

INTERCHANGE

October 2005

Volume 12, Number 4

From the Regional Math and Science
Center at Grand Valley State University

*Our Vision: Math and Science: Excitement in
Learning for Success in Living*

*Our Mission: Provide and coordinate
leadership, programs and services to achieve
excellence for all in the teaching, learning and
application of mathematics and science.*

In this Issue...

WET your student's appetite for water, get ready for the **Seventh Annual Michigan Statistics Poster Competition**, explore **Einstein's universe**, brush up on **Algebra**, and dig into **earth science!**
Stories on *pages 2-3*

Science and Math Update has articles about sinkhole plumes, antimalarial drugs, and apples, *pages 4-5*

Articles about a **Statistics Career Fair**, **Professional Development Courses**, and opportunities for **astronomy** buffs are on *page 6*

Calendar of Events for fall are on *pages 7-8*

Math (MCTM) comes to Grand Rapids and **JASON** goes to Mars! *page 8*

Join us for the Fall Science Update Seminar!

The Regional Math and Science Center cordially invites you to join us as we celebrate the 21st anniversary of the Fall Science Update Seminar on Wednesday, November 16, from 4:00 to 9:00 p.m. on Grand Valley State University's Allendale campus.

The theme for this year is "*Science is Core for our Future.*" This theme was chosen to reflect the growing need and demand for science education in America. We have invited Mr. Kevin Richards from the Michigan Department of Education to speak about the national and state focus for science education that is coming from all directions: business and industry leaders, legislators, school administrators and other professional organizations, emphasizing how crucial it is for science to be strengthened within our educational system. Don't miss this special event!

Other sessions will provide current content information and teaching strategies in biology, environmental science, health science, earth science, physical science, and engineering. Some sessions will use inquiry-teaching methods as tools for discussion and experimentation. Opportunities for student learning adventures; both as field trips and/or classroom experiences, will also be presented. These are just a few of the exciting, learning opportunities available for our participants.

see "Fall Science Update" on page 2

World Year of Physics Science Extravaganza!

Science, Mathematics, Technology, Activities, Presentations, Fun! That's what you will find on Saturday, October 29th, on the Allendale Campus of GVSU at the **Super Science Saturday Open House: Celebrating Phenomenal Physics**. Don't miss this day of science fun for K-12 students, teachers, parents, and the entire community!

Every lab and classroom in Padnos and Henry Halls will be filled with hands-on activities. Experience how physics connects with all areas of science including biology, chemistry, geology, health sciences, mathematics, statistics, engineering, and more. Presentations on astronomy and "whiz-bang" science will be provided by specially invited guest Congressman Vern Ehlers and physicists from the Inside Einstein's Universe Forum. Joining in this day-long event are area members of the American Chemical Society celebrating National Chemistry Week.

see "Year of Physics" on page 2

Fall Science Update

continued from page 1

Whether you are a new or returning teacher, this evening mini-conference promises to be an informative and relaxing evening where you can enjoy collegiality with other teachers, as well as take time to explore new trends and ideas in education. As always, there will be a wide range of grade-appropriate sessions from which you may choose. The brochure can be downloaded from the RMSC web site at the end of September at www.gvsu.edu/rmsc or call (616) 331-2267 for additional information.

Year of Physics

continued from page 1

Super Science Saturday events will take place from 9:00 a.m. – 3:00 p.m. and are free and open to the public. School groups are requested to provide one adult chaperone for every five students.

INTERCHANGE

Where information is given and received for the purpose of advancing excellence in mathematics and science education. Published six times. Deadline for copy for the November issue of *Interchange* is October 18, 2005.

Regional Math & Science Center
328 Henry Hall
Grand Valley State University
1 Campus Drive
Allendale, MI 49401

Telephone: 616-331-2267
Facsimile: 616-331-3412
e-mail: mthscctr@gvsu.edu
Web Page: www.gvsu.edu/rmsc

Mary Ann Sheline, *Director*
Mary Ann Watters, *Office Coordinator*
Karen Meyers, *Assistant Director*
Steve Mattox, *Newsletter Editor*
Tari Mattox, *Newsletter Editor*
Margo Dill, *Program Coordinator*
Kelly Heid, *Program Coordinator*
Rita Cooper, *Secretary*
Shelly Micho, *Secretary*

These materials were developed under a grant awarded by the Michigan State Board of Education.

This open house is sponsored by the Regional Math and Science Center, Physics Department, and College of Liberal Arts and Sciences (CLAS) at GVSU in conjunction with Laker Homecoming, with special funding provided by CLAS, the Michigan Space Grant Consortium, and the NASA-Smithsonian Universe Forum.

For more information about this event, contact the Regional Math and Science Center at (616) 331-2267 or go to www.gvsu.edu/rmsc.

Train for Project WET

Are you looking for K-12 activities to help your students learn about the hydrosphere? If so, Project WET (Water Education for Teachers) may be what can help you. With coordinators in every state, Project WET provides training on its activity guide that contains almost 100 lessons that are correlated with state standards and benchmarks.

In a hands-on Project WET workshop, you will experience many of the WET activities. The workshop will be at the Pierce Cedar Creek Institute in Hastings on November 5, 2005 from 9:00 a.m. -3:00 p.m. The cost of training and lunch is \$35, which includes the 500+ page activity guide and other materials. Contact Jen Howell to register at (269) 721-4473 or email her at howellj@cedarcreekinstitute.org.

In addition to the training, there is an opportunity to become a Project WET facilitator. Dr. Janet Vail, Michigan Project WET Coordinator and Associate Professor at the GVSU Annis Water Resources Institute, will be preparing facilitators on November 4th from 1:00-5:00 p.m. who will then assist with the Project WET training on November 5th. Overnight accommodations for

this training are available at the Pierce Cedar Creek Institute. If you are interested in becoming a Project WET facilitator, please contact Janet Vail at (616) 331-3048 or vailj@gvsu.edu for an application form and more details.

Announcing Statistics Poster Competition

The Department of Statistics at Grand Valley State University, the Regional Math and Science Center at GVSU, and the Michigan Council of Teachers of Mathematics are pleased to announce the Seventh Annual Michigan Statistics Poster Competition for K-12.

The *NCTM Standards for Curriculum and Evaluation in School Mathematics* presents the vision that problem solving is a primary goal of mathematics instruction and recommends student involvement in statistical activities at all grade levels. According to the *Standards*, and echoed by the benchmarks in Michigan's Curriculum Frameworks, statistical thinking should begin in the primary grades with the creation of student data from class activities. In upper grades, collecting, organizing, summarizing, and interpreting data are emphasized. The statistical poster competition is a powerful tool for attaining these goals while exercising essential communication skills. In addition, the competition provides a means for students to be creative and to have fun.

A statistics poster tells the story of a data set through numbers and graphs. A series of four articles that explain the process used to create a statistics poster and photos of last year's winning entries are available at the MSPC website at www.gvsu.edu/stat/statposter or by contacting John Gabrosek at (616) 331-3691 or via email at mspc@gvsu.edu. All

students in K through 12 residing in Michigan are eligible to submit statistics posters to the competition.

Entries will be judged in four different grade level categories: K-3, 4-6, 7-9, and 10-12. Students may work individually or in teams. For the K-3 category, there is no restriction on the size of the team; it may be as large as the entire class. For the other three categories, the team may have up to four students.

There is no entry fee. The deadline for submitting a poster to the Department of Statistics at GVSU is March 3, 2006 and prize winners will be notified by April 1, 2006. First, second, and third place prizes in the amounts of \$72, \$48, and \$36, respectively, will be awarded in each of the grade level categories, and winning entrants' schools will receive plaques signifying the honor. Honorable mention certificates will be awarded, as well. **Online Registration.** Posters can be entered through the competition website www.gvsu.edu/stat/statposter. For more information, contact event organizer John Gabrosek at (616) 331-3691 or mshpc@gvsu.edu.

Building Confidence in Algebra Teaching

This Algebra II workshop is designed to provide elementary teachers content knowledge and pedagogy so they can effectively teach:

- Patterns, relations, functions, and change
- Representation (graphs)
- Formulas, expressions, equations, and inequalities

The course will be taught by GVSU's Esther Billings. All sessions address the new Michigan Grade Level Content Expectations (GLCE) for the Michigan Curricu-

lum Framework (MCF).

This workshop examines algebra topics that were not explored in the Algebra I workshop offered in summer 2005, and you may sign up for this workshop even if you did not participate in the Algebra I workshop. Sessions meet October 26, November 2, 9, and 30, and December 14 from 4:30-8:00 p.m. in 303 Henry Hall on GVSU's Allendale campus. The \$80 fee includes all materials and a light dinner. To register or for more information contact Karen Meyers at (616) 331-2515 or meyersk@gvsu.edu.

Exploring Einstein's Universe

This series of workshops is designed to provide middle school and high school teachers content knowledge and pedagogy so they can effectively teach some of the revolutionary physics proposed by Einstein in 1905, his "miraculous year." This teacher



Young geologists on a fieldtrip to Grand Ledge during the Digging Rocks Summer Science Adventure Day Camp, Summer 2005.

professional development activity will provide a rich understanding of:

- relativity
- the photon nature of light
- measurement of the cosmos
- classroom instructional strategies

The course will be taught by GVSU's Brad Ambrose and Keith Oliver. All sessions address the standards in the Michigan Curriculum Framework (MCF). Sessions meet November 8 and 29 and December 13 from 4:30-8:00 p.m. in 303 Henry Hall on GVSU's Allendale campus. The \$45 workshop fee includes all materials and a light dinner. To register or for more information contact Karen Meyers at (616) 331-2515 or meyersk@gvsu.edu.

Dig into Earth Science Week

The week of October 9-15, 2005 has been designated as Earth Science Week. Since October 1998, the American Geological Institute has organized this national and international event to help people gain a better understanding and appreciation for the Earth Sciences and to encourage stewardship of the Earth. This year's focus is on Earth Science Careers to help students learn about what geoscientists do and how their work is important to society.

Teacher and student materials, suitable for elementary through college-age classroom use, are now available. For more information on this event and a monthly newsletter, "Earth Science Week Update", visit the Earth Science Week website at www.earthsciweek.org.

Mapping a Sinkhole Plume

Bopi Biddanda, Annis Water Resources Institute

Dissolution of Paleozoic bedrock (~400 million years old) in the Lake Huron Basin has led to karst formations (sinkholes) through which groundwater containing ancient nutrients may flow and emerge not only at lower elevations on land, but also on the lake floor. Although the importance of groundwater discharge to coastal freshwater and marine systems is now well recognized, submerged sinkholes have not been the focus of study by either limnologists or oceanographers.

A multidisciplinary exploratory team from the Institute for Exploration (Dwight Coleman), Great Lakes Environmental Research Laboratory (Steve Ruberg, Greg Lang), University of Michigan (Tom Johengen, Guy Meadows, Hans VanSumeren) and Grand Valley State University (Bopi Biddanda) located and mapped a submerged sinkhole with dimensions 55 m x 40 m x 1 m at a depth of 93 m in the North Central region of the Thunder Bay National Marine Sanctuary, Lake Huron during September, 2003. Conductivity, temperature, depth (CTD) and an acoustic navigational tracking system integrated with an open frame remotely operated vehicle (ROV) provided high-resolution CTD maps of the sinkhole and plume. Conductivity is a measure of the ability of water to pass an electric current, and is expressed in units of micro Siemens per centimeter ($\mu\text{S}/\text{cm}$). Conductivity of water at any given temperature is strongly influenced by the presence of dis-

solved substances such as chloride, silicate and sulfate ions. Typically, ground and river water have higher conductivity than lake waters. Relative to ambient Lake Huron water temperatures (surface water 14 °C; deep water 4 °C) and conductivity (surface water 150 $\mu\text{S}/\text{cm}$; deep water 200 $\mu\text{S}/\text{cm}$), the deep sinkhole environment was characterized by higher temperatures (7.5 °C) and very high conductivity (1800 $\mu\text{S}/$

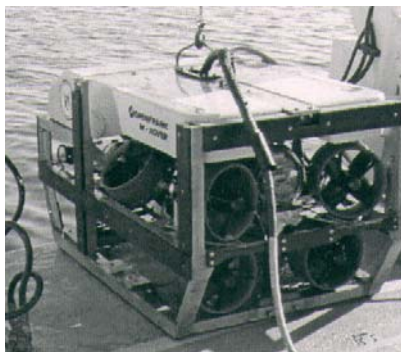


An estimated one million people in Africa die from malaria each year



cm) suggesting active groundwater seepage at depth.

Complex linkages existing between surface water and groundwater driven by hydrologic and climatic conditions may influence both the composition



The University of Michigan's ROV with navigational tracking and CTD systems

and discharge of groundwater venting in karst sinkholes that may fuel unique life forms and biogeochemical processes in these ecosystems. Future plans include a continued exploration of the many sinkholes found throughout this karstic system in the Great Lakes Basin. Results of this study (funded by NOAA's Office of Ocean Exploration) are reported in a research article: "Groundwater Plume Mapping in a Submerged Sinkhole in Lake Huron" (*Marine Technology Society Journal* v.39, p.65-69, 2005).

Designing New Antimalarial Drugs

By Linda Goossen, Clinical Laboratory Science

Malaria is caused by mosquito-borne parasites, *Plasmodium* spp. Following introduction of the parasite into the skin of man, the parasites ultimately invade red blood cells, causing clinical symptoms and in many cases, death. An estimated one million people in Africa die from malaria each year, and most of the victims are children under 5 years old (The World Health Report 2002).

Researchers, Niraj Tolia, Leemor Joshua-Tor, and Kim Lee Sim, of the Cold Spring Harbor Laboratory recently reported on advances in understanding the mechanism by which malaria parasites invade human red blood cells (Cell. 2005 Jul 29; 122(2): 183-93.) Erythrocyte binding antigen 175 (EBA-175), a protein on the surface of *Plasmodium falciparum* binds to glycophorin A, a protein on the surface of red blood cells. This binding allows

the malaria parasites to invade red blood cells. The researchers determined the atomic structure of the binding portion of EBA-175, called the RII domain. The binding of parasite protein to red blood cell protein resembles a handshake with two molecules of RII clamping glycophorin A. This discovery led the researchers to test the hypothesis that blocking the RII interaction should prevent the parasite from binding to the red blood cells, and thus inhibit malaria infection. The results of the study supported their hypothesis – the altered RII failed to bind to RBC. The findings suggest that drugs or vaccines that block the binding of *Plasmodium falciparum* to red blood cells may prove to be effective therapies for malaria.

Apples in History

By Christina Fox and Sheldon Kopperl, Department of Biomedical Sciences

Today, more than 7,500 varieties of apples are grown worldwide. News sources have stated that McDonald’s restaurants expect to purchase about 54 million pounds of apples each year. Apples are an integral part of our lives and have numerous nutritious benefits! The January 2005 issue of “The Grower” said that a newly published scientific review reported that eating more fiber—and phytonutrient-rich fruits and vegetables, including the flavonoids found most abundantly in apples—may significantly reduce the risk of developing digestive cancers. Other similar articles note that apples have a multitude of health benefits including

fighting breast cancer, age-related brain disorders, and oxidative damage.

The Grand Rapids Press, May 29, 2005 issue states that “Some apples may serve up more health benefits than others...Red Delicious and an apple called Northern Spy contain more disease fighting antioxidants in their skin and flesh than any other [variety] studied.” According to the article, these antioxidants help control free radicals in the



apples have a multitude of health benefits including fighting breast cancer



body that may “play a role in the development of heart disease and prostate, colon, and other cancers.”

Snow White, of the children’s fairy tale, is a young and naïve girl who takes a bite of a poisonous apple. Stories like these give the apple a bad image. It is thought that this fairy tale may be mimicking the story of Adam and Eve who ate from the Tree of Life. For many years, people assumed that the Tree of Life was an apple tree, but religious scholars now believe that it was more likely a fig tree.

There are many references to apples in Jewish and Christian texts. The *tappuach* (Hebrew for apple) was considered a great delicacy in *Songs of Songs 2:5* because of the aroma (*Esther 4:2*) and taste. It was also often made into apple wine, which was used to

completely cure a sage’s stomach-ache in the *Babylonian Talmud (Avodah Zarah, 40b)*.

One of our favorite references was in the *Midrash in Song of Songs 2:3* when God was compared to an apple tree. The apple tree provided no shade; on a hot summer day people “shunned” the tree and did not sit under its branches. This was considered analogous to nations “shunning” God on the day of the giving of the law. Another comparison was made in *Midrash*: as the apple tree brings out its blossoms before its leaves, Israel declared its faith before they heard the message. *Song of Songs 2:3* went on to say “Just as from the time the apple tree produces its blossom until its fruit is ripe fifty days elapse, so from the time that Israel went forth from Egypt until they received the *Torah* fifty days elapsed.” In *Exodus 1:12*, it is said women went into the field and gave birth under the apple tree.

With this journey through history that spans thousands of miles across the globe and thousands of years through time, we can see that apples have played a significant role in religious symbolism and history. Today, they serve as a source of good health and wellbeing. Being an apple farmer today means more than just producing food for children’s lunches, it is also about upholding the legends and history of an ancient delicacy that has been around for thousands of years.

(References are available on request)

These pages are produced by faculty, students, and staff from GVSU.

Visit Statistics Career Fair

On October 14 the Department of Statistics at Grand Valley State University and the SW Michigan Chapter of the American Statistical Association (ASA) will sponsor a Statistics Career Fair on the Allendale Campus. The career fair will provide high school and college students with an opportunity to learn about careers in statistics. Participants will meet with employers and professionals who use data to solve problems in a variety of fields, such as actuarial science, government, health care, and marketing. The lunch time keynote speaker is Fritz Scheuren, ASA President. There is no registration fee. Lunch is available for \$5 in advance. For more information as well as online registration, please visit the website at www.gvsu.edu/stat/ or contact Soon Hong at (616) 331-2057 or statcareerday@gvsu.edu.

Three Professional Development Courses

The MAISD Regional Mathematics & Science Center is offering three professional development opportunities this fall:

Teaching and Managing Inquiry in the Science Classroom

Jump start your science program with exciting student inquiry. Each day take home ready to use strategies that will help you manage teaching content through inquiry. Learn practical, easy, and fun methods for helping students design original high quality science investigations. Discover how to convert ordinary labs into high powered science fair projects. Develop a rubric for assessing inquiry all year long! Sessions led by Dave Krebs are designed for middle and high

school science teachers. Sessions meet October 27, November 29, and December 8 from 8:30 a.m.-3:30 p.m. \$30 per person. Credit: 1.8 SB-CEUs pending approval.

Basic Graphing Calculators: An Introduction for Math & Science Teachers

If your graphing calculator still sits in the unopened package and the keyboard looks overwhelming, then this is the workshop for you! We will cover basic number manipulation, creating tables of values, simple graphing, elementary statistics, and a few other concepts to kick-start your calculator use. It is assumed that you have no prior experience with graphing calculators. Uses of the TI-83, TI-83 Plus, TI-84 and TI-84 Plus will be presented. Bring your own calculator or we will provide one. Sessions led by Diane Krasnewich of MCC and are designed for middle school math and science teachers. Sessions meet September 22 and 29; 4:00 – 6:00 p.m. \$25 per person. Credit: 0.4 SB-CEUs pending approval.

Advanced Graphing Calculator Use for Middle School Teachers

This workshop is for teachers who already have some experience using a graphing calculator. After a quick review of basic concepts, we will concentrate on those topics in the Mathematics GLCEs that can be enhanced using a graphing calculator for classroom demonstration. We will also include some advanced graphing topics and information on downloading additional applications for the calculator. The TI-83, TI-83 Plus, TI-84 and TI-84 Plus graphing calculators will be used. Bring your own calculator or we will provide one. Sessions led by Diane Krasnewich of MCC are designed for grades 5-8 math and science teachers. Session meets October 18 from 4:00 – 8:00 p.m. \$35 per person. Credit: 0.3 SB-CEUs pending approval. All sessions meet at the Regional

Mathematics & Science Center at 1001 Wesley Avenue, Muskegon. For more information contact Dave Krebs at (231) 767-7317 or dkrebs@muskegonisd.org.

Apply to be a Teacher Leader in Astronomy

Ever wanted to study the stars and the sun with telescopes at Kitt Peak National Observatory near Tucson, Arizona? In this exciting program designed for middle and high school science teachers, funded by a National Science Foundation (NSF) grant, you will learn how to acquire astronomy data and support your students in conducting authentic astronomy research projects. In addition, the program will enhance your skill as a leader and mentor for those science teachers new to the profession.

The 2006 TLRBSE program includes four primary elements: 1) A 14-week online distance learning program with an emphasis on spectroscopy and data imaging, participating teachers receive 3-units of graduate credit from the University of Arizona; 2) A 2-week in-residence workshop (we pay a stipend, partial room & board, and up to \$500 for travel) at the National Optical Astronomy Observatory in Tucson, including several nights of research observing at Kitt Peak National Observatory, a world-class observatory complex high above the Sonoran desert of southern Arizona; 3) A program of ongoing mentoring support for beginning teachers; and 4) Partial funding to attend a national NSTA meeting with your mentees.

More information and an online application are available at www.noao.edu/outreach/tlrbse/. Application deadline is October 17, 2005. You must apply on-line. For more information call (520) 318-8526 or outreach@noao.edu.

CALENDAR *OF* EVENTS

SEPTEMBER

22 Thursday

Basic Graphing Calculators: An Introduction for Math & Science Teachers by Diane Krasnewich for middle school math and science teachers. 4:00 – 6:00 p.m. Also meets September 29 at MAISD RMSC. For more information contact Dave Krebs at (231) 767-7317 or dkrebs@muskegonisd.org.

27 Tuesday

Sam Rhine presents **Genetic Update Conference**. See details at www.samrhine.com.

OCTOBER

9-15 Sunday-Saturday

Earth Science Week. For more information visit www.earthsciweek.org.

13 Thursday

JASON Project: **Mysteries of Earth & Mars Network Site Teacher Training** at Kent ISD. 4:30 p.m. - 8:00 p.m. For additional training information, visit www.westmijason.org.

14 Friday

Statistics Career Fair on GVSU's Allendale Campus. For more information visit www.gvsu.edu/stat/ or contact Soon Hong at (616) 331-2057 or statcareerday@gvsu.edu.

14-15 Friday-Saturday

Combined meeting of the **Michigan Council of Teachers of Mathematics Conference** and **Teachers Teaching with Technology Regional Conference** in downtown Grand Rapids. For more information and registration visit www.mictm.org.

18 Tuesday

Advanced Graphing Calculator Use for Middle School Teachers by Diane Krasnewich for grades 5-8 math and science teachers. 4:00 – 8:00 p.m. at MAISD RMSC. For more information contact Dave Krebs at (231) 767-7317 or dkrebs@muskegonisd.org.

20 Thursday

AWRI seminar titled "**Cyanobacterial blooms: effects on aquatic ecosystems**" from 3:00 -4:00 p.m. by Dr. Karl Havens of the Department of Fisheries and Aquatic Sciences at University of Florida. Lake Michigan Center, 740 W. Shoreline Drive, Muskegon, MI. For more information call (231) 728-3601.

26 Wednesday

Algebra Concepts II for Elementary Teachers, part of the "Building Confidence through Content" series. 4:30-8:00 p.m. By Esther Billings of GVSU. 303 Henry Hall on the Allendale Campus. \$80 (includes light dinner and materials). Sessions also meet November 2, 9, 30, and December 14. To register or for more information contact Karen Meyers at (616) 331-2515 or meyersk@gvsu.edu.

27 Thursday

Teaching and Managing Inquiry in the Science Classroom by Dave Krebs for Middle and High School Science Teachers. 8:30 a.m.- 3:30 p.m. Also meets November 29, and December 8 at MAISD RMSC. For more information contact Dave Krebs at (231) 767-7317 or dkrebs@muskegonisd.org.

29 Saturday

Super Science Saturday Open House: Celebrating Phenomenal Physics for K-12 students, teachers, parents, and the entire community on the Allendale Campus of GVSU from 9:00 a.m. to 3:00 p.m.. Free and open to the public. Padnos and Henry Halls. For more information contact the RMSC at (616) 331-2267 or go to www.gvsu.edu/rmsc.

NOVEMBER

5 Saturday

Project WET (Water Education for Teachers) training for K-12 teachers. 9:00 am -3:00 pm. at the Pierce Cedar Creek Institute in Hastings. \$35 (includes lunch). Contact Jen at (269) 721-4473 or howellj@cedarcreekinstitute.org. If you are interested in becoming a Project WET facilitator, contact Janet Vail at (616) 331-3048 or vailj@gvsu.edu.

8 Tuesday

Exploring Einstein's Universe, part of the World Year of Physics 2005 – Workshop Series. 4:30 – 8:00 p.m. Designed for middle and high school teachers. Presented by GVSU's Brad Ambrose and Keith Oliver in 303 Henry Hall on the Allendale campus. \$45 (includes a light dinner and materials). Sessions continue November 29 and December 13. To register or for more information contact Karen Meyers at (616) 331-2515 or meyersk@gvsu.edu.

16 Wednesday

GVSU RMSC's **Fall Science Update Seminar**. 4:00 to 9:00 p.m. on GVSU's Allendale campus. Visit www.gvsu.edu/rmsc or call (616) 331-2267 for additional information.

AWRI seminar titled "*Cyanobacterial When does diversity matter? Microbial species and ecosystem function in northern peatlands*" from 3:00 -4:00 p.m. by Dr. Stephen C. Nold, Assistant Professor of Biology at University of Wisconsin – Stout. Lake Michigan Center, 740 W. Shoreline Drive, Muskegon, MI. For more information call (231) 728-3601.

MCTM Coming to Grand Rapids!

Get two conferences for the price of one! *Mathematics & Technology: Making Waves Toward the Future* is the theme for the combined 2005 Michigan Council of Teachers of Mathematics (MCTM) 56th Annual Conference and Teachers Teaching with Technology (T³) Midwest Regional Conference. The focus of the conference is teaching and learning of both mathematics and technology. The conference will be held in downtown Grand Rapids on **October 14-15, 2005**. The pre-conference session on the afternoon of October 13 will provide an in-depth session with Paul Bielawski of the OEAA / MDE, addressing Adequate Yearly

Progress and the impact of subgroups on AYP. For more information and registration form visit www.mictm.org.

JASON Goes to Mars

JASON Expedition: Mysteries of Earth and Mars offers middle-grade students learning opportunities through a wide range of scientific exploration. We will look at Mars analogs, or locations on Earth where environmental conditions, geologic features, or biologic attributes resemble in some way those thought to exist on Mars, now or in its past. This provides new insights into the nature and history of Mars, Earth and life itself. Deserts on Earth provide a good point of comparison for scientists trying to learn more about the Martian landscape. Like Earth, Mars has seasons, weather, floodplains, polar ice caps, volcanoes, canyons, craters, and an atmosphere. Exciting recent findings hint at the presence of liquid water. Water is one of the key ingredients for life; we will examine the role that water plays in shaping life here on Earth and apply that knowledge to the search for life elsewhere in the solar system. We will also explore

the cutting edge research and technology that goes into a robotic mission to Mars; the efforts to one day send humans to Mars.

Dr. Robert Ballard and a team of scientists will take middle grade students and teachers on the trip of a lifetime...to Mars! Working with renowned partner organizations such as NASA, as well as research and academic institutions around the world, students will conduct investigations and make discoveries that will help unravel the Mysteries of Earth and Mars.

Lessons, articles, video, live interaction with scientists and hands-on activities will help:

- Supplement and enrich students' study of key science topics in Earth, Life, and Physical Sciences
- Engage students in the process of scientific inquiry
- Connect important science concepts in a real world context
- Correlate to major textbooks and science kits
- Motivate all types of learners
- Meet state and national science standards

To learn more about JASON and The Mysteries of Earth and Mars see www.westmijason.org.



Regional Math and Science Center
328 Henry Hall
Grand Valley State University
1 Campus Drive
Allendale, MI 49401

Address Service Requested

110000 40600 100

NON-PROFIT ORG
U.S. POSTAGE
PAID
GRAND VALLEY
STATE UNIVERSITY

THIRD CLASS