



# Horizons

**Expanding Horizons in Science, Mathematics, Engineering and Technology**  
*Sponsored by the National Science Foundation*

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## *“Reaching Beyond”*

**N**ew Mexico AMP held its 2002 Student Research Conference, “Reaching Beyond,” on September 13-14, 2002, with over 280 participants including 24 students and faculty from LSAMP programs outside New Mexico. This annual two-day event is structured so that on the first day students present their research and attend research-oriented workshops and panels. The second day of the conference is devoted to activities that are designed to help students achieve personal, academic, and professional success.

This year’s keynote address was given by Vicente C. Garcia, Jr., Technical Director for Cryptology, NMSU Physical Science Laboratory, and an international expert in cryptologic systems. The luncheon speaker was New Mexico State Senator Ben Altamirano. During the day, AMP students from New Mexico, Louisiana, Texas, Oklahoma, South Carolina

*continued on page 4*



### **In this Issue:**

From the Director ..... 2

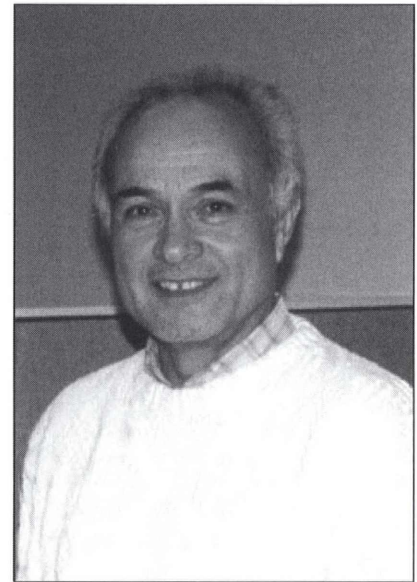
People, Places & Things .... 3

“Reaching Beyond” —  
the 2002 Conference ..... 4

New Mexico AMP  
Participating Institutions ... 7

# From the Director . . . . .

It has been another successful year for New Mexico AMP as shown in the tables below which were submitted to NSF as part of the annual GPRA report. In addition, the New Mexico AMP proposal "Bridges for Engineering Education Planning Grant" (NMSU BEE) has been funded by NSF. The BEE Project will extend the current emphasis on effective teaching and learning within engineering education to the pre-college level through a curriculum designed to attract students to engineering professions, beginning at the middle school level. Through this program, students will be better academically prepared to ensure success in university engineering programs. The project is a partnership of Lynn Middle School, Las Cruces High School, and NMSU. Project Co-Principal Investigators are Sheila Horan, Electrical and Computer Engineering, and Susan Brown, Professional Development Coordinator, Educational Research Center. We are excited about this new project and the opportunities it presents to our students.

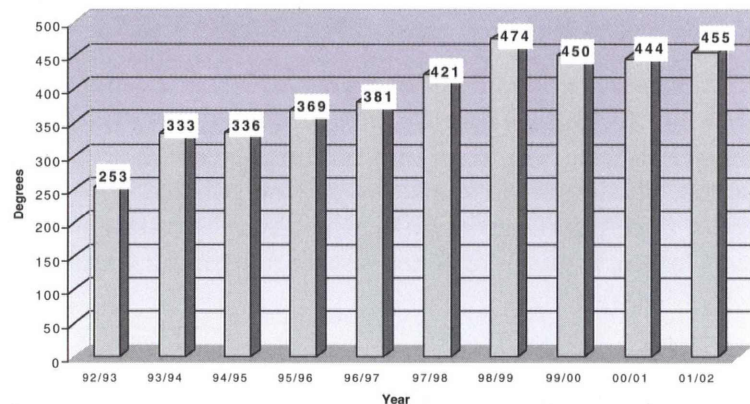


Ricardo B. Jacquez, Ph.D., P.E.  
Director

And, as we begin New Mexico AMP's 10th year, I also want to say thank you and well done to the staff, faculty and students whose work makes these successes possible.

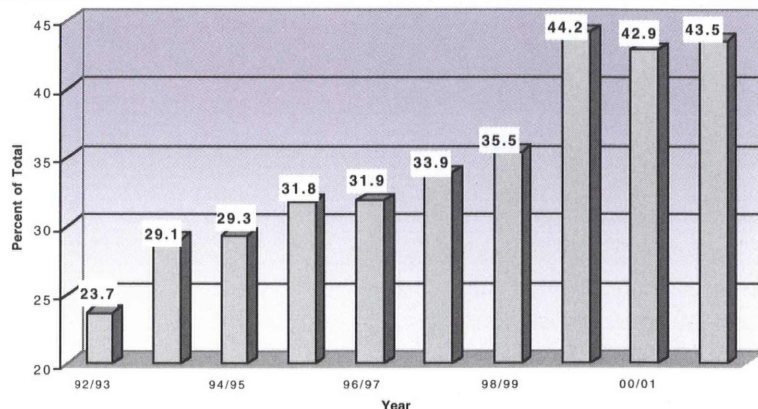
## Minority SMET B.S. Degrees Awarded by New Mexico AMP Institutions

A total of 455 SMET degrees were awarded to minorities in 2001/02, an increase of 80% over the 253 baseline degrees awarded in 1992/93.



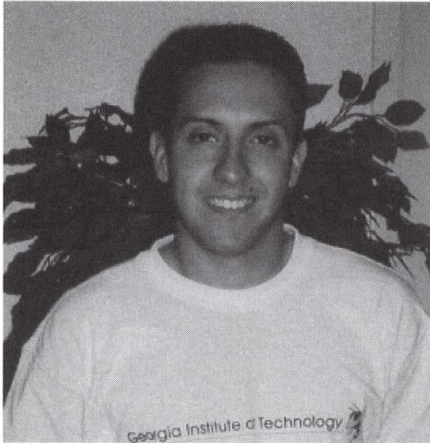
## Percentage of Minority SMET B.S. Degrees

The percent of minority students receiving SMET B.S. degrees has risen from the baseline of 23.7% in 1992/93 to 43.5% in 2001/02.



# People, Places, and Things . . . . .

The 2002 NASA Academy graduating class included New Mexico AMP student Omar Mireles. Omar was one of 16 students graduating from the 10-week summer program at the Goddard Space



Omar Mireles

Flight Center and the first student from New Mexico to participate. While there, he participated in individual and group research, attended dozens of lectures, and took field trips to four NASA facilities and various aerospace industrial organizations. Omar is a 2002 graduate of NMSU and was the team leader for the "Flying Aggies," a team of engineering students which tested two projects in NASA's Reduced Gravity Student Flight Opportunity Program. Omar is currently attending graduate school at the Georgia Institute of Technology, where he plans to complete his Ph.D. and conduct research in areas such as space nuclear reactors, crew escape systems, and micro gravity combustion.

Technology Development Manager Juan Silva, Raytheon Missile Systems Company, was presented with a trophy at the 2002 student research conference to recognize his support and the participation of the Raytheon Company at NMSU and with New Mexico AMP. Silva and colleague Gary Adams have facilitated internship and employment workshops at the student research conference. The Raytheon Company also provides scholarships to AMP students and has co-sponsored the student conference in recent years.



Juan Silva (r), Raytheon Missile Systems Company, accepts a trophy of appreciation from Ricardo Jacquez, Director, New Mexico AMP

New Mexico Highlands University engineering graduates Natalie Salazar and Lawrence Tafoya, received Special Recognition for Hardware Implementation at the World Automation Congress in June 2002. They have also both passed the Fundamentals of Engineering exam, the first step in becoming licensed professional engineers.



Karen Lieberman (l), Southern Regional Coordinator, New Mexico MESA, accepts the award of graphing calculators from Patty Lopez, Ph.D., Software Imaging Design Engineer, HP

The Hewlett-Packard Company, through their 2001-2002 High-Tech Diversity Award to NMSU, announced an award of 25 HP49g graphing calculators to be given to high achieving 8th grade and high school seniors in the New Mexico Math, Engineering, Science Achievement (MESA) program, and an additional 35 HP49g graphing calculators awarded to New Mexico AMP for their students. Karen Lieberman, Southern Regional New Mexico MESA Coordinator, accepted the award on behalf of New Mexico MESA; Ricardo Jacquez accepted on behalf of New Mexico AMP.

New Mexico MESA, Inc. is a non-profit organization that encourages middle and high school students to acquire the academic skills they will need in college while also helping them identify career aspirations in mathematics, engineering and science disciplines.

# Reaching Beyond . . . . .

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and New York shared their research activities and results in oral and poster presentations judged by a panel of professionals and faculty members.

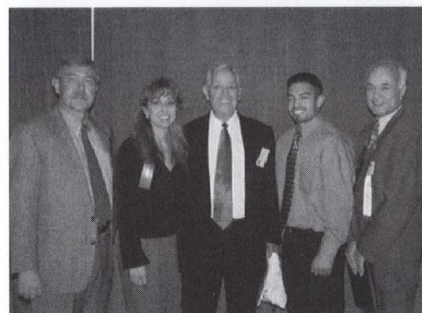
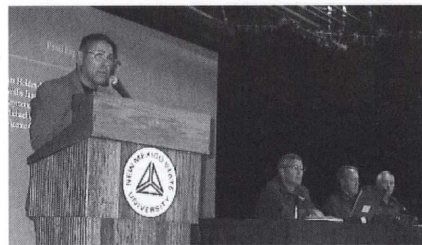
New this year was the collaboration with NMSU's University Research Council. This collaboration featured faculty poster presentations, and oral presentations by faculty members Drs. Paul Bosland, Anatoly Klypin, and Jaime Ramirez-Angulo, recipients of NMSU's 2001 "Exceptional Achievements in Creative Scholarly Activity" award.

Following these faculty presentations, a graduate school panel discussion covered topics such as applying for graduate school, available financial resources, and choosing a committee. The New Mexico, and the University of Massachusetts Alliance for Graduate Education and the Professoriate Programs (AGEP) were represented along with the Initiative for Minority Ph.D.s in Biomedical Sciences and Minority Health Disparities Program from the University of Arizona Graduate College. Students were able to obtain information about the graduate school programs and opportunities on each campus. The NMSU offices of Admissions, Financial Aid, Housing and Dining Services, and Placement and Career Services pro-



*Above: Provost William Flores meets with students before the conference opening session*

*Below: (l to r) Keynote speaker Vicente Garcia, Jr., and panel members Ray Bernstein, Jim Holden-Rhodes, and Willis Janssen*



*Above: (l to r) Rudi Schoenmackers, Michelle Villa, Senator Ben Altamirano, Johnny Lazoya and Ricardo Jacquez*

*Below: Daniel Dwyer, Vice Provost for Research, (r) discusses a current research project with a member of the University Research Council*



vided information tables and help to community college students planning to transfer to NMSU.

Raytheon Missile Systems Company, Hewlett-Packard Company, Agilent Technologies, United Space Alliance, and the Bureau of Land Management representatives held workshops on internship and employment opportunities with their respective organizations. In conjunction with the anniversary of the World Trade Center and Pentagon attacks, a panel of experts with expertise in areas such as electronics intelligence, counter-intelligence, cryptology, and network- and content-centric warfare provided discussion and answered questions based on the topic of "Educating the 21st Century Information Operations Workforce."

The panel was followed by an awards luncheon where the first, second and third place winners in the oral and poster research presentations were announced.

New Mexico AMP and Raytheon Missile Systems Company co-sponsor this annual event. Our thanks to all who attended or supported the conference and especially to the students who so generously and professionally share their work and research experiences.

*Conference photos by:  
Karen Luces, Richard Odom, and Darren Phillips*

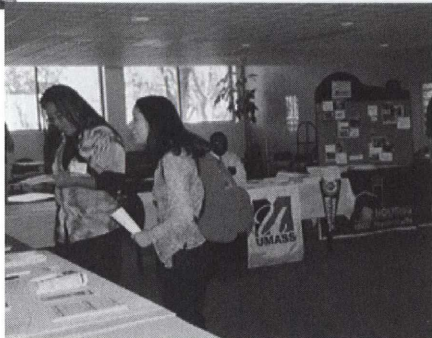
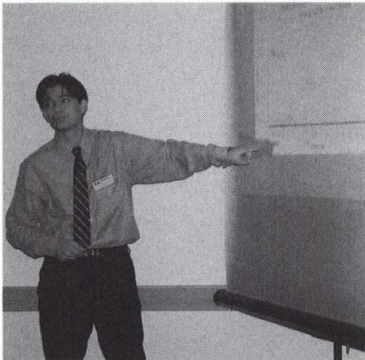


Above: Oral Presentation judges talk to New Mexico Highlands University student Lawrence Tafoya (center)

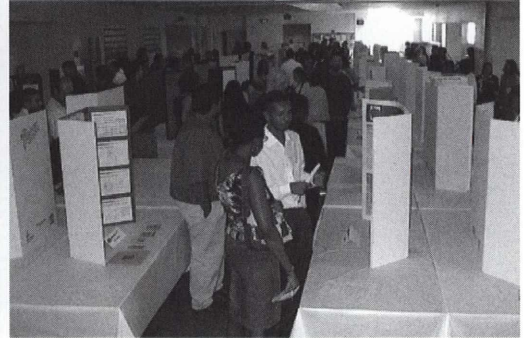


Poster Presentation Winners:  
(l to r) First Place – Frank Jurado (NMSU);  
Second Place – Joanne Gonzales  
(Southwestern Oklahoma State University);  
Third Place – Tie between Heriberto Cuellar  
(NMSU); and Ricardo Amador (NMSU RISE  
program) (not pictured)

Below: Mario Borunda (University of Texas System—El Paso) explains his research on hydrogen evolution



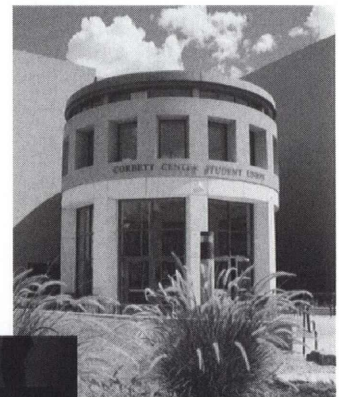
Graduate school information and displays



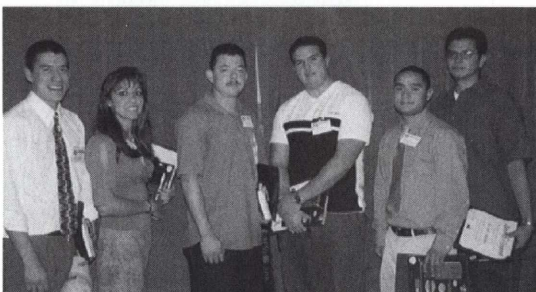
Student research poster presentations



Mariachis Espuelas de Plata



Conference site: Corbett Center Student Union on the NMSU campus



Oral Presentation Winners: (pictured l to r): Rodriguez, Villa, Gonzales, Storey, Godina, Bañuelos  
First Place – Isaiah Storey (New Mexico Tech); Second Place – Jafet Gonzales (NMSU); Third Place – Tie between the team of Javier Rodriguez, Michelle Villa, and Adrian Godina (NMSU); and Jose Leo Bañuelos (NMSU)



New Mexico MESA students take a break



# People, Places, and Things . . . . .

**S**anta Fe Community College pre-engineering students participating in the first summer bridge program offered under the Minority Engineering Transfer and Articulation (META) program at NMSU presented their final project at a mini-symposium held July 26.

As the capstone to their special projects course, the students presented a conceptual design of a basic infrastructure system (water supply, wastewater disposal, power and gas, and streets and roads) for a local colonia south of Las Cruces. While on campus, the students also participated in workshops presented by the Center for Learning Assistance, and met with practicing civil engineers from local firms.

The Minority Engineering Transfer and Articulation Program (META) is a joint effort between New Mexico State University, Santa Fe Community



*META Summer Bridge participants and advisors display the map showing the infrastructure improvements designed in their special projects course*

*(l to r) Joseph Flores, Brandy Long, Dr. Ricardo Jacquez, Steve Peralta, Jose Solis, Dr. Phil King, Barbara Silseth, Lonnie Montoya, Johnny Lazoya, Matthew Martinez, and Bobby Rios*

College, the New Mexico State Highway and Transportation Department, and four civil engineering firms (Bohannan Huston; Brown and Caldwell; Chavez-Grievess; and Molzen-Corbin). The META project will address the need for more comprehensively trained civil engineers who have relevant technology-based classroom and work experience.

**S**IPI graduates, AMP students, and current University of New Mexico undergraduates Ron Denny, Genevieve Eros and Julian Lucero-Emmons received Ford Motor Company / American Indian College Fund Corporate scholarship awards of approximately \$5,000 for fall semester 2002. Only 12 scholarships were awarded nationally to students attending non-tribal colleges. Recipients must have a 3.0 grade point average (GPA) or above and have demonstrated leadership and commitment to their community.

Eros is a junior majoring in management information systems. Lucero-Emmons is a junior majoring in computer engineering, and Denny is a junior majoring in computer science.

Established in 1989, the American Indian College Fund has existed for more than a decade to help increase educational opportunities for Native students. (Courtesy UNM Public Affairs Office.)

**S**eptember 19 was the date for the fall SMET 101 Student Success Panel. The panel consisted of students who have excelled in their studies and taken advantage of opportunities to work with faculty on challenging research projects.

The purposes of the panel were to help SMET 101 students learn more about the challenges and the opportunities they face in pursuing a SMET major, and to help them develop a successful academic program for their chosen discipline.

The discussion focused on topics such as: selecting a major, experiences which contributed most to achieving senior status, goals for career development, plans for graduate education, ethical issues, and strategies for academic and career success.

A professional panel and a transfer information panel are also part of the SMET 101 curriculum. The panels originate on the NMSU campus. They are videotaped and the tapes are sent to other SMET 101 sites in the state. Sites have the option of sending in questions that are of interest to their students before each panel so the panels remain relevant to all course sites.

*Student success panel members (l to r) Javier Rodriguez, Anthonette Checo, and Michelle Villa with moderator Dr. Ricardo Jacquez*



# New Mexico AMP Participating Institutions

## **Albuquerque Technical Vocational Institute**

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## **Clovis Community College**

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## **ENMU-Roswell**

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James P. Miller, Jr.  
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## **Luna Community College**

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## **Mesalands Community College**

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## **New Mexico Highlands University**

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## **New Mexico Institute of Mining and Technology**

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## **New Mexico Junior College**

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## **Santa Fe Community College**

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