

# NEWS JOURNAL

A publication of the Montana Science Teachers Association

Fall 2019



### **Submitting Articles to the MSTA News Journal**

When submitting articles, please adhere to the following criteria:

- Electronic submissions are preferred in Microsoft Word format. These can be attached to your email message.
- If in doubt about format, submit your work in .rtf format.
- If truly in doubt, paste your submission in the body of the email message.
- Lab activities may be mailed. Please cite any references.

**Judy Boyle, Editor** Tentative Submission/Publication Dates [sagemountaintrail@gmail.com](mailto:sagemountaintrail@gmail.com)  
August/September (Fall Issue)

December/January (Winter Issue)

February/March (Early Spring Issue)

April /May (Late Spring Issue)

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I hope all of you had the summer break of your dreams and are excited to open the eyes of your students to our world through science and STEM. In this edition, you will find many exciting professional development opportunities for you to take advantage of. But, first, I must congratulate 2020 Montana Teacher of the Year, Linda Rost! Congrats, Linda!

Please don't forget to attend our Annual MSTA Membership Luncheon at the MFPE Teachers Conference in Belgrade October 17th at noon. Our keynote speaker, Walt Woolbaugh from Belgrade, will be speaking at 2:00 pm. We also have wonderful sessions for you to attend. FYI- There will not be any curriculum group hospitality rooms this year. However, there will be one section in the exhibit hall designated as the "hospitality room". You will want to check the schedule for MSTA's time for us to have a little social hour.

For more opportunities for you and your students, "friend" us on our Facebook page!

Thank you for all you do to teach our students about the world around them and give a wonderful beginning to the school year!

Judy Boyle, MSTA President

## **NSTA 2019-2020 National and Regional Conferences**

### **Regional**

**Salt Lake City- October 24-26**

**Cincinnati- November 14-16**

**Seattle- December 12-14**

### **National**

**Boston-April 2-5**

**Before going back to school, you should read this amazing document. Wonderful support and inspiration for science in our schools.**

<https://www.whitehouse.gov/wp-content/uploads/2018/12/STEM-Education-Strategic-Plan-2018.pdf>

Dr. John Graves from MSU- Bozeman's MSSE program is offering a 6 week short course this fall on phenomenon-driven inquiry. It's limited to 50 folks so sign up soon! For more information: <https://eu.courses.-montana.edu/CourseStatus.awp?&course=19FAPHENOM>

## Science News

Science Assessments: Grades 5, 8, and 11 starting 2019/2020 school year

**Calling all teacher leaders!** Montana adopted new Science content standards in 2016. A new statewide assessment of these standards will be field tested in spring 2020 and operational assessment implemented in spring 2021. With these big changes, the OPI is reaching out to engage with educators and connect them with opportunities to support implementation of Montana's Science content standards. The OPI is looking for individuals interested in being Science Teacher Leaders in the following ways: creating or reviewing assessment items, developing professional learning, giving trainings, creating or facilitating online course, networking, etc. Please consider partnering with the OPI to spread the word and build the capacity to engage science educators across the state on the shifts with these new three-dimensional science standards and assessments - *let's re-envision the system of assessments and practice for science!*

Are YOU interested in becoming a Science Teacher Leader? Or know someone who might be interested? If interested, then please complete the [interest survey](#). Your responses will help us get in touch and connect you with great professional opportunities over the next couple of years. Should you have any questions, please contact Michelle McCarthy, Science Instructional Coordinator at 444.3537

or Jennifer Stadum, Indian Education Specialist at 444.0725 or [jstadum@mt.gov](mailto:jstadum@mt.gov). Thank you for taking time to respond and share this survey with your colleagues.

**USGS**  
science for a changing world

# Water Science School

Ever wondered how much water it takes to grow a head of lettuce, or even to "grow a hamburger?" When the stream near your house floods, how does the USGS measure the amount of water flowing? Care to find out what pH is, how much water is used to produce electricity, how much water is stored in glaciers, or what the effects of acid rain are? The U.S. Geological Survey's Water Science School website, located at <https://www.usgs.gov/water-science-school> is available to answer these and other questions.

**All About Earth's Water**  
Here you can learn about every aspect of water: where it is, how much there is, all about the properties of water, and how much water we use.

**Activity Center**  
We're interactive! Participate in opinion surveys, questionnaires, and challenge questions.

**Water Science Photo Gallery**  
Rushing flood waters, scientists stunning fish, water bubbles in outer space, and houses wearing stilts. Browse through dozens of water-related pictures, each with explanatory text.

**Water Cycle Components**  
The most complete discussion of the water cycle anywhere on the Web. One for schools and one for adults. Available in more than 60 languages!

Surface Water  
Ground-water  
Water Quality  
Water Use  
Water Basics  
Water Properties  
Water Cycle Components

U.S. Department of the Interior  
U.S. Geological Survey

<https://www.usgs.gov/water-science-school>

Scan me

**The U.S. Geological Survey (USGS)** is proud to announce a revised Web-based water-science education tool, [The USGS Water Science School](https://www.usgs.gov/water-science-school), where students (of any age) and adults (of any age) can learn all about water, from what it is, to where and how much there is, to the most in-depth discussions of the natural water cycle anywhere. We hope you or your teachers will find it useful in the classroom.



[Download our Water Science School Flyer in PDF format here](#)

The Water Science School offers several main topic areas:

- Water Basics
- Water Properties

- Natural Water Cycle (Posters and information in over 60 languages!)
- Surface Water
- Groundwater
- Water Quality
- Water Use
- Activity Center
- Photo Galleries
- Water Q&A
- Teacher Resources
- Water Dictionary

Our "new and improved" Water Science School: [https://www.usgs.gov/water-science-school?utm\\_source=hperlman&utm\\_medium=email&utm\\_campaign=Water-Science-School---Aug-2019](https://www.usgs.gov/water-science-school?utm_source=hperlman&utm_medium=email&utm_campaign=Water-Science-School---Aug-2019)

If you have questions or comments, please contact:

Tara Gross, [tgross@usgs.gov](mailto:tgross@usgs.gov)

Howard Perlman, [hperlman@usgs.gov](mailto:hperlman@usgs.gov)

**Attention Teachers: Apply to be a part of STEM in the Rockies - Aquatic Invasive Species Workshop this October 4-5!**

The Montana Learning Center has teamed up with Montana Fish, Wildlife & Parks to bring you a unique opportunity to be on the forefront of STEM education right here in Montana! Come and learn about engaging hands-on curricula that will excite you and your students about aquatic invasive species, a vastly growing threat to Montana's watersheds.

Teachers who participate in STEM in the Rockies - Aquatic Invasive Species Workshop will receive 20 Montana Office of Public Instruction renewal units and an array of biology-themed activities that can be done with their students. Room and board is also provided free of charge for participants at the Montana Learning Center.

Space is limited to only 20 participating STEM teacher leaders who teach in the formal classroom setting in Montana, so apply today! Applications are due September 14th. Applicants will be notified of their acceptance shortly after the application deadline.

For more information and registration, please visit:

<https://forms.gle/jT3xHsZXifX27B7p6>

The STEM in the Rockies - Aquatic Invasive Species Workshop is proudly designed and delivered by fellow Montana teachers. This opportunity is led by award-winning science teachers Kate Mattern and Ryan Hannahoe. Support for this opportunity is provided by Montana DNRC, Montana Fish, Wildlife & Parks, Lewis and Clark Conservation District (Grant Sponsor), Watershed Education Network, and Flathead Lake Biological Station.

**Attn. Teachers: Come fly with us. Literally! Apply to be a part of STEM in the Rockies this October 25-26.**

The Montana Learning Center has teamed up with the Montana Department of Transportation - Aeronautics Division to bring you a unique opportunity to be on the forefront of STEM education right here in Montana! Come and learn about engaging hands-on curricula that will excite you and your students about science, technology, engineering, and mathematics. This STEM in the Rockies workshop also includes an introductory flight in one of the Aeronautics Division's aircraft.

Teachers who participate in STEM in the Rockies will receive 20 Montana Office of Public Instruction renewal units and an array of aeronautics-themed activities that can be done with their students. Room and board is also provided free of charge for participants at the Montana Learning Center.

Space is limited to only 18 participating STEM teacher leaders who teach in the formal classroom setting in Montana, so apply today! Applications are due October 1st. Applicants will be notified of their acceptance shortly after the application deadline.

For more information and registration, please visit:  
<https://forms.gle/euzLAQQkNZpJS6e26>

The STEM in the Rockies workshop is proudly designed and delivered by fellow Montana teachers and pilots. This opportunity is led by award-winning science teachers Dr. Walt Woolbaugh & Ryan Hannahoe. Support for this opportunity is provided by the Montana Department of Transportation - Aeronautics Division.





# OPI SCIENCE ASSESSMENT NEEDS YOUR HELP

OPI has signed a contract with a science assessment vendor *Cambium* (formerly *AIR*). Testing years are fifth, eighth, and eleventh grades.

The OPI would like to apply for a waiver for accountability for the 2019/2020 school year science assessment; part of the process in achieving this goal is to gather public comment. OPI is asking if you could please send out the following link to students, parents, post-secondary educators, K-12 educators, administrators, in essence, all stakeholders. Another piece of the Public Comment Form addresses the issue of the ACT for the HS science assessment. Here is the [MT Science Assessment Transition Public Comment](#) page.

Updates will be posted on the [Montana Comprehensive Assessment System](#) page. Please spread the word.

## The stars that grace the night sky have been called the campfires of eternity.

Beginning on Sept. 27, the Montana Learning Center in partnership with the Montana Chapter of the International Dark Sky Association will offer an opportunity to view the brilliance of the cosmos during the 2019 Montana Dark Sky Conference & Star Party.

"Astronomy is one of the many sciences that anyone can be a part of," Hannahoe said. "You can go outside, look up and be overwhelmed with the vastness of Montana's starry skies."

The conference and star party, which concludes on Sunday, Sept. 29, will be held at the Montana Learning Center campus, 7653 Canyon Ferry Road, which is located just outside of Helena. Registration is \$25 for adults and \$10 for students. Children will be required to be accompanied by an adult.

Registration can be made online at: <https://forms.gle/qPzUJZrDYVKMLFdw9> including options for lodging and meals.

Registration payment can also be mailed to the Montana Learning Center, 7653 Canyon Ferry Road, Helena, MT 59602.

There will be private night-sky viewing for conference attendees only on Friday from 9 p.m. to midnight. On Saturday the conference includes sessions on the dark sky movement, an introduction to light pollution in the night sky, dark sky economics and the Master Astronomer Program. Opportunities for networking and discussion fill the conference agenda until darkness again veils the landscape on Saturday when there will be a second star party that is free and open to the public.

"We are excited to partner with the Montana Learning Center and bring together people from across the state who are working for better, safer, dark-sky friendly outdoor lighting. This will be a great opportunity for learning how to protect Montana's heritage of star-filled skies," said John Ashley, chair of the Montana Chapter of the International Dark Sky Association.

The U. S. Department of Energy in 2011 found more than one-third of night lighting is wasted at a cost of \$3.3 billion, contributing about 15 million tons of carbon dioxide annually, according to information provided by the International Dark Sky Association website, <https://www.darksky.org/light-pollution/energy-waste/>.

The Montana Learning Center, a NASA partner, offers summer camps for children and teacher training that provides science content and teaching strategies to enhance and expand personal growth. More information on the Montana Learning Center can be found on its website at <http://montanalearning.org/>. The center's 14-inch robotic telescope and its 25-inch telescope, Montana's largest public-use telescope, are available for reservation for private star parties.

"This ties directly into our astronomy program," said Hannahoe, the Montana Learning Center's executive director. "As such, it is really important to not only protect our direct view of the night sky in and around the Helena area but also play a part preserving it in Montana and beyond."

"As outdoor lighting continues to grow unabated, it directly threatens our view of the night sky." Hannahoe added.

While night sky has been a canvas where star stories were written by generations of our ancestors, astronomer Carl Sagan spoke of what we share with stars in his book "Cosmos" where he wrote, "The nitrogen in our DNA, the calcium in our teeth, the iron in our blood, the carbon in our apple pies were made in the interiors of collapsing stars. We are made of starstuff."

For additional information, contact:

Ryan Hannahoe  
Montana Learning Center  
(406) 475-3638



# **The Western Aerospace Scholars is Seeking Montana Teachers. Apply today. Up to \$2,800 in stipends and 60 Montana OPI Renewal Units available.**

<https://form.jotform.com/museumofflight/OAEapplication2019-2020>

The Western Aerospace Scholars (WAS) is seeking Montana middle and high school teachers to evaluate online coursework and participate as an academic facilitator during a six-day summer residency at The Montana Learning Center at Canyon Ferry Lake, Sunday-Friday, June 21-26.

In addition to the content of the university level curriculum, participants also have opportunities to interact with professionals working in STEM fields, tour engineering and research facilities, work with highly engaged and motivated students, and learn new techniques for demonstrating STEM concepts in their classrooms.

The ideal candidates are certified teachers or students enrolled in pre-cert programs with experience teaching mathematics, science or technology-related courses. Experience with chaperoning student trips or camps is beneficial, but not required. Continuous access to the internet and e-mail are essential.

## **Phase One (November to April): Online Curriculum**

The WAS curriculum was developed in partnership with NASA and the University of Washington, and focuses on the science of space, history of robotic and human space travel, and opportunities for further human exploration.

Students and teachers access the curriculum via a web-portal maintained by WAS. Teachers are provided answers and grading rubrics for each lesson, and are expected to give assignment feedback for each lesson, starting in November 2019 and ending by April 2020. We estimate that teachers will spend 3-4 hours per week evaluating student work during this phase.

## **Phase Two (June 21-26, 2020): Summer Residency**

The focus of the residency is the design of a human mission to Mars. Students are guided by industry mentors, university students, and teachers as they participate in challenges and activities.

Additionally, participants receive briefings from professionals and attend tours of engineering facilities and laboratories. The Summer Residency is both a cooperative and a competitive experience. Mornings center on the design of the mission to Mars, afternoons are spent interacting with experts in the aerospace field, and the evening brings students a number of competitive, hands-on engineering challenges.

### **Online Academic Evaluator expectations and pay:**

We estimate that teachers will be responsible for grading up to 20 scholars for the duration of Phase One and will spend between 3-4 hours per week evaluating student work. For this, teachers can receive up to \$1,700.

### **Summer Residency Academic Facilitator expectations and pay:**

Teachers are responsible for supervising scholars at the Montana Learning Center for the entire experience. Teachers will receive \$1,100 for their participation in a six-day residency.

In addition, all room & board (including transportation to/from the Montana Learning Center) is provided by the WAS Foundation. Further, teachers are able to apply for 60 Montana OPI Renewal Units.

<https://form.jotform.com/museumofflight/OAEapplication2019-2020>

Online Application Deadline is 11:59pm, Tuesday, October 15, 2019

**FWP'S NEW STORY MAP CELEBRATING  
MONTANA'S YELLOWSTONE CUTTHROAT TROUT**

"FWP has released a new story map celebrating Montana's native Yellowstone cutthroat trout. This engaging multi-media web-based tool covers the historical setting, habitat needs, status, and conservation of our native trout. The engaging photos, videos, and text will educate and entertain audiences of all ages." Click on the link below to view this amazing resource!

<https://mtfwp.maps.arcgis.com/apps/Cascade/index.html?appid=fd-f5c7af3413435da2c2190aab5ef9c3>

**MONTANA SCIENCE TEACHER NEWS!**

**Presidential Award for Excellence in Math and Science Teaching  
(PAEMST)  
2019 Awardees**

**Kimberly Popham, Belgrade High School, Belgrade**

**Thomas Cubbage, CM Russell High School, Great Falls**

**Robert Jensen, Hellgate High School, Missoula**

**Congratulations to our Montana Biology Teacher of the Year**

**Katie Capp, Belgrade High School**

Please join NSTA President Dennis Schatz to explore the evidence for how out-of-school STEM learning is a key factor in developing our youths' interest in science, and to learn more about ways that educators have connected in-school and out-of-school experiences to enhance STEM learning.

**What: Free NSTA Science Update Webinar** - Making Science Learning Lifelong, Lifewide and Lifedep: What We Know About the Importance of Out-of-School STEM Learning

**When:** Wednesday, October 9, from 7:00 – 8:00 pm Eastern Time (It will also be recorded for those who register to access at a later time)

**How: Register at** <https://common.nsta.org/resource/?id=10.2505/9/WSNSTA191009>

## STEM Student Professional Skills Symposium

We are excited to announce our annual **STEM Student Professional Skills Symposium (SSPSS)**, set for Saturday, October 5<sup>th</sup>, 2019 at the Museum of the Rockies. This year, we have two very exciting upgrades: 1) Five NASA personnel and researchers will be coming to Montana October 2<sup>nd</sup> – 5<sup>th</sup> for NASA Days. 2) **JoAnn Morgan**, the only woman in the Apollo 11 launch control room and the first female senior executive at Kennedy Space Flight Center, will be our SSPSS keynote speaker.

All Montana STEM majors and faculty members with any kind of interest in NASA, space, or remote sensing are invited to attend this unique event. Minority students are especially encouraged to participate. Registration is required and due by September 25<sup>th</sup>.

See the attached letter for event details. We've also attached a flyer you can use to share the events with your students and faculty. Event webpage, including schedule and registration link: <https://spacegrant.montana.edu/sspss.html> . *Meeting rooms locations will be updated on the online agenda.*

Overview of events (see attached letter for more information):

-> A student networking session with NASA visitors will be held Wednesday, 10/2 from 4 pm to 9 pm.

-> MSGC personnel and NASA visitors will be at the MSU Career Fair on Thursday, 10/3 from 9 am to 3 pm.

-> NASA visitors will conduct a student workshop about internship programs on Thursday, 10/3 from 4 to 9 pm.

-> NASA visitors will conduct internship interviews on Friday, 10/4 from 8 am - noon. Students should indicate their interest in an internship interview on the SSPSS registration form and also visit the NASA booth at Career Fair.

-> In association with the NASA visitors, we will have a faculty networking event from 1 to 4PM on Friday, 10/4.

-> In association with the NASA visitors, we will have an Indigenous and Tribal College student event from 4 to 6 PM on Friday, 10/4.

-> The main SSPSS event will take place from 7:45AM to 4PM on Saturday, 10/5.

Questions? Contact MSGC Deputy Director Randy Larimer at [rlarimer@montana.edu](mailto:rlarimer@montana.edu) .



Montana Science Teachers' Association

