Welcome back! We hope you had a great summer and are off to a good start in the new school year. We are here and ready to visit your classroom, however, we are still waiting with our fingers crossed for the state budget to pass.

Funding Announcements
While our state funding is still uncertain, we do have several grants to help with specific projects this year. A BIG thanks goes out to:

- **NOAA** awarded AS a multi-year grant for a watershed education program. We have a cohort of about 25 middle grade teachers participating in this program.
- The **Robert C. Hoffman Charitable Trust** will fund visits to Adams County elementary classrooms this year.
- The **Adams County Community Foundation** provided funds for new equipment purchases. Please keep an eye on our upcoming newsletters and our Facebook page to learn about our new purchases and the lab activities to support them.
- **Sheetz** provided us with a stack of gas cards to keep the van on the road to your school.
- We are **EITC** approved again this year so please let businesses in your area know that they can make donations (exchangeable for PA tax credits) to our program. We are listed under the Educational Improvement Organizations as Gettysburg College. To contribute this school year, businesses will have already had to apply to participate in EITC over the summer months. We’re happy to answer more questions about this program and help steer businesses in the right direction to participate in this PA tax credits program. We have more information available on our website [https://sites.google.com/site/advancingsciencegc/eitc](https://sites.google.com/site/advancingsciencegc/eitc) or you can visit the EITC website directly at [www.newpa.com/eitc](http://www.newpa.com/eitc)

Facebook
Advancing Science is on Facebook! We are finally (only a decade or more late) joining the social media craze and we hope to keep you updated with our activities, ideas, and new equipment/activities. Please like us! [https://www.facebook.com/Advancing-Science-Gettysburg-College-1473446496289390/timeline/](https://www.facebook.com/Advancing-Science-Gettysburg-College-1473446496289390/timeline/)
Join us for an Advancing Science workshop at Gettysburg College on Tuesday, October 13 from 8:00-3:00. We have a variety of activities planned that will introduce middle grade teachers to some of our most popular equipment including Vernier probeware and spectrophotometers. Workshop space is limited to veteran Advancing Science teachers of grades 5-9. Preference will be given to teachers actively involved with Advancing Science. A tentative schedule is provided below.

**Session 1: Choose between:**
- A. Exploring the Scientific Method through Tracks and Scat with Val Stone
- B. Landform Models with Lesa Bird

**Session 2: Chesapeake Bay lecture by Professor Istvan Urcuyo (Gettysburg College)** - Professor Urcuyo teaches the first year sequence of introductory biology as well as upper-level courses in Tropical Marine Biology and Paleobiology. Every once in a while he also teaches a First Year Seminar titled “A Dying Ocean” in which freshman learn about and discuss the many environmental problems that our world's oceans are facing. His present research focuses on the biodiversity of marine invertebrates along the pacific coast of Central America. His summer plans usually include weeks of field work on the pacific coast of Nicaragua accompanied by two Gettysburg college undergraduate research assistants. He has also participated in nine international oceanographic research expeditions to deep-sea habitats in the Gulf of Mexico and the Northeast Pacific Ocean using submersibles and ROV's such as ALVIN, JASON and ROPOS. He has a longstanding love-affair with cave exploration and extremophiles.

**Session 3: Spectral Curve Of Leaf Pigments with Professor Kay Etheridge** - Use the spectrophotometers to determine the wavelength at which an extract of leaf or vegetable pigment absorbs the most light energy. We'll also have a few other spec activities available for you to check out.

**Session 4: Photosynthesis with Chris Biggins (Gettysburg Area High School)** - Use Vernier equipment to measure the rate of carbon dioxide change produced by spinach leaves under dark and light conditions.

**Advancing Science will provide:** Meals (continental breakfast and lunch) and an attendance certificate that you can submit to your district administration for Act 48 hours

**To register:**
- Please complete the form here: [https://docs.google.com/forms/d/1Y_0nCQX9GXYjs3by-8xfSUFqrAND2FhjpKA9NhhBgw/viewform](https://docs.google.com/forms/d/1Y_0nCQX9GXYjs3by-8xfSUFqrAND2FhjpKA9NhhBgw/viewform) or visit the “forms” page of our website [www.advancingscience.org](http://www.advancingscience.org)
- Registration opens Thursday 9/17 and closes Tuesday 9/29
- Confirmation emails will be sent by 10/2
New Equipment/Activities

**Land Form Models** are now available thru our equipment loan program. Two full sets of land form models provide plenty of hands-on opportunity for your students. Complete activity book provided.

New class sets of **Fossils** available for loan. Each kit includes 15 fossils to demonstrate the major life forms throughout geologic history. A descriptive key sheet and geologic time chart introduces students to basic fossils and match the fossil to the era. Suggested for Grades 4-12.

**Owl Pellet Dissections** are great for elementary thru high school classes. Good activity for classification, food web discussion, hypothesizing (what does an owl have for dinner, what do you think the habitat of the owl was?), use of tools (hand lenses, stereoscopes, forceps), skeletal comparison. Thank you to Pam Shaffer and Arendstville Elementary for encouraging us to add this lab to our program.
Birds Eye View
As much as I enjoy the summers off, I do enjoy getting back in the driver’s seat with Advancing Science each fall. We work with many of the same students throughout their grade school and high school years, seeing them in multiple grades. It is a unique opportunity we have to scan a high school class and recognize faces of students that we may have worked with in 3rd grade. They are of course the ones I pick on for the answers I need. Last spring a student from Chambersburg High School was in the BIO lab I taught here at Gettysburg College. It was great to see the comfort level she had with the equipment we were using in lab.....she had already used it in high school thanks to her teacher borrowing the same equipment from Advancing Science. It is nice to see the positive impact the Advancing Science program can have.

Val’s View
Citizen science has a long history of amateurs making and recording observations of all aspects of science. Recently, this movement has gained momentum primarily due to the internet and social media. Through these projects, amateur scientists from around the globe connect and contribute to a variety of projects that support scientific research. Advancing Science will be highlighting some of these projects throughout the year and we hope that you’ll consider getting your student’s involved.

My family and a few friends are currently participating in Monarch Watch. The kids collected Monarch caterpillars and a few eggs from the garden and raised them in containers. Once the butterfly emerges and is ready for flight, we affix a small tag to the lower wing and send them on their way with wishes for a successful flight! It would be very exciting to have one of our butterflies recovered and reported! We are also collecting our swamp milkweed seeds to send to the Bring Back the Monarchs conservation campaign. Our kid “staff” ranges from ages 4 to 9 and they are very diligent workers!

For more information about the Monarch projects:

Monarch Watch -
http://www.monarchwatch.org/

Bring Back the Monarchs conservation campaign (You can order free milkweed plants for restoration projects here, but you do have to pay for shipping)
http://monarchwatch.org/bring-back-the-monarchs/

To find other citizen science projects, check out:
www.zooniverse.org
www.scientificamerican.com/citizen-science/
Training Videos!
Are you a teacher that is new to the Advancing Science program or a teacher that hasn’t been involved in several years? We have posted a few training videos on our website that will review the steps for submitting requests and preparing for visits/loans. Watch these short videos from the “teacher training” tab of our website. www.advancingscience.org

Lab Activities
Do you have a favorite “rewrite’ of one of our activities? Additional questions you use with your class? New ideas on the use of some of our equipment? We would love to hear from you so we can incorporate your suggestions into the documents. Our teachers are our best resources! If you have ideas for new equipment or activities please let us know. We may not have the funds now to purchase new supplies but if the pot of gold shows up we would like to be ready.

DCNR Watershed Education Teacher Workshop
Thursday, May 12, 2016 at 8:00am to 5:00pm
Caledonia State Park 101 Pine Grove Road, Fayetteville, PA 17222-8224

This workshop offers 11.5 Act 48 hours. Because this one-day workshop is condensed, three hours of pre-workshop assignments must be completed.

http://events.dcnr.pa.gov/event/watershed_education_teacher_workshop_1347#.VgQfCstVhHw

Watershed Education (WE) is an inquiry-based, interdisciplinary curriculum for students in grades 6-12. Developed by the DCNR Bureau of State Parks, WE helps educators utilize local natural resources as a valuable teaching tool. By blending hands-on classroom and field investigations modeled on professional research methodologies, students participate in data collection and analysis, community networking and partnerships, stewardship and service learning activities. WE promotes in-depth, multi-modal learning and understanding of water resources while encouraging students to examine their watershed holistically.

Chesapeake Bay Ecosystem Atlas (Free Download)
Check out the free Chesapeake Bay Ecosystem Atlas and its companion Atlas Teacher’s Guide developed by National Oceanic and Atmospheric Administration (NOAA) and Chesapeake Environmental Communications. and download a free copy for yourself!
http://baybackpack.com/blog/7360