent graduates as interns in the past. One of the perks is that after doing the internship you are an internal applicant for state positions if you choose to pursue a career with the State of Indiana.

[Groundwater intern posting](#) (Requisition ID 312386)

The internship is through the [Governor's Public Service Summer Internship Program](#) and there are other positions within IDEM and other state agencies. If you would like to see the other listings search "Governor's Summer Intern" on the Work for Indiana website <https://workforindiana.in.gov>

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**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.

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! Details will be available soon.

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**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.

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**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.

**In-Person registration deadline - April 20, 2022  
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.

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**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**

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**GEORGIA TECH EAS**

**Non-tenure track lecturer**

The School of Earth and Atmospheric Sciences (EAS) at Georgia Tech invites applications for a non-tenure-track Lecturer position. The lecturer will play a significant role in the first-year courses taught in EAS. This program provides over 1500 students each year with lecture and laboratory instructions. The successful candidate will be expected to provide direct lecture and laboratory instruction to undergraduate students, develop curricula, and advise undergraduate students. An MS degree in Atmospheric Sciences or other related fields is required. [More info and how to apply.](#)

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**USGS GEOCHRONOLOGY DATABASE IS HIRING  
AT THE MASTERS LEVEL**

**Facility Operations Specialist**

The USGS geochronology database (still in beta form, but hoping to go live in 2022) team is hiring at the master's level (GS-9, [see here](#) for qualifications). The hire will work with our team to continue building and populating the database. We're especially looking for people with experience with geochronology and/or databases.

We expect an ad to go live on USA Jobs soon. The system will likely only accept the first 100 applicants, which is often reached within the first day of posting. Anyone interested can contact [Leah Morgan](#) with questions.

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**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

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### **WANG ENGINEERING**

#### ***SEEKING Engineering Geologists, Geotechnical Engineers***

Contact: [Cornelia Lidia Marin](mailto:cornelia.lidia.marin@purdue.edu), PG

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### **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](http://www.nas.edu/afstfp).

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### **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](#).

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### **NATIONAL WEATHER SERVICE POSITIONS AVAILABLE**

[Check here for available positions](#) with the National Weather Service.

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### **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](#).

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### **AGI GEOSCIENCE JOB CENTER**

[Check listings here.](#)

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### **GRADIENT CORP**

#### **MULTIPLE OPPORTUNITIES**

Please feel free to contact [Qian Zhang](mailto:qian.zhang@gradientcorp.com) if you are interested in applying and/or have any questions about the company and the opportunities.

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### **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.

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**POSITIONS AVAILABLE IN METEOROLOGY AND  
ATMOSPHERIC SCIENCE**

[View current career listings](#)

## **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 (pierce81@purdue.edu) **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](#).