

NEWS JOURNAL



A publication of the Montana Science Teachers Association

Winter 2020

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 sagemountainrail@gmail.com

August/September (Fall Issue)

December/January (Winter Issue)

February/March (Early Spring Issue)

April /May (Late Spring Issue)

Happy New Year!

With a new year comes new opportunities and this news journal is full of exciting possibilities for both you and your students. Present a session, take an online course, travel abroad or stay in our wonderful state for professional learning, or share your passion for science as a camp counselor or by being a mentor or captain of a team of future scientists. If you are an elementary teacher, step outside your content comfort zone! It's my favorite thing to do and has opened my eyes along with my students'. I hope this year brings you and your students many new STEM and NGSS adventures!

Thank you for all you do to teach our students about the world around them and have a wonderful New Year!

Judy Boyle, MSTA President

SHARE YOUR IDEAS!

The National Science Teaching Association

Have an idea for an inspiring presentation or workshop on science or STEM education? Submit a session proposal today!

2021 National Conference

Chicago, IL

April 8-11, 2021

Proposal Deadline:

4/15/2020

To submit a proposal, visit www.nsta.org/conferenceproposals

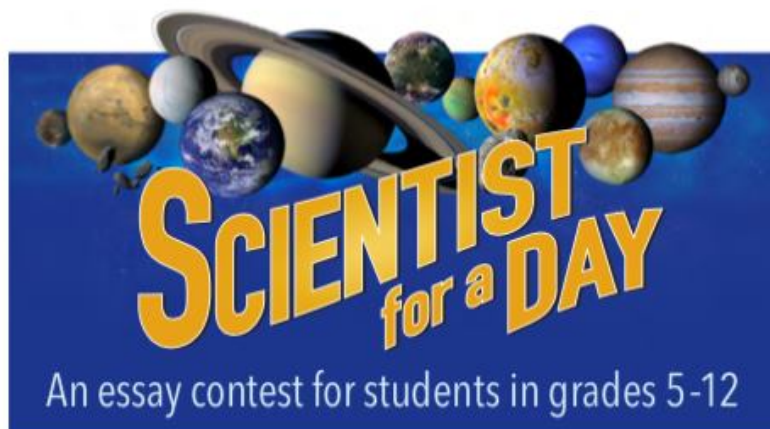
NSTA 2019-2020 National Conference

Boston-April 2-5

Register at https://s6.goeshow.com/nsta/national/2020/registration_form.cfm

Opportunities for You and Your Students

National Aeronautics and Space Administration



Think like a scientist and decide where to explore next!

The solar system is rich with unexplored worlds. Among them are Miranda, Triton and Charon, three moons in the outer solar system. NASA's Voyager 2 and New Horizons spacecraft briefly visited them, but there's so much more to discover.

So let's go back – but to which moon?

Learn what you can about these distant and mysterious worlds and choose one you would want to explore further. Then write an essay of up to 500 words telling us why you would send a robotic spacecraft to investigate the moon you chose. Have fun!

**U.S. Contest Deadline:
February 20, 2020**

Other participating countries may have different deadlines.

For more information, contest rules, and videos, visit:

<https://solarsystem.nasa.gov/scientist-for-a-day/>

Send questions to: scientistforaday@jpl.nasa.gov

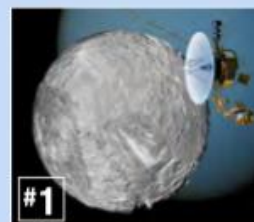
We look forward to reading your essays!

This year's contest is sponsored by NASA's Radioisotope Power Systems program. Voyager and New Horizons used radioisotope power to explore the outer planets. Visit <https://rps.nasa.gov/missions> to learn how.

www.nasa.gov

Jet Propulsion Laboratory – California Institute of Technology

TOPICS for the 2019-2020 Contest



Miranda
Moon of Uranus



Triton
Moon of Neptune



Charon
Moon of Pluto

Above images are artist's composites and are not to scale.



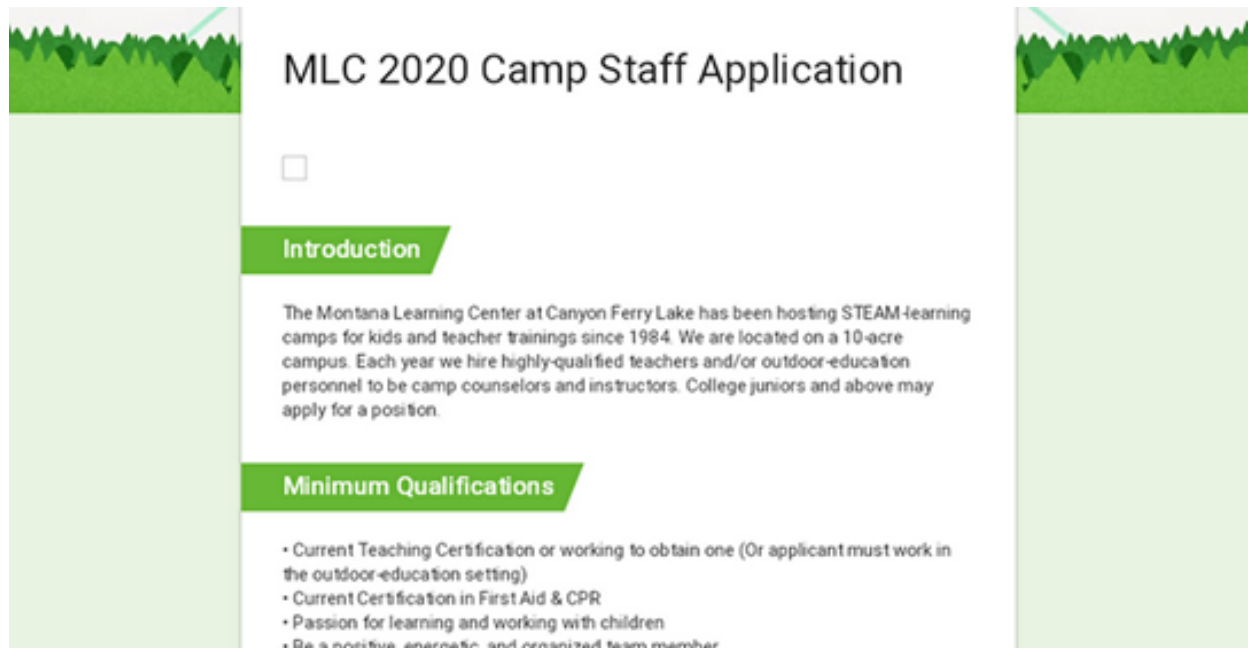
MONTANA LEARNING CENTER

The Montana Learning Center is hiring for staff to support our '2020 Summer Learning Camps for Kids!
We offer competitive pay, room and board at the MLC during camps, a beautiful place to work and a great staff to work with. Montana teachers who work at camp can also earn up to 80 OPI Renewal Units.

Apply here:

<https://forms.gle/hr4r6EupXpyh2GaG6>

For more information on the MLC, see <http://montanalearning.org/>



MLC 2020 Camp Staff Application

Introduction

The Montana Learning Center at Canyon Ferry Lake has been hosting STEAM-learning camps for kids and teacher trainings since 1984. We are located on a 10-acre campus. Each year we hire highly-qualified teachers and/or outdoor-education personnel to be camp counselors and instructors. College juniors and above may apply for a position.

Minimum Qualifications

- Current Teaching Certification or working to obtain one (Or applicant must work in the outdoor-education setting)
- Current Certification in First Aid & CPR
- Passion for learning and working with children
- Be a positive, energetic, and organized team member

IMPORTANT DATES:

March 5 – Division 1 of MT Tech Science fair – MT. Tech

March 5 & 6 – Intermountain Junior Science and Humanities Symposium – MT. Tech

March 12 – Division 2 of MT Tech Science fair – MT. Tech.

March 30 – State Science Fair – U of M, Missoula

April 2 – 5 – NSTA National Conference – Boston

April 3 – 6 – NCTM National Conference – San Diego

April 26-28- 2020 MEEA Conference- Chico Hot Springs

July 15-18 - Environmental Field School – YBRA, Red Lodge

August 12-14 – Montana Sci-Tech Summit – MSU Bozeman

Announcing the 2020 MEEA Conference!



This year we will focus on providing educators with resources to ensure their environmental education is promoting environmental literacy to all demographics and incorporating the varied perspectives from across our state.

March 26th - 28th at Chico Hot Springs

www.montanaeaa.org/services/annual-conference



The 65th Annual **MONTANA** **SCIENCE** **FAIR**

Join us March 30, 2020!

Registration Opens January 27, 2020

**The 65th Annual Montana Science Fair at
the University of Montana's Adams Center:**

- **Early check-in on Sunday March 29th**
- **Fair & Judging on Monday March 30th**
- **Awards Ceremony on Tuesday March 31st**

Questions? Contact Ginger Claussen
ginger.claussen@umontana.edu

SCIENCE FAIR INFO

Over 130 individual and team awards, scholarships, and cash prizes will be awarded, including two Division I all-expense paid trips to the Intel International Science and Engineering Fair in Anaheim, California.

Additionally, the top 10% of Division II students will be named Broadcom MASTERS Nominees. These students will have the chance to become one of 300 semifinalists and 30 finalists nationwide that will present their research projects at an all-expenses paid competition in Washington, D.C.

Students and teachers can find all necessary paperwork, deadlines, restrictions, ISEF guidelines, and a schedule of events on our website.

<http://hs.umt.edu/mtsciencefair>

Thank you to all of the sponsors, judges and volunteers who make the Science Fair possible each year!

T-SHIRT DESIGN COMPETITION

The Montana Science Fair is hosting a t-shirt design competition again this year for the official 2020 t-shirt. The winner will receive a \$150 gift card and the design will be featured on 500+ Montana Science Fair T-shirts.

The deadline to enter the contest is February 10, 2020.

Entries can be scanned/emailed to: Gisele Forrest

gisele.forrest@umontana.edu

Western Aerospace Scholars

STEM companies want you! Earn college credit!



Montana Aerospace Scholars Program Seeks High School Sophomores

In collaboration with NASA, Museum of Flight, and the University of Washington, registration for the Montana Aerospace Scholars program is now open!

Apply for this free dual-phase program that focuses on Earth & Space Science. This experience exposes students to the opportunity to work face-to-face with professional engineers, NASA scientists, university students and educators.

Students who successfully complete the online course will be invited to participate in an all-expenses paid STEM-focused experience at the Montana Learning Center at Canyon Ferry Lake.

For more information, visit
<https://www.museumofflight.org/WAS>

Student applications are due February 15th.

This program is supported by NASA.

For more information, please email WAS@museumofflight.org or call (206) 764-5866.

ANNOUNCING GENES IN SPACE 2020

DESIGN AND LAUNCH YOUR DNA EXPERIMENT IN SPACE!

Calling all students in grades 7 through 12: Have you ever wondered how astronauts might survive a deep-space mission or how we might be able to use biology to transform new worlds? If so, Genes in Space is for you!

Genes in Space is a science contest that challenges students to design original DNA experiments that address real-life challenges and opportunities of space exploration. The contest is free and does not require equipment. Proposals will be judged solely on their creative and scientific merit. The winning experiment is conducted in space, and samples are returned to Earth for you to analyze! Submission deadline is April 17th, 2020. Learn more about the contest at https://www.genesinspace.org/us-contest/?mc_cid=de83a3e1f2&mc_eid=30d84f9b77

All student contestants practice valuable scientific skills while exploring a topic that interests them and learning about the exciting field of space biology. Awards will be announced May 21, 2020. Awardees win a miniPCR DNA Discovery System for their educational institutions. Five finalist teams additionally receive mentoring from Harvard and MIT PhD scientists and receive travel awards to attend the 2020 International Space Station R&D Conference where they will present their ideas to a panel of judges. The winning team will watch their DNA experiment launch into space!

Educators: Turn Genes in Space into a class assignment! Check out the free tools for bringing modern genetic analysis and space biology into your classroom. https://www.genesinspace.org/classroom-resources/?mc_cid=de83a3e1f2&mc_eid=30d84f9b77

Resources include interactive videos, lesson plans, classroom activities and worksheets, and more.

Find us on the web at www.genesinspace.org or email us at genesinspace@minipcr.com.

Genes in Space is a collaboration between miniPCR bio and Boeing with generous support from the ISS U.S. National Laboratory, Math for America, and New England Biolabs, Inc.

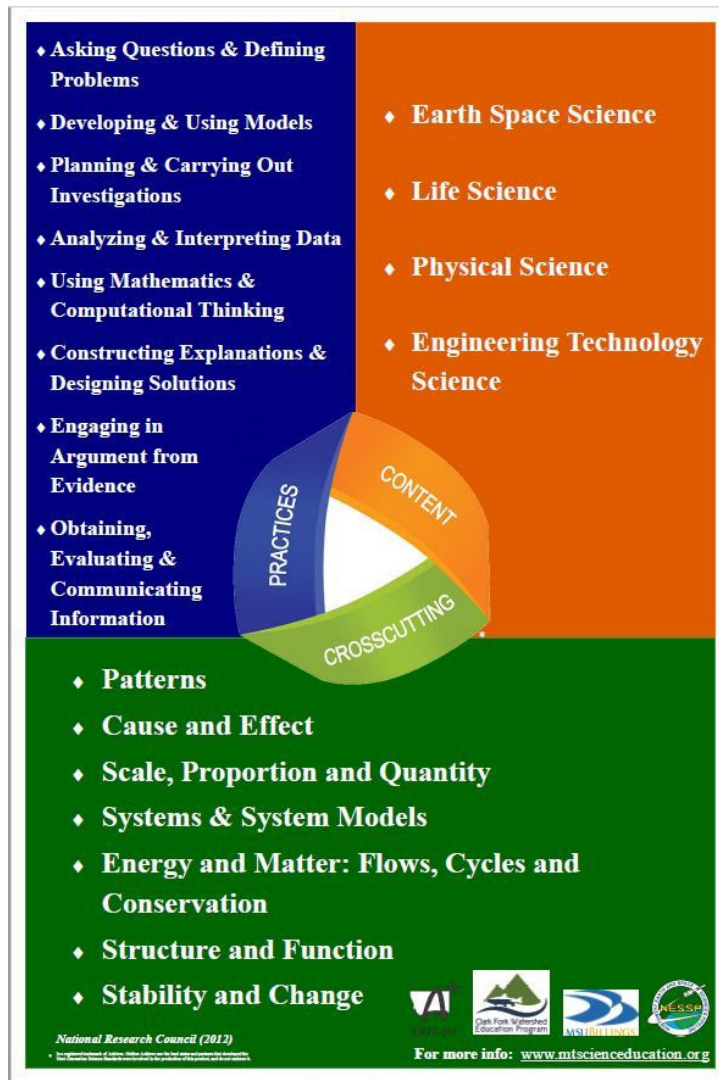
Now accepting applications for 2020

OXFORD, Ohio (Sept. 3, 2019) – Miami University's Project Dragonfly is accepting applications for 2020 Earth Expeditions graduate courses that offer extraordinary experiences in 16 countries throughout the world. <http://EarthExpeditions.MiamiOH.edu>

Earth Expeditions can build toward the Global Field Program (GFP), a master's degree that combines summer field courses worldwide with web learning communities so that students can complete the GFP master's part-time from anywhere in the United States or abroad. <http://GFP.MiamiOH.edu>

Project Dragonfly also offers the Advanced Inquiry Program (AIP) online master's degree that combines Miami University web-based courses with experiential learning and field study through several AIP Master Institutions in the U.S. Applications for Miami's 2020 cohorts are being accepted now with place-based experiences provided at zoos and botanical gardens in Chicago, Cincinnati, Cleveland, Denver, New York, San Diego, Seattle, and St. Louis. New for 2020: residents of the Jacksonville, Florida, area can study at Jacksonville Zoo and Gardens, AIP's newest Master Institution, and earn Miami's AIP master's degree. <http://AIP.MiamiOH.edu>

Graduate tuition for all programs is greatly reduced because of support from Miami University. You can watch Project Dragonfly's 2019 info session at the following link: <https://projectdragonfly.miamioh.edu/2019/10/22/watch-dragonfly-2019-info-session/>



Get Your 3D On!

Preparing for MT Science Assessment

The 2020 science assessment field test for grades 5 and 8 is this spring. This science assessment measures the three-dimensions of the Montana science standards. Familiarize yourself with these components in these free facilitated online courses that work with you.

- **February 10 - March 15:** [3D Learning in Your Classroom](#) Registration opens January 20 (24 Renewal Units)
- **March 1 - March 28:** [Crosscutting Concepts: The Big Picture](#) Registration opens February 9 (20 Renewal Units)

NGSS above posters available upon request as supplies last-

MMcCarthy5@mt.gov

6-12 Teacher Research Opportunity

MSU Bozeman & West Region Transportation workforce are offering a 3-credit research course for educators. Applications are open until February 7, 2020. Research Experience for CTE, Science, post-secondary and 6-12 Teachers in Innovative Transportation takes place from June 22 - July 31 at MSU Bozeman, (opportunity includes a \$6,000.00 stipend and all travel expenses are reimbursed). Learn more at [Innovative Transportation Systems](#) and complete your [application](#) soon! http://wrtwc.org/wp-content/uploads/2018/10/RET-ITS_ApplicationForm_Live_V2.pdf

STEM Teaching Tools Field Notes

How can your science instruction leverage and develop students' interests?

This STEMteachingtools resource is designed to help educators build on student interests by creating experiences, adapting curriculum, and resourcing learners.

Climate Change in Montana: Resource Articles

A message from Martha Kohl of the Montana Historical Society,

"I've shared about resources relating to [Montana and climate change](#) in the past. Lately several new articles have come across my screen on the subject, so I thought I'd share them with you.

- *["The Impacts of Climate Change on Huckleberries."](#) Flathead Beacon, November 21, 2019*
- *["Unprecedented sagebrush die-off. recovery reveals threat of weather swings."](#) Helena Independent Record, November 28, 2019*
- *["U of I-led study: Back-to-back low snow years will become more common."](#) Idaho Falls Post Register, August 20, 2019.*

Living with fire has always been part of the Montana experience and will become even more of an issue with climate change. Here are two articles on the topic:

- ["Living with fire: New paper suggests rethinking relationship with wildfire," Bozeman Chronicle, August 20, 2019](#)
- ["Living with Fire Part 2: Building fire-adapted communities through land-use planning." Montana Free Press, July 4, 2019](#)

I think it is important not just to look at the effects of climate change, but also to look at potential policy responses. (We don't want to make kids feel hopeless.) Here's one debate that's happening now:

- ["Next-gen wind farm near Columbus argues for prices on par with gas, coal." Helena Independent Record, October 3, 2019"](#)



High School Sophomores Needed!

[Western Aerospace Scholar program sign up](#) is underway. HS sophomores take the first phase of this program, an online course over a couple of months, and after passing this course they experience phase two, which is a three-day camp at the Montana Learning Center on Canyon Ferry Lake. Students explore engineering programs, talk with and tour the Boeing facility, and join a team to get to Mars! Do not miss this fabulous opportunity.

Teachers/Counselors for Summer Camps Needed

Camp staff positions are open to Certified Teachers, Outdoor Educators, and college students. The Montana Learning Center (MLC) offers competitive pay, room and board at the MLC, and up to 80 OPI Renewal units. [Applications](#) are being accepted now, and if you'd like more information, please visit the [MLC website](#).



NASA Science Space Place

Explore Earth and Space <https://spaceplace.nasa.gov/menu/parents-and-educators/> with classroom curricular materials from NASA. NASA has the data, and you can combine that with the Inquiry in NASA Hub Course to challenge your students to be scientists! <https://learninghub.mrooms.net/course/search.php?search=nasa>

STEM Teaching Tools Field Notes

How can your science instruction leverage and develop students' interests?

This [STEMteachingtools](http://stemteachingtools.org/brief/58) resource is designed to help educators build on student interests by creating experiences, adapting curriculum, and resourcing learners.

<http://stemteachingtools.org/brief/58> Montana Learning Center at Canyon Ferry Lake

Montana Learning Center seeks MSGC interns to:

- Work closely with the organizations's executive director, students and teachers in the ROADS Challenge
- Work closely with leadership and students to assist in carrying out the MAS program
- Work closely with leadership, campers and members of the general public to carry out the MLC's night-sky programs
- Assist with the MLC's summer learning camp for kids

The MLC has been serving students and teachers in the STEAM fields since the 1980s. They will be hosting 26 different camps for students entering grades 1st - 12th summer 2020. The MLC is located on a beautiful 10-acre campus at Canyon Ferry Lake. The MLC has an observatory complex that features Montana's largest public-use telescope, perfect for viewing the night sky. People from all over come to enjoy this resource.

The MLC has been selected by NASA to host the Rover Observation And Drone Survey on Mars Challenge for Montana. The ROADS Challenge is an immersive opportunity for middle school and high school students to use the latest technologies in aeronautics and robotics to explore, inspire, create, and achieve. Please check out the ROADS website for more information: <https://nwessp.org/mars/about/>

The MLC also hosts the Montana Aerospace Scholars program for the Museum of Flight in Seattle/NASA. Each year high school sophomores and juniors come to the

MLC for an aeronautics experience where they plan and carry out a mission to Mars.

Eligibility:

Participants must be a full-time registered student (previous two semesters/three quarters) at a Montana campus and must be intending to enroll full time for the fall, have a GPA of 3.0 or higher, have an interest in education/working with the general public/kids and space science. This opportunity is for students from all MSGC affiliated campuses.

Pay ranges from \$5000 - \$6,000 for ten weeks full time work depending on experience. Room and board provided at the MLC when camps are in session.

Application Deadline - April 2020 or until filled.

<https://spacegrantmontana.submittable.com/submit/128187/internship>

Ecology Project International:

is offering 7-9 day field-based professional development courses for educators focused on providing tools and methodologies to bring Next Generation Science Standards into the classroom. Travel to Costa Rica, the Galapagos, Yellowstone, or Baja to develop curriculum aligned to NGSS, model engaging student activities, and network with fellow educators. Come snorkel with whale sharks, study giant tortoises, or research bison in a national park while you build NGSS storylines around amazing natural phenomena. Courses are offered in Spring and Summer and you can find dates, prices, and locations here: www.ecologyproject.org/ngss.

What's the course actually like? Watch a short testimonial from a teacher on course:

<https://www.youtube.com/watch?v=zwZ-m87Y0#action=share>

Caitlin Gill | Education Partnership Coordinator

Ecology Project International

406.218.2613

315 S. 4th Street E. | Missoula, MT 59801

www.ecologyproject.org

National STEM Scholar Program

We need your help to share an all-expenses paid professional learning opportunity for middle school science teachers affiliated with your organization. Applications are now being accepted for the 2020 class of the National STEM Scholars Program, a program designed specifically for middle school science teachers inspiring the next generation of STEM (science, technology, engineering and math) pioneers nationwide.

Seeking middle school science teachers who:

- *enjoy the creativity in teaching
- *are eager to share ideas with colleagues
- *are excited about networking with peers from across the U.S.
- *would like financial and academic support for great ideas

The National STEM Scholar Program works to inspire the creativity and passion of middle school science teachers, ten of whom will be selected for this prestigious program. The next set of Scholars will be hosted by The Gatton Academy of Mathematics and Science and The Center for Gifted Studies from May 31 - June 6, 2020 at Western Kentucky University in Bowling Green, Kentucky.

Scholars will engage in hands-on, minds-on science activities; connect with speakers and thought leaders in STEM education; learn with skilled science educators; and develop a creative Challenge Project for classroom implementation. Each Scholar will receive a Chromebook and funding for Challenge Project supplies and materials.

National STEM Scholars will share midpoint progress with their colleagues while attending the National Science Teachers Association annual meeting in April 2021. Mentoring will be provided throughout the year by Western Kentucky University faculty.

All expenses, including travel costs, materials, mentoring and Challenge Project supplies will be covered by a grant from the National Stem Cell Foundation. If you have questions, please call 270-745-6323 or email gifted@wku.edu.



MONTANA LEARNING CENTER est. 1984
at Canyon Ferry Lake

Summer Camps 2020

Spend the summer as a scientist at Montana's premier science camp for kids, and explore the world around you!

ILLUMINATING YOUNG MINDS

Find camp descriptions and registration at montanalearning.org

The advertisement features a collage of images: a child looking through a telescope, a group of children smiling, a child fishing in a lake, and a child wearing a cap and sunglasses. A central graphic shows a landscape with a tree, a lake, and a sunset, with a magnifying glass over a small globe and a fish.

MSTA Regions

