

NEW MEXICO ACADEMY OF SCIENCE

2007 ANNUAL SYMPOSIUM...ENERGY!

**The Annual Symposium will take place at the UNM Health Sciences Campus
at the Domenici Center NOVEMBER 10th
from 2:00-4:00pm. (See map on page 4)**

**THE SYMPOSIUM IS FREE AND OPEN TO ALL...
COME AND PARTICIPATE IN A DEMONSTRATION OF THE...**

Electricity Portfolio Simulation Model

**developed by Professor Tom Drennen, Sandia National Laboratories
and Richard Klotz, Hobart and William Smith Colleges**

Stakeholders often have competing interests when selecting or planning new power plants. This preliminary "Electricity Portfolio Simulation Model (EPSim)" is designed to help energy planners, policy makers, and energy students better understand the tradeoffs associated with competing electricity energy sources.

EPSim allows the user to explore competing electricity portfolios annually from 2002 to 2025 in terms of five different criteria:

- Cost
- Environmental impacts
- Energy dependence
- Health and safety
- Sustainability

A demonstration of this amazing model will be followed by a panel discussion featuring experts in nuclear energy, solar energy, sustainability, conservation, and utility management.

Both parts of the program will have extensive interaction with the audience.

THEN...please join us during the evening of November 10th for the...

***NMAS 2007 Annual Banquet,
Outstanding Science Teacher Awards
and Distinguished Lecture***

CELEBRATE the International Polar Year with our *Distinguished Lecturer*,
Cristina Takacs-Vesbach, Ph.D.
Department of Biology, University of New Mexico

**The Biology of the Antarctic McMurdo Dry Valleys-misconceptions,
surprises, and unsolved mysteries**

Dinner will begin at 6pm with the NM Outstanding Science Teacher awards and lecture following.

*The evening will be held at the New Mexico Museum of Natural History and Science.
See page 5 in this newsletter for more information and page 8 for the banquet registration.*



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Recent gifts to the NMAAS.....

In the category "Under \$100"
Beverly Graham
(Gifts to the NMAAS Endowment,
See page 6)

The NMAAS is looking for a new treasurer and a new newsletter editor....if you would like to serve your Academy...please contact any officer or board member.

NMAAS MEMBER NEWS

In 2007, the NMAAS sadly lost several members.

Dr. Tim Moy, Associate Professor of the History of Science, University of New Mexico, drowned at Kailua Beach, Hawaii, on July 22, while trying to help his 12-year old son. Dr. Moy was NMAAS Distinguished Lecturer in 2003.

Dr. Arthur Guenther, founder of the Center for High Technology Materials, University of New Mexico, died of cancer in April. Dr. Guenther was scheduled to receive the first Lifetime Service Award from the NM Optics Industry Association. He was Past-Chairman of the International Commission of Optics, and received the NMAAS Distinguished Scientist Award in 1977.

Costas Tsentas, long-time NMAAS member, died in late 2006. He was a paleontologist who lived in New Jersey but worked on New Mexico fossils; and was homesick for New Mexico for many years prior to his return to our state.

Dr. Waldemere Benjar, NMAAS, life member, of Socorro NM, died Feb. 9, 2007.

The New Mexico Academy of Science offers sincere condolences to the families and friends of these eminent members of the Academy.

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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)

President's Message - October 2007

Glenn Kuswa

Our Academy is completing another good year of service to the New Mexico science community. Our outreach program continues to bring working scientists into New Mexico classrooms, the Junior Academy of Science offers chances for youth to compete, learn, and in some cases go on to the national competition. We recognize the NMAAS Outstanding New Mexico Science Teachers every year. The board has been encouraging interaction with other organizations, and educating New Mexicans about such threats to scientific integrity as "Intelligent Design."

Our membership has been fairly stable in recent years, but that is not a good sign, as many of our members are older. We should encourage our friends and colleagues to join. We can also guarantee a good future for our Academy, now in its second century, by contributing to our endowment fund. The board has voted to place the endowment funds under the care of the Albuquerque Community Foundation, and shortly we expect to sign a contract that will enable our members to make legacy contributions secure in the knowledge that the funds will be well managed and likely to grow. We will be bringing more news of this in the next newsletter. So far, our endowment fund has grown to \$6000, thanks to the generosity of our members.

We have a very interesting program this year for the afternoon and evening Annual Symposium/Meeting and banquet on November 10th; the NMAAS has chosen to focus on the very important topic of ENERGY. We will present a new computer model that features a way to involve the audience in discussions about the relative merits of options for generating electric power. We will also have a panel of experts on renewable, nuclear, and fossil energy sources. This will be on the UNM campus at the Domenici Center (see the map on page 4).

The evening talk and banquet at the New Mexico Museum of Natural History and Science will feature polar science from the ongoing research of the International Polar Year. Dr. Cristina Takacs-Vesbach, from UNM, will talk about her research in the dry valleys of Antarctica and, as always, the Academy will present the awards to this year's Outstanding Science Teachers...and...there will be great food. Please sign up as soon as possible. More details can be found in this bulletin (see pages 5 and 8).

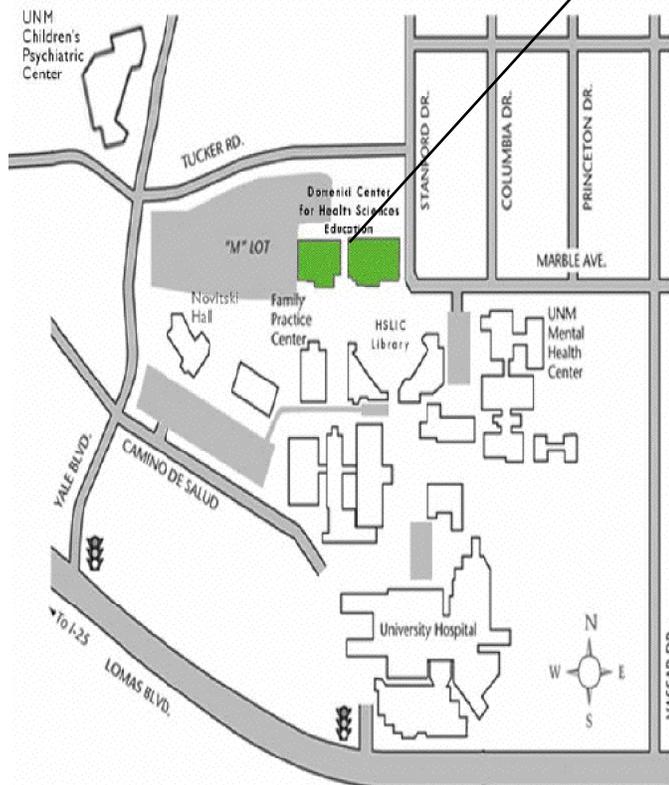
Note the new feature--profiles of members (see page 6). We hope to continue and to expand this to promote a better science community. Please volunteer your profile by calling or emailing the editor. We will also entertain profiles of non-members who are key to a strong New Mexico Science Community.

It has been an honor to serve NMAAS as president during the past year. Angela Wandinger-Ness will be taking the gavel for the next year.

DID YOU KNOW**...about Nuclear Power Plants?...**

- ♦ There are 103 nuclear power plants in the U.S.
- ♦ Nuclear power plants provide 19% of U.S. power.
- ♦ The state that uses the most nuclear-generated power is Vermont; it receives more than 70% of its power from nuclear power plants.
- ♦ The very first nuclear power plant was built in the Soviet Union (Russia) in 1954.
- ♦ Worldwide there are 439 nuclear power plants.
- ♦ The country that uses nuclear power the most is Lithuania; it receives more than 80% of its total power from nuclear power plants.
- ♦ If a person drank 1 liter of the typical nuclear power plant wastewater every day for 1 year, the additional dose of radiation they would receive would be 3.3 mrem - about equal to one round-trip jet plane flight.

Dont't forget about the NMAS Symposium, held on November 10th, 2 - 4 pm at UNM's Domenici Center
....see location below

Location of Domenici Center Auditorium**DID YOU KNOW****...about New Mexico's Geothermal Energy?...**

- New Mexico has abundant areas of geologically young volcanoes...which means abundant subsurface heat. New Mexico's considerable reserves of this clean, reliable form of energy have barely been tapped.
- But even so...New Mexico has more acres of geothermally heated greenhouses than any other state, and aquaculture, or fish farming, is a growing enterprise that makes use of our geothermal energy.

NYSC Delegates from New Mexico

NMAS has the responsibility of selecting New Mexico's delegates to the National Youth Science Camp each year. During the summer of 2007, these students represented our state.

First Delegate

Alaina Lee Schade,
Fort Sumner HS

Second Delegate

Emily J. Powell,
Los Alamos HS

First Alternate

Melissa A Hatch,
Rio Rancho HS

Second Alternate

Natalie M. Freienmuth,
Rio Rancho HS

NMAS Junior Academy Awards Make a Difference!

The following letter was recently received from one of our NMJAS paper competition winners...

Dear Lynn Brandvold and NMJAS:

Thank you so much for the \$200 award for my science fair paper. Your award has encouraged me to continue my research and my interest in applying science and engineering to solving problems in order to make our world a better, safer place. It has also encouraged me to continue writing and presenting my research.

I look forward to reading about NMJAS on your website. I especially thank you for your time and interest in student research.

*Sincerely,
Devin Roach
8th Grader, Annunciation*

Attend the 2007 NMAAS Annual Banquet - Awards - Lecture

Saturday, November 10, 2007

Begins at 6:00 P.M.

@ New Mexico Museum of Natural History
1801 Mountain Rd. NW, Albuquerque, NM

*This event requires a reservation and a fee
See page 8 for cost and reservation form*

*The Biology of the Antarctic McMurdo
Dry Valleys-misconceptions, surprises,
and unsolved mysteries*

by Dr. Cristina Takacs-Vesbach

The McMurdo Dry Valleys is a region of Antarctica that has been ice free for the past 4 million years. Low temperatures, high winds, and no vegetation earn this ecosystem the name the harshest place on Earth. However, temperatures do rise above freezing in the summer, which melt the glaciers to form ephemeral streams that feed lakes permanently covered by meters of ice. At first glance, one might think this system is devoid of life, but a rich microbial food web exists that make this ecosystem the perfect place to study ecosystem function in the absence of higher organisms. Because of the lack of vegetation and vertebrates, researchers have always referred to the McMurdo Dry Valleys as a relatively simple ecosystem, but the more it is studied, the clearer it becomes that this was a simple misconception. At every turn, research in the dry valleys has surprised us and this lecture will detail a number of these unexpected findings.

Dr. Takacs-Vesbach is an Assistant Professor in the Department of Biology at UNM. She earned a BA in Biology from the University of Colorado, Boulder in 1991 and a PhD in Biology (with a minor in Biochemistry) from Montana State University in 1999. Dr. Takacs-Vesbach studies the microbial ecology of extreme environments and works in Yellowstone National Park and the Antarctic. She first became involved in the International Polar Year as a member of the US National Committee to the IPY.

Don't delay, reserve your space now for the NMAAS annual banquet. Mail the form on page 8 or call or email the NMAAS treasurer.

DID YOU KNOW...about New Mexico's Wind Power?....

- The New Mexico Wind Energy Center is the seventh-largest wind generation project in the United States.
- Located 170 miles southeast of Albuquerque and 20 miles northeast of Fort Sumner, the wind center is perfectly suited for eastern New Mexico's windy landscape. Power production does not require water, produce emissions or generate solid waste.
- The wind center consists of 136 turbines, each standing 210 feet high.
- The facility can produce up to 200 megawatts of power, or enough electricity to power 94,000 average-sized New Mexico homes.
- In May 2003, PNM was awarded the 2003 Utility Leadership Award from the American Wind Energy Association.

CELEBRATE THE INTERNATIONAL POLAR YEAR (IPY) WHEN POLAR-PALOOZA COMES TO ALBUQUERQUE in OCTOBER, 2007

- Why should people in New Mexico care about the Poles?
- How can thousand-year old ice from the Arctic and Antarctic help us understand Earth's future climate?
- Who are today's polar explorers?

The "International Polar Year" (IPY) began in February, 2007. IPY is a major international research program, similar to the IGY (International Geophysical Year) of the 1950s, that is sending research scientists to the poles to explore fundamental scientific questions concerning endangered species, the geology, chemistry, and physics of ice, and climate change. The scientists and their new discoveries will be presented to the general public here in the U.S. through a national education and outreach program, funded by the National Science Foundation, called POLAR-PALOOZA.

POLAR-PALOOZA ALBUQUERQUE will feature exciting educational events throughout the month of October. *Check out NMnaturalhistory.org for the full month-long calendar of events.*

On October 23, the people who know the poles best – some of the world's leading polar and climate scientists (working at the ends of the Earth) and an Alaskan Native will present "*Stories from a Changing Planet.*"

"Stories from a Changing Planet" will be offered at both 6:30pm and 8:15pm at the NM Museum of Natural History and Science. Admission is \$6 public, \$5 museum members or seniors 60 and over, and \$3 students with ID. Reservations recommended, Call Chris Sanchez at 505-841-2872 or email chris.sanchez@state.nm.us

DID YOU KNOW?.. about New Mexico's Oil and Gas?

- New Mexico is a leading U.S. producer of crude oil and natural gas.
- New Mexico natural gas production accounts for roughly 9 percent of the U.S. total.
- The San Juan Basin located in northwestern New Mexico and southwestern Colorado contains the Nation's largest field of proved natural gas reserves.
- New Mexico rivals Colorado as the Nation's top coalbed methane producer, and approximately one-third of all natural gas produced in New Mexico is coalbed methane.
- The Blanco Hub, located in the San Juan Basin, is a major transportation point for Rocky Mountain natural gas supplies heading to West Coast markets.
- New Mexico's Permian Basin, in the southeastern portion of the state, holds three of the 100 largest oil fields in the United States.

Join the NMAS Endowment Campaign and Support Science and Science Education in New Mexico

The NMAS has instituted an endowment for the long-term support of the many science education programs of the Academy. If you have wanted to provide enduring aid to the important work of the Academy in supporting science and science education throughout New Mexico, this is the perfect opportunity for your "end-of-year" tax deductible contributions. The NMAS is a 501(c)(3) non-profit and all donations to the endowment are tax deductible. We ask all NMAS members to remember the NMAS Endowment Fund when planning their charitable giving.

Founding Contributors to the New Mexico Academy of Science Endowment as of November 2007

<i>Marshall Berman</i>	<i>Maureen Romine</i>	<i>Dave Thomas</i>
<i>Mona Pomeroy</i>	<i>Harry Pomeroy</i>	<i>Marvin Moss</i>
<i>Jayne Aubele</i>	<i>Larry Crumpler</i>	<i>Glenn Kuswa</i>
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<i>Debra Thrall</i>	<i>Barry Clark</i>	<i>David Hsi</i>
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<i>David Steinhaus</i>	<i>Leonard and Patricia Duda</i>	<i>David Sharp</i>
<i>Mercedes Agogino</i>	<i>David and Ruth Duggan</i>	<i>Lesha Dawn Harenberg</i>

*We thank the several anonymous donors
who have already posted contributions to NMAS through
the United Way!*

NMAS MEMBER PROFILE>>>>>>Dr. Faraj Ghanbari

Dr. Faraj Ghanbari came to the U.S. in 1976. He attended The University of New Mexico (UNM) and received his doctorate degree in Nuclear Engineering in 1986. He worked as a senior scientist and supervisor of the radiation instrumentation section at Eberline Analytical from 1985 until joining the Sandia National Laboratories (SNL) in 1989. He has developed nuclear monitoring instrumentation for a variety of applications, established radiological analyses laboratories, and performed research in high energy particle beam activation.

Dr. Ghanbari enjoys teaching and mentoring young students who are interested in mathematics and sciences. He has conducted numerous hands-on science activities for the students at the Albuquerque public schools at all levels, and teaches the scientific method as a part of these activities. He is an adjunct professor at UNM where he presents lectures in radiation interaction with matter at undergraduate and graduate level courses. Dr. Ghanbari supports the International Programs at SNL and has presented lectures at international workshops. He is a co-developer of a new course in Nonproliferation of Weapons of Mass Destruction (WMD) Policy and Science offered by the Political Sciences, Sociology, and Chemical and Nuclear Engineering departments at UNM. The course was offered at UNM during the spring semester of 2007 for the first time.

The course presents an interdisciplinary introduction to the nonproliferation regime, the US and international agencies responsible for development and implementation of nonproliferation policies, and the social and political dynamics underlying the development of weapons of mass destruction (WMD) in selected countries. The course reviews the current nonproliferation treaties and discusses the technological approaches available for verification and implementation of these policies and treaties. The concept of non-proliferation policy and its application extending from major powers such as the United States, Russia, to European countries and regional powers, especially countries in the Middle East, is discussed.

Member profile submitted by: Glenn Kuswa, Sandia National Laboratories
Submit member profiles to the Editor of this Newsletter

Membership Form New Mexico Academy of Science

New Membership[] Renewal[] For Membership Year other than 07[] Publications[] Donation[]

Date _____ Name _____

Employer/Firm/Affiliation _____ Title _____

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

Mailing Address: _____

Phone _____ FAX _____ email _____

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

NMAS PUBLICATIONS

New Mexico Journal of Science <small>Set of all available pre-1992 back issues</small>	\$10 _____
From Sundaggers to Space Exploration <small>(NMAS/Sigma Xi, 1986)</small>	\$4 _____
Dinosaurs of New Mexico <small>(NMAS Journal v. 32, 1992)</small>	\$10 _____
The Importance of Agricultural Science in New Mexico's Economy <small>(NMAS Journal v. 34, 1994)</small>	\$10 _____
Astronomy in New Mexico: Past, Present and Future <small>(NMAS Journal v. 35, 1995)</small>	\$10 _____
New Mexico's Natural Heritage: Biological Diversity in the Land of Enchantment <small>(NMAS Journal v. 36, 1996)</small>	\$10 _____
Environmental Management: Current and Future Needs <small>(NMAS Journal v. 37, 1997)</small>	\$10 _____
Water Resource Issues in New Mexico <small>(NMAS Journal v. 38, 1998)</small>	\$10 _____
Ensuring Sustainable Development of Arid Lands Through Time <small>(NMAS Journal v. 39, 1999)</small>	\$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 _____
NMAS Journal v. 44, 2006	\$10 _____
Subtotal:	\$ _____
+ Handling:	\$ 2.00
TOTAL:	\$ _____

Membership Class (check one)

[] Member \$25/year

[] Student \$15/year

[] Subscription \$30/year
(Libraries only)

[] Contribution to the \$_____
NMAS Endowment

Membership Subtotal: \$_____

Donation Subtotal: \$_____

Publication subtotal: \$_____

Total: \$_____

Membership includes 3 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...consider making a donation to the NMAS Endowment to support our science education programs!

NMAS Newsletter
Volume 93 no. 2&3
October, 2007

**NMAS 2007 Annual Banquet, Awards, and Lecture
November 10 2007**

**Registration for NMAS banquet/lecture evening event:
\$35.00 (includes banquet and lecture)**

NOTE: this registration is for the evening event only..the annual conference held in the after-noon is free of charge...see page 1 for information on that event.

Name: _____

Mailing Address: _____

Email address or phone number: _____

Registration for banquet/lecture for _____ persons = \$ _____ (@\$35.00 each)

Total Amount Enclosed = \$ _____

Please mail (or email or phone) your registration (for the banquet/lecture event) to:
New Mexico Academy of Science

2732 Tramway Circle NE

Albuquerque, NM 87122

ATTN: Marilyn Savitt-Kring, Treasurer

To register for the banquet/lecture evening event by email or phone (and pay with a check made out to NMAS when you arrive) contact marilysavitt-kring@comcast.net or 505-856-6654 for more information or to make reservations.

Don't Delay....Registration must be received by November 6th.



**NEW MEXICO
ACADEMY
OF SCIENCE**

Newsletter

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Albuquerque, NM 87104