

Science Update Feb 2017



This periodic update from the [Minn. Dept. of Education](#) (MDE) is sent to a few email lists, including the [Minn. Science Teachers Assn.](#) (MnSTA) and district/organization contacts. We encourage you to forward this to other teachers and science leaders. See MDE contacts at the end of this document.

Note: MDE does not endorse any resource or event that is not conducted by MDE.

* indicates an item that was not in the previous edition

News

* MnSTA Adopts Position Statement on Elementary Science



The [Minnesota Science Teachers Association \(MnSTA\)](#) strongly supports the concept that science must be a basic component in the daily curriculum of every elementary school student at every grade level. In the last decade, numerous reports have been published calling for reform in education. Each report has highlighted the importance of early experiences in science to allow students to develop lifelong curiosity for the natural world and problem-solving skills that empower them to participate in an increasingly scientific and technological world.

In their recently released position statement on Elementary Science, MnSTA recommends that every elementary student in Minnesota should receive the equivalent of at least 3 hours of science instruction per week. See the [full position statement](#).

* ACESSE Project and Survey

Minnesota Dept. of Education is participating with a dozen other states in a project to support the whole system of science education in the states, including schools, informal settings, teacher preparation and community stakeholders. This three year project is called Advancing Coherent and Equitable Systems of Science Education. During this year the project is collecting data through focus groups and an online survey of randomly selected teachers. If you receive this survey invitation, know that the data from the survey is very valuable in designing programs and services to support science learning in Minnesota and we encourage you to participate.

* NSTA Distinguished Teaching Award

Jean Tushie, biology teacher at Eden Prairie High School, is a 2017 recipient of the Distinguished Teaching Award from the National Science Teacher Association. This award recognizes teachers who have made extraordinary contributions to the field of science teaching. Jean is a past president of the Minnesota Science Teachers Association and more recently was the conference coordinator. She served on the Board and Council of



NSTA and was chair of the 2016 Minneapolis Area Conference. Jean is also a past Presidential Award recipient. Congratulations Jean! For information about NSTA awards, including some that receive few applicants, go the [NSTA awards page](#).

Teacher Events and Workshops

Teaching with Lake Superior Conference, Feb. 11, Duluth

[This full day conference](#) at the Great Lakes Aquarium is designed to offer sessions for pre-K – 12th-grade educators in formal and non-formal settings. During our February conference, we want to help you make the most of natural phenomena and draw resources of the North Woods into meaningful teaching moments. Sessions will include:

Will we Have a Snow Day? How Does Solar Power Work? What Kind of Rock is This? Why do Forest Fires Happen? What Happens to the Animals that Live There? How does a forest help people? What Will Climate Change Mean for Me?

Cost: \$20 (includes Aquarium admission, parking, coffee, snacks and lunch).



* Green School Roundtable, Feb 23, St. Paul

This event gives attendees an opportunity to share success stories, discuss barriers, seek solutions, and create collaborations among peers through guided conversation, with the goal of achieving greener, healthier schools in MN. Teachers, administrators, facilities managers, non-profits coordinators, community leaders, advocates welcome. The event is at the University of Minnesota St. Paul Campus, 3:00 – 6:00. [Details and registration here](#).

Schoolyard Gardens Conference, March 3, Chaska



Over 370 teachers, school administrators, school food service professionals, Master Gardeners, parents, and other school garden supporters attend this annual conference at the Minnesota Landscape Arboretum to share ideas and resources for building and sustaining school gardens. From nutrition programming to building valuable community partnerships, the conference agenda highlights practical and inspirational tools from the leading experts and educators in Minnesota. [Conference Web Page & Agenda](#)

Institute for Non-formal Climate Change Education, March 13–15, Sandstone, MN

Are you a naturalist, museum educator, or after school youth program leader? Do you work with community members and the public? This Institute is geared toward anyone interested in learning skills on how to communicate about climate change in non-formal educational settings. Join us for a 3-day Institute at the Audubon Center of the Northwoods, where you will gain comfort in communicating on climate change, engage in climate change activities and workshops, and get a chance to explore the beautiful Minnesota northwoods. One full day will be presented by the National Network for Ocean and Climate Change Interpretation. They are highly skilled in communicating about climate science and want you to gain that confidence, too!

[Register Today!](#) Registration \$180, Includes: Room and board! 2 Graduate Credits optional (fee)
Contact education@climategen.org with any questions!

Project Learning Tree Trainings, Various dates and locations

Project Learning Tree provides engaging, hands-on environmental education lessons that use trees and the natural world to teach science, math, ELA and social studies concepts and skills. Participants get an activity guide, CEUs and lunch. Most workshops are free. Go to this [DNR site](#) for information and registration.



A new resource is a book for 7-12 teachers, [SE Forests and Climate Change](#), provides lessons on the history of climate science, how climate affects our forests and ecosystems, and how people are working to manage and adapt forests.

PLT K-8 workshops: Mar. 25, Apr 22, June 28

PLT Climate Change 7-12 Workshops: Mar, 22, June 21

*** March for Science – Minnesota, April 22, St. Paul**

March for Science - Minnesota is an upcoming event in support of evidence-based research in education and industry, pro-science programs, and the health of citizens and the environment. The march will take place on Earth Day, April 22, 2017 in Washington DC and around the country including St. Paul MN. March for Science is a non-partisan, volunteer-based organization who is concerned by efforts to cut support to science, engineering, and higher education, issue gag orders against scientists, and continue to deny basic science as policy positions. This is concerning because science and technology in the United States of America is one of our strengths that keep our economy competitive internationally, and these fields provide long-lasting, satisfying jobs. Details and updates are at [this website](#) or Twitter @ScienceMarchMN

Green & Sustainable Chemistry Workshop for High School Teachers, June 20 – 22, Minneapolis

The Center for Sustainable Polymers in partnership with the Minnesota Corn Growers Association is offering a FREE three-day workshop at the University of Minnesota to high school chemistry teachers.

Participating teachers will receive instruction on the principles of green chemistry, industrial applications, and potential impacts to human health and the environment. Participants will gain hands-on experience with safer, cost-effective labs that minimize waste and are drop-in replacements for traditional secondary chemistry labs.

Participating teachers will receive a \$300.00 stipend and the option to earn 2 graduate level credits from the Colorado School of Mines. Accommodations and parking will be provided for traveling participants. To apply go to [this link](#). Applications due: March 1, 2017.

*** STEM Rivers Institutes, July 26 – 28 or July 24 – 26**

Hamline University presents FREE, three day field-based professional development opportunities that inspires, educates, and prepares 3rd-8th grade teachers to engage students in STEM disciplines through hands-on, inquiry-based investigations at local watersheds.

St. Croix River Institute, June 26-28, 2017 (Monday-Wednesday)

Mississippi River Institute, July 24-26, 2017 (Monday-Wednesday)

Details and information are at [this website](#).

Summer Institute for Climate Change Education, June 26-28, St. Paul



Climate Generation is a recognized leader in climate change education nationally, and we are joining forces with University of Minnesota's Institute on the Environment, where leading climate change research is happening. Hear directly from climate change and solutions experts, and engage with hands-on activities that will help bring these concepts to life in your classroom.

Join a network of teachers from across the country dedicated to bringing science, critical thinking, and problem solving about climate change into the classroom.

The location is the University of Minnesota's Institute on the Environment, with the opportunity for a field trip to the Cedar Creek Ecosystem Reserve on the 29th (extra fee).

Registration: \$150 (includes breakfast and lunch each day!) Lodging is available (\$48/night single, double/shared \$36) 2 Graduate Credits optional (fee). Click [here](#) for information and registration

***Minnesota Modeling Instruction workshops, July 10 – 14, Shakopee**

The Modeling Instruction method relies less on presentation and more on engaging students using experimentation to construct and revise scientific models to explain physical phenomena. Two workshop are being held at Shakopee High School this summer:

- Introduction to Chemistry modeling July 10 – 14
- Introduction to Physics modeling July 10 – 14
- Mechanics Modeling July 17 – 21

For information contact Casey Rutherford crutherford@shakopee.k12.mn.us

***G-Camp, June 26 – July 13, Texas and adjacent States**

G-Camp is an 18-day field camp for 5th - 12th grade science teachers that provides first-hand experience with the principles of geology in the field, helps you develop new curriculum and virtual fieldtrips for your classroom, and makes learning fun and exciting out-of-doors. All expenses are paid for participants except for transportation to and from College Station, TX. Former participants say it has been a life-changing experience for them! [G-Camp link.](#)

LiftOff Aerospace Workshops, Texas

This aerospace workshop emphasizes STEM learning experiences by incorporating a space science theme supported by NASA missions. Teacher participants are provided with information and experiences through speakers, hands-on activities and field investigations that promote space science and enrichment activities for themselves and others.

Multiple NASA missions are studying our sun and the solar system, unraveling mysteries about their origin and evolution. In August 2017, a total eclipse of the Sun is visible from a narrow corridor that traverses the U.S. Educators will receive background information on the Sun while analyzing the characteristics of objects in the solar system that allow life to exist. The deadline for receiving applications is April 14 and should be submitted through the [online system](#):

Teacher and School Awards and Opportunities

Presidential Award nominations and applications are now available.



Nominate exemplary science teachers (including yourself) for the Presidential Award for Excellence in Mathematics and Science Teaching. This is the most prestigious award in this field and includes recognition activities in Washington DC and a \$10,000 award. This year, teachers of grades 7-12 are eligible submit an application that describes content understanding, instructional strategies, assessment practices, professional development and leadership. Just completing the application provides professional growth. The application is due May 1. For information go to the [PAEMST website](#).

CDC Science Ambassador Fellowships, Georgia

The competitive fellowship is for teachers and educational leaders interested in bringing public health into current middle- and high- school classrooms. It includes a 5-day summer course (July 10-14, 2017) at CDC headquarters in Atlanta, GA and a 1-year distance-based professional development opportunity. Applications are due February 15, 2017.

For more information, please see the attachments or visit the [website](#). We look forward to your application. Please share these materials with other teachers and educational leaders in your network who may be interested.

Chemical Disposal

The Chemical Safety Day Program is again being offered during the coming spring, summer, and fall months. The program is designed to assist schools and colleges in disposing of unwanted chemicals and hazardous waste from science, art, industrial technology, and maintenance departments. There are collection locations at various cities across the state. The program is operated by the University of Minnesota. Information on the program can be found at [this site](#). If you wish to participate, please return the completed Participation Form by fax, email, or mail. We look forward to making your school a safer place.

School Programs and Grants

*** Clean Drinking Water Starts with Me! Poster Contest**



Why are water resources so important? What can each of us do to ensure a clean water future? Utilize your creative talent and design a hand-made poster no larger than 9"x 12" construction paper size. All entries must include this year's tag line "Clean Drinking Water Starts with Me!"

There are prizes at elementary, middle and high school categories for cash for students and water bottle filling stations for the schools. Entries are due by March 1. [Click here](#) for more details.

*** Scientists in the Classroom**

The Scientists in the Classroom program is a platform for teachers and scientists to collaborate as colleagues, peers and partners in the scientific enterprise to further science education. While the

scientist can act as a resource for the teacher and students, the teacher and students can, in turn, help the scientist better understand how to convey their work to a larger, more diverse, and often skeptical audience.

By connecting early career scientists with educators, we hope to both enrich middle and high school students' climate change and evolution education, and to give scientists a better understanding of the challenges faced when teaching these often socially contentious and misunderstood topics. [Click here](#) for information.

GIS Mapping Contest: My Hometown on the Map

Minnesota students are challenged to create a map that tells a story about their hometown using free Geographic Information System (GIS) online resources. All students

are eligible and schools can submit up to five entries. Each entrant receives a Competition tee-shirt. The best map in each division receives a \$100 gift certificate to Amazon. The competition is open until April 21. The competition website is at [this link](#). Information about the free GIS license for schools is at [this MDE website](#).



School Garden Grant Opportunities

The Jeffers Foundation will be offering \$500 School Garden Grants to schools wishing to “start” a school garden project. The will be available at [this link](#) beginning January 15. Several other garden grants are also listed on the same page.

Mississippi River Climate Change Field Trips

Sign-ups are now being accepted for FREE climate change field trips offered by the National Park Service and partners for students in grades 5-8. The field trip features three activities to support climate literacy. Bus stipends are available, and two classrooms can be accommodated on one trip. Spring dates available: April 13, 14, 20, 21, 26, and 27. Trips take place at Fort Snelling State Park. Contact Mary Hammes to schedule field trips: 651-291-9119 and email: mhammes@parkconnection.org. [Additional information is available on the park's website.](#)

*** Genes in Space – Design and Launch your DNA Experiment to Space!**

We invite students in grades 7 through 12 to design DNA experiments for space. Students will pioneer DNA research on the International Space Station to address real-life challenges of deep space exploration. Five finalist teams will receive mentoring from Harvard and MIT PhD scientists, present at the 2017 International Space Station R&D Conference, and receive miniPCR DNA Discovery System™ for their education institutions. Winners will also attend Space Biology Camp and send their DNA experiment to space! Submission deadline is April 21st 2017.



Teachers – Here's how you can turn contest submissions into a [class assignment](#) that's aligned with national standards. [Find us on the web](#)

Student Awards and Competitions

National Youth Science Camp – Inform your Seniors



Two Minnesota students completing their senior year will spend three weeks in June in the mountains of West Virginia with **all expenses paid**. They will interact with students selected from all states and several countries as they explore many science topics, meet prominent scientists and collect field data. In addition they will have selections of canoeing, horseback riding, camping and other recreational activities. Teachers should encourage students with an interest in science, leadership qualities, and a love of the outdoors to apply. There are often few

applicants. This award is coordinated by MDE. For information go to [this site](#) or contact john.c.olson@state.mn.us. The deadline is March 1.

Minnesota High School STEM Communicator Awards

The goal of these awards is to identify and encourage high school students who show exceptional potential in performing scientific and mathematical research, in communicating their research through writing, and in understanding the societal context of their research and results.

Candidates must submit a paper that explores a current issue relating to science, mathematics, technology and society, a transcript, and an assessment by the student's educational advisor(s). The Minnesota Academy of Science will recruit scientists and educators of appropriate expertise and stature to evaluate the applicants. The top 10 papers will be recognized with a cash awards and medallions and potential publication in the [Minnesota Academy of Science Journal of Student Research](#).

The deadline to submit an Intent to Apply is March 15, 2017. To declare your intent to apply for the awards, email [Karen Newell](mailto:Karen.Newell). Full information is at [this link](#).

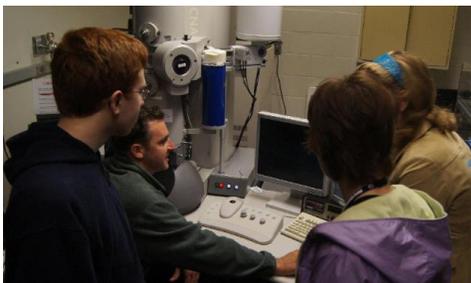
* Minnesota Youth Institute

The Minnesota Youth Institute engages high school students in solving local and global hunger issues. The interactive, day-long program on May 15 brings teens from across the state to the University of Minnesota for an immersive science experience and an opportunity to connect with research and industry leaders. MNYI serves as a gateway to the World Food Prize Symposium and global travel, paid internships while still in high school, and a scholarship to the University of Minnesota. To apply for the institute, students write a paper proposing a solution to a critical global challenge in a specified country. Papers are due April 15. For more details visit the [program site](#).

*Clean Tech Competition

The Clean Tech Competition is a unique, worldwide research and design challenge for pre-college youth. The program encourages scientific understanding of real-world issues and the integration of environmentally responsible energy sources. Each year, the Clean Tech Competition addresses an issue that is grounded in core technological competency areas and focuses on the next great engineering challenges. The competition is designed to foster a deeper understanding of STEM (science, technology, engineering, and math) related concepts, recognize outstanding talent, and prepare the next generation of globally competitive innovators. [Click here](#) for more information

* Materials Camp, June 13 – 16, Minneapolis



The MN ASM materials camp will provide a hands-on experience into the world of materials science and engineering. This FREE commuter camp is for students entering their Junior or Senior year in high school in fall 2017. They receive a unique science experience under the direction of industry and education based “Materials Mentors”. The program is a combination of mini-demonstrations, field trips with extensive involvement in laboratory facilities to actively explore materials science & engineering principles. An application is due by March 31. This is a competitive program

for inquisitive learners with strong math and science aptitude. Details and registration are at [this site](#).

Research Science Institute for High School Students

The Center for Excellence in Education and Massachusetts Institute of Technology co-sponsor the Research Science Institute (RSI) and are looking for talented 11th Grade or equivalent STEM Students! Do you have an interest in Science, Technology, Engineering or Mathematics and a desire to complete a research program with other very talented young scholars?

Apply to the (RSI) program to be held on the MIT campus June 25 - August 5, 2017. RSI is free of cost to students except for travel to and from MIT. Visit the CEE website for RSI application materials. See application information at [this link](#). Please contact Maite Ballestero, Executive Vice President, Programs & Administration, maite@cee.org if you have questions.

Minnesota Competitions and Programs

Many competitions, out-of-school programs and field trip opportunities are posted at [the Mn-STEM website](#) and listed in the [Reach for the Stars Catalog of Programs and Activities](#).

MDE Contacts:

[Dawn Cameron](#), Science Assessment Specialist

[John Olson](#), Science Content Specialist, @JohnCasperOlson

[Doug Paulson](#), STEM Integration Specialist, @DPaulsonSTEM

[Jim Wood](#), Science Assessment Specialist

Send submissions for the Science Update to John Olson

Other Minnesota Links:

[Minn. Dept. of Education Science Page](#)

[Minn. Science Teachers Association](#)

[Frameworks for MN Science and Mathematics Standards](#)

[Get – STEM](#) Connections between schools and businesses

[Mn-STEM](#) STEM programs and resources for families, schools and community

[Sharing Environmental Education Knowledge](#) environmental education resources

[Minnesota Academy of Science](#): Science Fair, Science Bowl and other competitions

[Mn DNR Education website](#): Curriculum, professional development, posters, etc.