
Water in New Mexico

NMAS 2012 Annual Meeting and Distinguished Lecturer

December 1, 2012

Please join us beginning at 6PM for the
NMAS 2012 Annual Banquet, Awards, and Lecture

We are honored to present the 2012 Distinguished Lecturer:

John Fleck
Science Writer and Author

discussing

***“Water in New Mexico:
Problems of Scarcity,
Searches for Solutions”***

Read more about John on page 6

Dinner will begin at 6PM
followed by the NM Outstanding Science Teacher Awards and Lecture

The evening will be held at the New Mexico Museum of Natural History
& Science, 1801 Mountain Rd. NW, Albuquerque, NM

See page page 8 for the banquet/lecture registration.

Register NOW for this event!

Pay Membership Dues!

Please Pay 2012 Membership Dues!
The last year you paid dues is on your mailing label. If you have not yet paid dues for 2012, please fill out the form on page 7 and send your dues to NMAS.

DID YOU KNOW?

NMAS Members: We are looking for NMAS officers and board members, including a new VP, Director-at-Large and an NMAS newsletter editor. If you are interested, please contact any officer or board member listed on page 2.

For more information go to www.nmas.org



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NMAAS MEMBER NEWS...

The NMAAS Officers and Board
acknowledge
Angela Wandinger-Ness
Director-at-Large 2011-2012
and NMAAS Past President
for her service to the Academy
as she leaves the NMAAS Board.
THANK YOU Angela!

NMAAS Members...we are looking for officers and board members, including a new Vice President and an NMAAS newsletter editor. If you are interested, contact any officer or board member listed on this page.

For more information go to
www.nmas.org or email nmas@nmas.org

Our Thanks to those who have made donations to NMAAS

Endowment Donations
Second half of 2012

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NMAAS Newsletter
Volume 98, no. 3
Fall/Winter, 2012

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NEW MEXICO ACADEMY OF SCIENCE

Founded in 1902 to foster scientific research and scientific cooperation, increase public awareness of the role of science in human progress and human welfare, and promote science education in New Mexico.

The Academy has been in continuous existence since 1915, and became formally associated with the New Mexico Museum of Natural History and Science in 1995.

Affiliated with the American Association for the Advancement of Science (AAAS)

Member of the National Association of the Academies of Science (NAAS)

DID YOU KNOW?

The New Mexico Rural Water Association is a non-profit membership organization that provides training and technical assistance to small water and wastewater systems. Their Annual Conference, scheduled for April 15-18, 2013 will feature classes, workshops, and hands-on training sessions. For information go to <http://www.nmrwa.org/>

President's Message - November 2012

Jesse Johnson

The Scientific Method For Non-Scientists

Those of us who have judged at multiple science fairs have probably witnessed several projects that have a very rigid structure. They have a hypothesis clearly stated, a list of materials and equipment, a procedure, some data and a conclusion. In the end, the projects go through a review of sorts by the judges. It's not quite a peer review, but it is, in a way, an emulation of peer review. In short, it is a very strict application, or at least presentation, of the scientific method.

Of course, the scientific method, outside the confines of middle and high school, isn't always so neat and tidy, but it does share many of the same elements. Somebody notices something interesting or has a problem to solve and starts thinking about it. A hypothesis is formed, funding is sought in order to do the research needed, data are gathered, and the hypothesis is tested. If the test fails, the hypothesis is refined or discarded for another and the testing begins anew. The process of testing can differ depending upon whether it is a laboratory, theoretical, or observational science. Sometimes multiple working hypotheses are tested simultaneously. Eventually, results or partial results or even negative results will be presented to peers - experts in the field - at professional meetings and in scientific journal publications. Peers will review the work; that is, pick it apart and look for flaws. Other scientists will continue to research the same problem and test the hypothesis, and publish or present new information that either confirms or changes the original hypothesis.

It is important to note that this method is not something that is used to arrive at some grand truth. Rather, it is a method used to derive plausible explanations and descriptions of the natural world, and these explanations must have verified predictive value. With Newton's laws, for example, one can predict where a projectile will land given a known position and velocity, yet those laws have been superseded by quantum mechanics. Does this mean that Newton's laws are wrong? Perhaps they simply don't adequately explain what happens at the quantum level but do very well on scales easily perceived by humans.

While this lack of 100% absolute ironclad certainty in science may seem like a flaw to some, it is in fact a strength. It is, in essence, an understanding that no matter how good our understanding of a phenomenon is, there may be a better one, or a deeper one, which leads us to strive for an improvement. Sometimes saying "I don't know" is good as it can be the beginning of the path to a greater and deeper understanding of our world.

If the students participating in science fairs properly learn the methodology and nothing else, then that alone makes those fairs worth it. Knowing that an idea may be wrong, then taking a rational approach to gathering information and then testing the idea is a powerful tool to use. Not all kids who participate in science fairs go on to be scientists. This does not mean that the methodology used in science holds no value for them.

Indeed, a methodology that lends itself towards deriving rational explanations can be used in a multitude of ways. It can be used by attorneys preparing for a case and historians or detectives trying to figure out what actually happened in the past. It can be used by educators trying to improve student learning. It can and should be used by elected officials when making policy decisions. The list of ways that it can be applied in life outside of science is almost boundless. This is one of many reasons why a sound education in science is important. It can provide students with vital and powerful reasoning skills for use later in life, even if they don't go on to be physicists, chemists, geologists, or biologists. Even, in fact, if they do not go on to college.

NMAA values a sound education in science, so much so that we hold a paper competition for high school students every year. While we are encouraging these students to become scientists later in life, we should not discount the potential benefits for those who don't. We are trying to help them hone skills that will benefit them later in life, no matter what job they may choose.

But what are the best ways to teach students the scientific method, and are science fairs really effective when it comes to teaching students about it? To both of those questions, I will leave you with my answer: I don't know.

2012-2013 New Officers Slate

President Elect

Michaela Buenemann

Vice President

To Be Filled (please nominate a candidate)

Secretary

Malva Knoll

Director-at -Large

To Be Filled (please nominate a candidate)

Election of new officers and directors will take place at the December 1 annual banquet. If you are interested in the VP or Director-at-Large positions, please contact any officer and submit your name.

The President Elect Candidate is:

Michaela Buenemann, Ph.D.

Assistant Professor

Department of Geography

New Mexico State University

Michaela Buenemann is an Assistant Professor of Geography in the Department of Geography at New Mexico State University (NMSU). Before moving to her current position in 2008, she taught at the University of Oklahoma, James Madison University, and the University of Arizona. She earned her Ph.D. in geography from the University of Oklahoma in 2007. Her research focuses primarily on integrating remote sensing, geographic information systems, and spatial modeling for the monitoring and assessment of land changes in drylands, including both more subtle and gradual land modifications such as woody plant encroachment and more obvious and rapid land transformations such as urbanization. Her teaching includes courses in the areas of geographic information science and technology, human-environment relationships, and physical geography.

The Secretary Candidate is:

Malva Knoll

Science Educator (Retired)

Malva Knoll received her Masters Degree in Secondary & Adult Science Education from the University of New Mexico in 1980. She worked as a high school chemistry teacher for Albuquerque Public Schools from 1975-2007; and was Director of Education for the National Museum of Nuclear Science & History from 2007-2012. She has been a strong supporter of NMAAS and has served as an NMAAS officer previously. She served as Secretary from 1988-1994 and was NMAAS President in 1995. She is currently also active with NM Science Teachers' Association. We are very pleased to welcome her back as an active officer and board member of the Academy.

Active Participation in NMAAS

Ruth Duggan, NMAAS Membership & Publicity

Are you an active member of NMAAS?

- Are you checking the website regularly for new opportunities to volunteer in science education in New Mexico?
- Are you engaging your local schools to support science and math education?
- Have you invited a friend to join NMAAS?
- Are you making plans to attend the Annual banquet and award ceremony in December?
- Are you considering serving as an officer in NMAAS?

These are just a few examples of how you might become more active in NMAAS. It is through the active participation of its members that NMAAS becomes a strong organization and a force that makes a difference in New Mexico.

**Make a Difference in New Mexico
DO IT TODAY!**

2012 New Mexico Journal of Science

The topic of the 2012 NM Journal of Science is New Mexico's Water Resources. New Mexican scientists from around the state have submitted articles covering a range of water-related topics for the publication that are currently undergoing peer review..

Dr. Kurt Anderson, President Elect, is the NMAAS Journal Editor and is hard at work completing the volume. The Journal will be an online publication. If you are a paid member for 2012 you will be able to access the Journal through the NMAAS website. Pay your dues now for 2012, if you have not yet done so, in order to receive the Journal.

DID YOU KNOW?

A newly formed water group in our state is the New Mexico Water Collaborative, a nonprofit corporation dedicated to the reduction of water footprints for communities in New Mexico. The Collaborative provides resources for the people of New Mexico to facilitate the implementation of water conservation strategies, build sustainable water projects, and educate our communities about critical water issues. For information go to: nmwatercollaborative.org

Next Generation Science Standards

Compiled by Jayne Aubele, NMAAS Newsletter Editor

Editor's Note: This article is taken from information on the NGSS website. For more information on NGSS go to <http://www.nextgenscience.org/>

A new effort is under way to define nationally accepted science standards for K-12 education.

Science—and therefore science education—is central to the lives of all Americans, preparing them to be informed citizens in a democracy and knowledgeable consumers. Each of the 50 states have varied science standards that are generally adapted from two national sources: the National Science Education Standards from the National Research Council (NRC); and Benchmarks for Science Literacy from the American Association for the Advancement of Science (AAAS). However, these documents are 15 years old; and major advances have since taken place in the world of science and in our understanding of how students learn science effectively.

Recently national standards in math, English language arts, and social studies called “Common Core” have been adopted by the states, including New Mexico. In order to focus on new standards for science, a partnership was developed by four organizations: the National Research Council; the National Science Teachers Association; the American Association for the Advancement of Science; and Achieve (an independent, bipartisan, non-profit education reform organization that helps states raise academic standards). These organizations embarked on a two-step process to develop a new, complete, consistent, and national set of science standards, called the “Next Generation Science Standards.”

Step One: Getting the Science Right. The National Research Council (NRC), the staff arm of the National Academy of Sciences, began by developing the *Framework for K-12 Science Education*. The *Framework* was a critical first step because it is grounded in the most current research on science and science learning and identified the science all K-12 students should know. To undertake this effort, the NRC convened a committee composed of practicing scientists, including two Nobel laureates, cognitive scientists, science education researchers, and science education standards and policy experts. In addition, the NRC used four design teams to develop the *Framework* in their respective disciplines. These disciplines are physical science; life science; earth/space science; and engineering. Note that engineering is a new addition to national science standards.

In order to identify the relevant core ideas for these four disciplines at the K-12 level, the NRC Framework Committee developed and applied a set of criteria. To be considered “core,” the ideas had to meet at least two of the following criteria and ideally all four: (1) Have broad importance across multiple sciences or engineering disciplines or be a key organizing principle of a single discipline; (2) Provide a key tool for understanding or investigating more complex ideas and solving problems; (3) Relate to the interests and life experiences of students or be connected to societal or personal concerns that require scientific or technological knowledge; (4) Be teachable and learnable over multiple grades at increasing levels of depth and sophistication. Number 1 is important in that it encourages the inclusion of core concepts related to sciences such as ecology, environmental science, and others that bridge several traditional disciplines.

Step Two: States Developing Next Generation Science Standards. In a process managed by Achieve, representatives from the states will lead the development of *K-12 Science Standards* arranged in a coherent manner across disciplines and grades to provide all students an internationally-benchmarked science education. Additional review and guidance will be provided by advisory committees composed of nationally-recognized leaders in science and science education as well as business and industry. As part of the development process, the standards will undergo multiple reviews from many stakeholders including two public drafts. This process will produce a set of high quality, college- and career-ready K-12 Next Generation Science Standards ready for state adoption.

The End Result...States Adopt the NGSS and Implement into the Curriculum. In the end, the decision to adopt the standards and make them consistent between states will lie in the hands of the states themselves. The Next Generation Science Standards will identify content and science and engineering practices that all students should learn from kindergarten to high school graduation. To reap the benefits of the science standards, states should adopt them in whole, without alteration. Adoption of the standards is only the first step toward improving educational opportunities for all students. For states that adopt the standards, they will need to be implemented in every classroom. As the standards will not define a curriculum, states and local districts will have the responsibility for providing more detailed guidance to classroom teachers, and will have room to fill in specific content to help students learn the key ideas in the standards.

A public draft of the *Framework* was released in July of 2010. The NRC reviewed comments and considered all feedback prior to releasing the final *Framework* on July 19, 2011. The Preliminary draft of the *Standards* was released in May 2012 and reviewed by educators, scientists, and the public. Each of the tens of thousands of comments collected during the review period is being carefully considered by the 26 lead state partners and the NGSS writing team. A feedback report will be issued that will explain how feedback was handled and why. The revised second public draft will be available in December 2012 on the NGSS website for public comment.

New Mexicans should note that New Mexico is not one of the 26 states that has official representation in the NGSS process; and the NM Public Education Department has not as yet acknowledged the need for working with or adopting the new standards. Representatives from the *New Mexico Partnership for Math and Science Education*, a statewide membership organization of formal and informal science education institutions and projects, have taken on the task of attending NGSS meetings as volunteers in order to represent New Mexico.

2012 NMAAS Distinguished Lecturer

John Fleck Science Writer and Author

John Fleck (in his own words) has been a journalist since he could drink legally, and has written about science and related topics for the Albuquerque Journal since 1990. He is a media fellow and contributing editor at Stanford University's Bill Lane Center for the American West. His specialty is the science, policy and politics of water. He is the author of *The Tree Rings' Tale*, a University of New Mexico Press book for young people about climate, water and the west.

His talk for the NMAAS on December 1 will be on New Mexico and the Southwest and our enormous water challenges. The needs of a rising population will soon collide with both the reality of a drought-prone climate and the likely impacts of climate change on the region's water supply. But he believes there are reasons to be optimistic - that we have the tools to cope with these problems.

Join us for a special NMAAS lecture by New Mexico's premier science journalist....

John Fleck
Science Writer
Albuquerque Journal

DID YOU KNOW?

The U.S. Geological Survey (USGS) web page for the water resources of New Mexico is a direct link to water-resource information including New Mexico's rivers and streams, groundwater, water quality, and many other topics. The USGS operates the most extensive satellite network of stream-gaging stations in the state, many of which form the backbone of flood-warning systems. The USGS provides current ("real-time") stream stage and streamflow, water-quality, and groundwater levels for over 130 sites in New Mexico, available to the public. For information, go to <http://nm.water.usgs.gov/>

THANK YOU to retiring NMAAS Secretary

Mona Pomeroy

After 15 years as Secretary of the New Mexico Academy of Science, Mona Pomeroy has submitted her resignation. NMAAS will miss her greatly and the Board and Officers wish to say a heartfelt THANK YOU to her for her expertise, hard work, and years of service to the Academy. We asked Mona to say a few words for this newsletter...and this is what she said....

"I grew up in Fort Sumner, and graduated from Fort Sumner High School. I graduated from the University of New Mexico with a Bachelor of Science degree in Education, Business emphasis. Married my college sweetheart, Harry Pomeroy in June 1957. We lived in Albuquerque and Hatch before moving to Clovis for Harry to teach Science.

NMAAS has been important to our family for decades [Note: Harry Pomeroy, Mona's husband, has also been an officer of NMAAS and is currently Awards Chairman]. When our two daughters were small we would sometimes accompany Harry to the NMAAS Board meetings and Marsha, Suzie, and I would do other activities while Harry was in the meeting. Where in the state the meeting was being held determined whether we accompanied him or not.

I became a member of NMAAS when I accepted the Secretary's position. When Malva Knoll was President in 1996 I substituted a few times as Secretary, then finished out Adrienne Podlesny's year when she could no longer serve, and was elected Secretary for the 1997 year and have served since.

I have met many wonderful and interesting people in NMAAS over the years. It has been a privilege to be part of the NMAAS Board."

DID YOU KNOW?

The New Mexico Water Resources Research Institute is located in Las Cruces, New Mexico at New Mexico State University. The NM WRRI was established in 1963 by the New Mexico legislature and approved under the 1964 federal Water Resources Research Act. The institute funds research conducted by faculty and students from universities across the state to address water problems critical to New Mexico and the Southwest. The institute also participates in joint efforts to solve water-related problems along the U.S./Mexico border. For information, go to wri.nmsu.edu

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Date _____ Name _____

Employer/Firm/Affiliation _____ Title _____

Primary Interest (geology, biology, chemistry, physics, science education, etc.) _____

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Check if your address is different from that on the mailing label of this newsletter []

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- [] Member \$25/year
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- [] Life \$400
[3/4 of amount goes to NMAS Endowment]
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(Libraries only)
- [] Contribution to the NMAS Endowment \$_____
- [] Contribution to the NMAS General Fund \$_____

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Total: \$ _____

Membership includes newsletters, and occasional special Journal of Science volumes (sent to life members and members who have paid their annual dues during the volume's year of publication).

Send check for membership and/or publications and donations, payable to NMAS, to:
New Mexico Academy of Science
1801 Mountain Rd. NW
Albuquerque, NM 87104

Please...make a donation to the NMAS Endowment to support science education programs!

NMAS PUBLICATIONS

New Mexico Journal of Science Set of all available pre-1992 back issues	\$10 _____
From Sundaggers to Space Exploration (NMAS/Sigma Xi, 1986)	\$4 _____
Dinosaurs of New Mexico (NMAS Journal v. 32, 1992)	\$10 _____
The Importance of Agricultural Science in New Mexico's Economy (NMAS Journal v. 34, 1994)	\$10 _____
Astronomy in New Mexico: Past, Present and Future (NMAS Journal v. 35, 1995)	\$10 _____
New Mexico's Natural Heritage: Biological Diversity in the Land of Enchantment (NMAS Journal v. 36, 1996)	\$10 _____
Environmental Management: Current and Future Needs (NMAS Journal v. 37, 1997)	\$10 _____
Water Resource Issues in New Mexico (NMAS Journal v. 38, 1998)	\$10 _____
Ensuring Sustainable Development of Arid Lands Through Time (NMAS Journal v. 39, 1999)	\$10 _____
NMAS Journal v. 40, 2000	\$10 _____
NMAS Journal v. 41, 2001	\$10 _____
NMAS Journal v. 42, 2002 (Centennial CD)	\$10 _____
NMAS Journal v. 43, 2003	\$10 _____
Science on the Border (NMAS Journal v. 44, 2006)	\$10 _____
NEW..Energy in the Southwest <small>Online at www.nmas.org/NMJoS-Volume-45.pdf</small> (NMAS Journal v. 45, 2008)	\$10 _____
Subtotal:	\$ _____
+ Handling:	\$ 2.00
TOTAL:	\$ _____

NMAS Newsletter
Volume 98 no. 3
Fall/Winter, 2012

Registration Form
NMAS 2012 Annual Banquet, Awards, and Lecture
6pm, December 1, 2012

Registration for NMAS banquet/awards/lecture evening event: \$38.00

Name: _____

Mailing Address: _____

Email address or phone number: _____

Registration for _____ persons

(@\$38.00 each) Total Amount Enclosed = \$_____

Please mail (or email or phone) your registration for the banquet/lecture event by November 28 to:

New Mexico Academy of Science
P.O. Box 13071, Albuquerque, NM 87192-3071
ATTN: David Duggan, Treasurer

To register for the banquet/lecture evening event by email (and pay with a check made out to NMAS when you arrive) contact nmas@nmas.org or phone 505-941-2840

Don't Delay....Registration must be received by November 28th.



**NEW MEXICO
ACADEMY
OF SCIENCE** | **Newsletter**

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