

# SYSTEMIC CONNECTIONS



January 3, 2012 Volume 16

*This is an STEM information exchange that is available to all teachers in the Anchorage School District*

## CALENDAR - STEM EVENTS 2011-2012

January 6-7	SEAPerch Workshop - Anchorage
January 21	Lego League Statewide Invitational Championship SAHS, Anchorage
February 4	Lego League Statewide Open Championship Ryan Middle School, Fairbanks
February 10-11	FIRST Tech Anchorage Qualifier SAHS Anchorage
February 25-28	ASTE 2012: Create~Collaborate~Innovate
February 25	ROV Riot - Bartlett Pool
Feb 28-Mar 2	Iditarod Winter Conference for Educators
March 2-3	Statewide Championship Patty Center, UAF Sponsored
March 3	First Use Science Kit Training (K-6)
March 23-25	AK Science & Engineering Fair - Begich MS
March 29 - April 1	NSTA - Indianapolis, IN
March 31	Science Olympiad - UAA Campus
April 24- May 5	Math Derby
May 8-11, 2012	CCSC - Outdoor Week (Grade 6)
May 8-11, 2012	Outdoor Week
June 24-28, 2012	Nat'l Marine Educators Conference Anchorage

## STEM Web Page Highlights

### **Objectives & Initiatives for 2011 – 2012**

<http://www.asdk12.org/depts/STEM/objectives.asp>

### **Links to local STEM programs –**

Campbell Creek Science Center, Imaginarium, UAA Planetarium, Alaska Zoo. <http://www.asdk12.org/depts/STEM/>

*Please read and then TRY some of these!*

1. **Northwestern University Materials Research Science and Engineering Center's Research Experience for Teachers**
2. **Sir Isaac Newton's Own Annotated Principia Mathematica Goes On-line**
3. **NASA Education Express Message -- Dec. 15, 2011**
4. **Planet Connect - 2012 Wildlife Conservation Youth Engagement Grants Apply by February 1, 2012!**

5. **Earth Science Week Update - December 2011**
6. **NEON - NASA Educators On-line Network**
7. **from NSTA Science Matters - December 2011**
8. **Exploring the Past: Archaeology in the Upper Mississippi River Valley**

## **CHECK OUT THESE SITES:**

**BioLogica**

[http://biologica.concord.org/webtest1/web\\_labs.htm](http://biologica.concord.org/webtest1/web_labs.htm)

**Steve Spangler**

<http://www.stevespanglerscience.com/experiments>

<http://www.stevespanglerscience.com/experiment/00000075>

**Curiosity in the Classroom**

<http://www.curiosityintheclassroom.com/>

**Upcoming T3 Math and Science Webinars**

<http://education.ti.com/go/upcomingwebinars>

**EarthScienceGuy**

<http://earthscienceguy.blogspot.com/>

**Interested in the NEW Common Core State Standards?**

Check out <http://www.commoncoresolutions.com/>

## **Northwestern University Materials Research Science and Engineering Center's Research Experience for Teachers**

An exciting summer development opportunity- Northwestern University Materials Research Science and Engineering Center's Research Experience for Teachers. Science teachers are invited to participate in eight weeks of laboratory research with some of Northwestern's leading scientists. Research topics include a wide range of materials science, physics and chemistry areas such as ceramics, nanocomposites, photonics, nanoparticles, and molecular electronics. The program runs from June 18 through August 10, 2012 and carries an \$8,500 stipend.

At the end of the eight weeks, the participants not only write a technical paper based on their research, but also develop a curriculum project that they can use in their classrooms. K-12 teachers and community college professors who have a bachelor's degree in science or engineering are eligible; no prior research experience is necessary. Participants are eligible to receive graduate credits through the National Louis University. The application deadline is March 15, 2012.

For more information and to apply to the program, please visit our website:

[http://www.mrsec.northwestern.edu/content/educational\\_programs/ret.htm](http://www.mrsec.northwestern.edu/content/educational_programs/ret.htm)

If you have any questions, please feel free to contact me at [mrc-ret@northwestern.edu](mailto:mrc-ret@northwestern.edu) or 847-491-3606.

Sincerely,

Ashley D. Walter Project Coordinator

---

## **Sir Isaac Newton's Own Annotated Principia Mathematica Goes On-line**

<http://www.downes.ca/cgi-bin/page.cgi?post=56812>

<http://www.guardian.co.uk/science/2011/dec/12/isaac-newton-principia-mathematica>

Angie Slingluff  
Aviation and Space Education Coordinator  
FAA Alaska Region AAL-30  
907 271-5228

---

**NASA Education Express Message -- Dec. 15, 2011**  
*Teach STEM? NASA Explorer Schools Can Help With That!*

Teachers across the country, regardless of school size, type or geographic location, have seen the benefit of participating in the NASA Explorer Schools project. These teachers have access to free NASA classroom materials and student engagement activities, as well as educator support resources, through the NES Virtual Campus. NES classroom resources are designed to help teachers increase student interest and achievement in science, technology, engineering and mathematics, or STEM, subjects.

Are you looking for fun, exciting and interactive ways to connect your students to NASA? Designed for teachers in grades 4-12, NES provides a forum for accessing free lessons, student engagement activities, and professional development opportunities centered on NASA missions and STEM topics and careers. NES also offers multiple pathways for you to connect with other motivated STEM educators across the country to share best practices and classroom implementation ideas. Visit the NASA Explorer Schools website to read firsthand stories from participating teachers about the benefits of joining the NES project and implementing NASA resources in the classroom!

<http://www.nasa.gov/offices/education/programs/national/nas2/recognition/profiles-index.html>

**2011 OPTIMUS PRIME Spinoff Award Video Contest**

NASA has opened registration for the 2011 OPTIMUS PRIME Spinoff Award Contest. Featuring OPTIMUS PRIME, the leader of the popular TRANSFORMERS brand, the contest highlights spinoffs from NASA technologies that are used on Earth. The goal is to help students understand the benefits of NASA technology to their daily lives. Last year's contest was open to students in grades 3-8 and resulted in 76 video submissions from over 190 students in 31 states.

For 2011, the OPTIMUS PRIME Spinoff Award Contest has been expanded to include students in grades 3-12. Each student, or group of students, will submit a three- to five-minute video on a selected NASA spinoff technology listed in NASA's 2010 "Spinoff" publication. Videos must demonstrate an understanding of the NASA spinoff technology and the associated NASA mission, as well as the commercial application and public benefit associated with the spinoff technology.

Participants must register for the contest by **Jan. 3, 2012**. Video entries are due Jan. 17, 2012.

Video entries will be posted on the NASA YouTube channel, and the public will be responsible for the first round of judging. The top five submissions from each of the three grade groups (Elementary [3rd-5th], Middle [6th-8th] and High School [9th-12th]) will advance for final judging. A NASA panel will select a winning entry from each group. Among other prizes, a crystal OPTIMUS PRIME Spinoff Award Trophy will be given to winners at a special awards ceremony being held in Florida in April 2012. The innovators associated with the NASA technology highlighted in the winning videos also will receive trophies, as will their commercial partners.

For more information, visit the OPTIMUS PRIME Spinoff Award website at <http://ipp.gsfc.nasa.gov/optimus>.

**Engineering Design: Forces and Motion -- Balloon Aerodynamics Challenge Web Seminar**

As part of a series of electronic professional development experiences for educators, the NASA Explorer Schools project and the National Science Teachers Association are hosting a 90-minute live professional development Web seminar for educators on **Jan. 5, 2012, at 6:30 p.m. EST**. This Web seminar will introduce the Forces and Motion: Balloon Aerodynamics Challenge for students. This activity provides first-hand information about density, neutral buoyancy and drag, which is then used to solve a problem. The activity provides many opportunities for incorporating national mathematics, science and technology learning standards into your curriculum.

For more information and to register online, visit [http://learningcenter.nsta.org/products/symposia\\_seminars/NES2/webseminar23.aspx](http://learningcenter.nsta.org/products/symposia_seminars/NES2/webseminar23.aspx)

To learn more about the NASA Explorer Schools project, visit <http://explorerschools.nasa.gov>.

Email any questions about this opportunity to the NES Help Desk at [NASA.Explorer.Schools@mail.nasa.gov](mailto:NASA.Explorer.Schools@mail.nasa.gov).

---

**Planet Connect - 2012 Wildlife Conservation Youth Engagement Grants Apply by February 1, 2012!**

Environmental solutions for the future can begin with you!

Whether you're in a city, rural area or a suburb, wildlife is all around you. In many places, that wildlife faces challenges. If you're a high school student with a creative idea for conserving and protecting wildlife, Planet Connect is offering grants of \$1,000 to implement a project in your local school or community. In addition, all grantees will receive funding to participate in a local summer internship focused on wildlife conservation or natural resources.

Here's your chance to make a difference! Apply

for a national Planet Connect Youth Engagement Grant today! Visit <http://planetconnect.org/2012wcgrants> to learn more and to watch the grant promo video.

Need some help brainstorming project ideas? Check out the grant projects and internship summaries from the 2011 student grantees here: <http://planetconnect.org/2011grantwinners>

---

### **Earth Science Week Update- December 2011**

#### ***Examine Critical Minerals In AGI's New EarthNote***

What would you do without your cell phone, computer, or car? These technological marvels require dozens of elements, which come from a finite supply of minerals. In a new EarthNote, AGI looks at what makes a mineral "critical" and how a sudden loss of resources could impact the economy.

Critical minerals are defined by their dollar value, availability of substitutes, and increasing demand. Green technologies such as wind turbines and electric cars, communications technologies such as computers and cell phones, and cutting-edge military systems all depend on critical minerals. Learn more in the new EarthNote (<http://www.agiweb.org/environment/earthnotes/note.html?PublicID=8>).

Find out how Earth science issues influence your life with EarthNotes, summaries of timely information about geoscience issues. Reports on a wide range of topics are contributed by geoscientists. To read more EarthNotes, visit: <http://www.agiweb.org/environment/earthnotes/>.

#### ***SSA Resources Produce Seismic Shift in Learning***

Want to shake up education? Start with the Seismological Society of America (SSA), the international scientific association devoted to advancing seismology and applications in imaging Earth's structure and understanding and mitigating earthquake hazards.

SSA, an AGI member society, offers a number of links to educational web sites, including geoscience activities related to seismic science and earthquakes. Sponsored by Purdue University, the site (<http://web.ics.purdue.edu/~braile/indexlinks/educ.htm>) features seismic eruption models, wave animations, plate tectonics simulations, information on tsunamis, and much more.

SSA also offers publications, information on seismology careers, a distinguished lecturer series, and an electronic encyclopedia of earthquakes. Learn more about SSA online (<http://www.seismosoc.org>).

---

### **NEON - NASA Educators On-line Network**

NASA Aspire To Inspire Project Launch

Click here <http://women.nasa.gov/a2i/> to discover A2I: Our vision for Aspire 2 Inspire is to reach out to young girls and present some of the Science, Technology, Engi-

neering and Math (STEM) career opportunities available through the real lives and jobs of women at NASA. We want to "spark" the interest and empower young girls because they are valuable and can make significant contributions to STEM. Holiday Ham for NASA  
Learn more about an upcoming opportunity to contact the International Space Station with Ham radio technology.

You must be thinking, "What does holiday ham have to do with NASA?" It's a catchy way to draw your attention to the current opportunity involving ham or amateur radios. Wait! Keep reading! You don't have to have a ham radio license or the equipment to participate. You just need to be a highly motivated educator with a spark of tenacity. So, use the break time you receive over the holiday season to find a local ham radio group to help you host a contact with NASA astronauts in space on-board the International Space Station. Holiday Ham for NASA, get it?

<http://nasatalk.com/blog/article/bylines/67-dynae-fullwood/1629-holiday-ham-for-nasa.html>

---

### **from Science Matters - December 2011**

#### ***Hooked on Science's Experiment of the Week***

What happens when 120 volts of electricity flow through a pickle? According to Science Guy Jason Lindsey it glows! Check it out [here](#). Visit the Hooked on Science [website](#) to access other fun experiments and helpful resources for teachers and parents.

<http://www.hookedonscience.org/>

#### ***Toxicity and Chemical Exposure Databases***

Two EPA databases can help K-college educators learn more about chemical safety and the effects of various toxins on humans and the environment. [ToxCastDB](#) contains toxicity data on more than 300 environmental chemicals, with more to be added.

<http://actor.epa.gov/actor/faces/ToxCastDB/Home.jsp>  
[ExpoCastDB](#) features human exposure studies that have collected chemical measurements from homes and child care centers, such as the amounts of chemicals found in food, drinking water, air, dust, indoor surfaces, and urine. Users can obtain summary statistics of exposure data and download datasets.

<http://actor.epa.gov/actor/faces/ExpoCastDB/Home.jsp>

#### ***RealWorld-InWorld NASA Engineering Design Challenge***

The RealWorld-InWorld NASA Engineering Design Challenge encourages students in grades 7-12 to explore and build skills essential for successful careers in science, technology, engineering, and mathematics through two phases of project-based learning and team competition. Upon completion of RealWorld registration, teachers and others guiding students through the RealWorld design phase will receive over \$900,000 in PTC Creo (Pro/ENGINEER) professional engineering soft-

ware along with free online training. For every RealWorld student team registered from September through January, teacher/parent/coach names will also be entered into monthly drawings for \$100 gift certificates. For more information visit the competition [website](#).  
<http://www.nasarealworldinworld.org/>

### ***Earthwatch Educator Fellowships for Summer 2012***

Teachers of all subjects and all grade levels can [apply](#) to join Earthwatch expeditions through its [Educator Fellowship Program](#). As an educator fellow, you'll participate on a fully funded expedition assignment, receive a travel stipend to offset some of your transportation costs, and bring your expedition experiences into your classroom by creating and implementing lesson/unit plans that reflect the knowledge gained from your time in the field. Educator fellows are ambassadors of environmentalism, cutting-edge field research, and local involvement in classrooms across the country. For more information visit the program [website](#). The deadline for applications is February 13, 2012.

<http://www.earthwatch.org/aboutus/education>

### ***NEA Foundation-Nickelodeon Big Help Grants***

[NEA Foundation- Nickelodeon Big Help Grants](#) are available in the form of student achievement grants to K-8 public school educators. The Big Help Grants program is dedicated to the development and implementation of ideas, techniques, and approaches for addressing four key concerns: environmental awareness, health and wellness, students' right to a quality public education, and active community involvement.

Proposals for work resulting in low-income and minority student success with honors, advanced placement, or other challenging curricula are particularly encouraged. Practicing U.S. public school teachers, public school education support professionals, and faculty and staff members at public institutions of higher education may apply. The maximum grant amount is \$5,000. Deadlines are February 1, June 1, and October 15 each year.

<http://www.neafoundation.org/pages/educators/grant-programs/nea-foundation-green-grants>

---

### ***Exploring the Past: Archaeology in the Upper Mississippi River Valley***

Walking beside thousand-year-old burial mounds, flaking raw stone into tools, learning how potsherds tell us about human behavior, and understanding how humans adapt to complex, ever-changing environments our 2012 NEH Summer Institute features all this and more.

The Mississippi Valley Archaeology Center at the University of Wisconsin- La Crosse will offer a three-week NEH Summer Institute on July 9- 27, 2012. This dynamic learning experience for K-12 teachers will explore how Native Americans and Euro-Americans have

adapted to the Upper Mississippi River Valley over the past 13,500 years, and how archaeology leads to an understanding of how human cultures change and adapt through time.

The Institute will feature a one-day excavation experience, field trips to archaeological sites, hands-on laboratory and workshop activities, demonstrations, and classroom activities. Individual projects will help participants tailor the content to their own teaching areas. NEH Summer Scholars receive a \$2,700 stipend to help offset their expenses.

Application and other information on the Institute will be available online at

<http://www.uwlax.edu/mvac/neh.htm>.

The deadline for applications is March 1, 2012.

Any views, findings, conclusions, or recommendations expressed in this program do not necessarily reflect those of the National Endowment for the Humanities.

Bonnie L. Jancik

Director of Public Education

Mississippi Valley Archaeology Center at the University of Wisconsin - La Crosse

1725 State Street

La Crosse, WI 54601

Phone: 608-785-6473

Fax: 608-785-6474

E-mail: [bjancik@uwlax.edu](mailto:bjancik@uwlax.edu)

---