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

EAPS WEEKLY NEWSLETTER

February 21, 2022

Facebook Twitter LinkedIn Instagram Website

EAPS MEETINGS & EVENTS

EAPS FACULTY MEETINGS 3-5pm

- **Feb. 22**
- **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). 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.

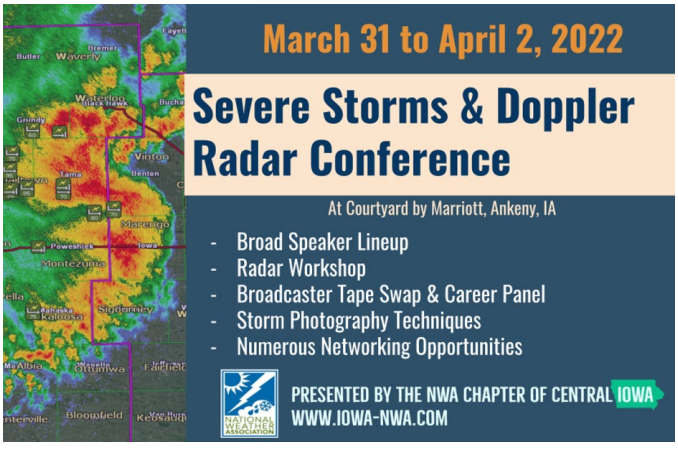
PUBLICATIONS

Wang, W., D.R. Schmitt, W. Lei, *A program to forward model the failure pattern around the wellbore in elastic and strength anisotropic rock formations*, Int. J. Rock Mech. & Min. Sci., 151, 16 pp., https://doi.org/10.1016/j.ijrmms.2022.105035, 2022

NEWS/OPPORTUNITIES

HAPPENING TODAY! 2-3PM

Brad Garczynski of Earth, Atmospheric, and Planetary Sciences at Purdue is a featured speaker in a webinar hosted by the Cradle of Aviation Museum in NY. This event is organized through the NASA Public Engagement Office. He will discuss findings from the NASA's Perseverance Mars Rover. This webinar will be live-streamed on youtube and facebook. More information.



Faculty Candidate – Cloud Modeling

Dr. Zachary Lebo
Associate Professor University of Wyoming
Website Faculty Page
Public Seminar: "Aerosol, Cloud, and Precipitation Interactions in Deep Convective Clouds" Zoom link.
Date: Thursday, February 24, 2022
Time: 3:30 PM - 4:30 PM Location: HAMP 2201

Abstract: Deep convective clouds are responsible for the phenomenon we commonly call thunderstorms. These clouds form under complex thermodynamic and dynamic conditions, and seemingly small changes in the background meteorology can have rather large impacts on the strength of deep convection as well as the propensity to produce hail and tornadogenesis. Moreover, microphysical processes, in particular phase changes, can also impact the evolution and properties of deep convective clouds; these processes are commonly parameterized in numerical weather prediction (NWP) models, which could result in uncertain predictions. Another factor that has received considerable attention in the recent literature is the role of aerosol loading in deep convective clouds, with studies exhibiting a wide range of effects to changes in the background aerosol loading. In this talk, I will present mechanisms by which changes in aerosol loading could influence deep convective cloud processes and properties using conceptual diagrams. I will then discuss how aerosol, cloud, and precipitation interactions can be represented in numerical models, and I will also present the results of numerical simulations of squall lines targeted at dissecting the aerosol influence on deep convective clouds, ultimately determining which mechanisms play the largest role. While such an analysis is critical for improving the understanding of aerosol, cloud, and precipitation interactions in deep convective clouds, it is limited to a single ideal case, thus neglecting the wide range of meteorological conditions under which these clouds form. Therefore, I will present a numerical technique that allows for an efficient analysis of thousands of combinations of aerosol impacts and deep convective cloud properties, which are inherently linked to the background meteorological conditions. Specifically, I will discuss the role of aerosol loading in the context of varying updraft width and slope. I will conclude with a discussion of future research directions that involve a targeted field campaign aimed at understanding aerosol, cloud, and precipitation interactions in sea breeze convective clouds as well as a long-term, high-resolution modeling project aimed at continental deep convection.

Bio: Dr. Zachary Lebo earned BS degrees in Meteorology and Mathematics and an MS degree in Meteorology in 2007 from the Pennsylvania State University. He earned his PhD in Environmental Science and Engineering in 2012 from the California Institute of Technology. He was an ASP Postdoctoral Fellow at NCAR from 2012 to 2013, before working as a Research Scientist at CIRES/NOAA. Dr. Lebo has been on the faculty in the Department of Atmospheric Science at the University of Wyoming since 2015. Dr. Lebo's research portfolio is broad, including cloud microphysics and aerosol interactions in stratiform and convective clouds, the role of turbulence in cloud microphysics and precipitation, fundamental studies on convective cloud properties, climate model downscaling, research to operations studies for high-impact winter weather, fugitive emissions from oil and natural gas wells, and land-atmosphere interactions spanning geological time scales, mainly with a focus on numerical modeling and machine learning. Dr. Lebo's contributions to the field of mesoscale meteorology were recently acknowledged through a STAC Early Career Award "For significant contributions to our understanding of and ability to model cloud microphysical processes and the effects of aerosols on clouds, deep convection, and precipitation processes".
Co-Host Contact: Lisa Welp and Matt Huber.

PSPSPS SEEKING SUBMISSIONS OF PET PHOTOS FOR CALENDAR

The EAPS 22-23 Committee on Planning the Selection of Purdue's Special PetS (PSPSPS) is seeking submissions of pet photos from willing participants within the EAPS department for inclusion in an upcoming publication. This objective of this program is to create a calendar showcasing the lovely pets within our department and give them the recognition and attention they deserve. Please fill out this form for submission. (Google login required to submit form.)
The calendar will cover an 18-month period, beginning in August of 2022 and ending in December 2023. If you have multiple pets that you would like included, please try to include them in the same photo. **If anyone has important dates they would like included in the calendar, those can be added as well (pending committee approval outlined in the PSPSPS handbook).** **The submission deadline to be included in the calendar is February 28, 2022.** We will send out regular reminders until that point.
Calendars will likely cost $15-20 and the money will support the EAPS Graduate Student Assembly. Please do not hesitate to reach out to hvannier@purdue.edu if you have any questions.

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 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 a PSSS Application Q&A Webinar on Tues., March 1, 2022 from 3-4 pm Pacific Time.
For more information and to apply.

STUDENT AND EARLY-CAREER EVENTS 53RD LUNAR AND PLANETARY SCIENCE CONFERENCE MARCH 7-11, 2022 THE WOODLANDS, TEXAS/VIRTUAL

We are planning a variety of student and early-career events for LPSC and invite you to attend as participants, mentors, and presenters! Many of these require advance registration. We are seeking experienced attendees to help as reviewers and mentors. Please join us!
For more information, contact: Meeting and Publication Services, USRA/Lunar and Planetary Institute meetinginfo@hou.usra.edu

EAPS GRAD STUDENT RESEARCH OPPORTUNITIES

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

STEM STUDENT CONTESTS

Correlation One is a New York based startup that hosts data science and engineering competitions for the world's best STEM students.
This spring, they are hosting two competitions for Purdue University students:
East Coast Regional Datathon
Midwest Regional Terminal
Participating students will compete for $15,000 in cash prizes, and will also be eligible for exclusive recruiting opportunities with Citadel LLC and Citadel Securities. The event is open to all the current students (including undergraduate, graduate, Ph.D., and post-doc researchers).

MRCC SUMMER INTERN - CLIMATOLOGIST

Position: Student hourly

Location: West Lafayette, Indiana (must be in-person)

Salary: $12/hour; 40 hours/week

Availability: Must commit to a minimum of 8 weeks. Up to 13 paid weeks are available. Internship period run from May 16, 2022 – August 12, 2022.

Primary Function of Position: To serve in a support role within the service and research-based environment at the Midwestern Regional Climate Center (MRCC).

Duties & Responsibilities: This position is designed to expose the intern to the range of activities performed by the MRCC. The intern will assist MRCC climatologists with outreach and education activities (e.g., social media, marketing of products and tools), in responding to data and information requests in the MRCC service office, and with applied research projects.

Education Requirement: This position is open to anyone currently enrolled as a sophomore or above in an atmospheric sciences or related field program. Graduating seniors are eligible only if they have been accepted to a graduate degree program and they will begin that program no later than Fall 2022.

Experience Requirement: A strong interest in climatology is preferred, as well as an interest in climate outreach and education. Strong communication skills are required for this climate services and outreach environment.

Knowledge
Required: Experience with word processing and spreadsheet software
Encouraged: Experience in computer programming, scripting, and statistical packages.

Covid Protocols: Hired intern must abide by the Protect Purdue requirements detailed at https://protect.purdue.edu/, which may include following masking protocols, reporting vaccination status, participating in covid testing, or other requirements for the Purdue University campus.

Contact Information: A cover letter, resume, and the names of up to three professional references should be submitted electronically via email no later than **March 1, 2022.** The applicant's last name must be included within each file name.

Applications should send all materials to:

Midwestern Regional Climate Center
mrcc@purdue.edu

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.

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

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

2022 INDIANAVIEW STUDENT SCHOLARSHIP

The IndianaView Student Scholarship Program provides an opportunity for participants at our member institutions to support the goals and objectives of IndianaView and AmericaView. IndianaView will award up to six $750 scholarships to six different students. The purpose of the scholarship program is to promote student development in remote sensing and other geospatial technologies.

Who Can Apply? Undergraduate or graduate students using remote sensing and/or other geospatial technologies in their research at any of the IndianaView educational institutions. Scholarship applicants must be endorsed by a faculty member from one of these educational institutions.

What activities does the scholarship support? IndianaView wishes to see a significant portion of the award used to support fieldwork that complements a student's research, travel to a professional meeting, data purchase, software purchase, minor equipment purchase, professional society membership, journal subscription, publication cost, and/or book purchase. The scholarship cannot support international travel.

Please include the following in your application (send via email):

Resume -- Your CV/Resume must include: a) your name, address, phone number, and e-mail address; b) educational background; c) work experience (if applicable); d) personal involvement with remote sensing and other geospatial technologies (through coursework, projects, work experience, or any other activity).

Essay -- Please include a 1-page essay (double-spaced) that addresses your personal interest in remote sensing and/or other geospatial technologies and your plan (including time frame) for using the scholarship funds to promote your personal development in the field.

Letter of Recommendation --The faculty member who is endorsing you should send a letter of recommendation in a separate email.

Submit the application documents via email to: kongn@purdue.edu.

All materials must be received by the end of the day on February 25, 2022. Valid applications will be considered by a review panel. Awards will be announced in mid-March 2022. Note: Students receiving awards are required to provide feedback about how the scholarship benefited their professional development and prepare a fact sheet about the project. Fact sheet templates will be provided. Funds must be spent by August 31, 2022.

For questions, contact Dr. Nicole Kong, IndianaView Coordinator.

Dr. Nicole Kong, Director, IndianaView
340 Centennial Mall Dr.,
West Lafayette, IN 47907-2058
E-mail: kongn@purdue.edu
Telephone: (765) 496-9474

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.

ADVANCING IDEA IN PLANETARY SCIENCE

Call for Abstracts and Registration Now Open!
Advancing IDEA in Planetary Science
April 25-April 29, 2022
Virtual

The Advancing IDEA in Planetary Science virtual conference is scheduled for April 25--29, 2022.

Call for Abstracts: Abstract submission deadline -- February 23, 2022, 5:00 p.m. U.S. Central Standard Time

Registration fees are not being collected for this virtual conference, but registration is required for communication purposes, including virtual access information.

Registration is available through April 29, 2022.

For more information, contact: Meeting and Publication Services, USRA/Lunar and Planetary Institute

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.

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.

Call for Abstracts: Abstract submission deadline -- February 24, 2022, 5:00 p.m. U.S. Central Standard Time (GMT -6)

Refer to the workshop website for detailed abstract submission information regarding contribution expectations, notional scenarios for a human mission to Mars, format, and guidelines.

Registration

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.

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.

Spring Application Deadline: March 1

Fall Application Deadline: October 1

POSITIONS AVAILABLE- CAREER OPPORTUNITIES

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.

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

WANG ENGINEERING

SEEKING Engineering Geologists, Geotechnical Engineers

Contact: Cornelia Lidia Marin, PG

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.

NATIONAL WEATHER SERVICE POSITIONS AVAILABLE

Check here for available positions with the National Weather Service.

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.

AGI GEOSCIENCE JOB CENTER

Check listings here.

GRADIENT CORP MULTIPLE OPPORTUNITIES

Please feel free to contact Qian 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.

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.