Countdown to Impact
NMSU’s Moon Observation A Success

NMSU’s A Mountain Observatory LCROSS team: from left Rob Suggs (NASA’s Marshall Space Flight Center), Cat Wu, and Ryan Hamilton (NMSU graduate students)

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Countdown to Impact: NMSU’s Moon Observation A Success (2)

NSF Interactive, Web-Based Proposal Writing Workshop (8)
The Core Ideals of the Mexican American Gang: Living the Presentation of Defiance (11)

NMSU Professor’s Research Helps Indigenous Natives of Siberia (4)
AAAS Science & Technology Policy Fellows (8)

Winners of the Ninth Annual URC Research and Creativity Fair (8)
Life at Microsoft: Former NMSU CS Grad Addresses Accessibility and Offers Advice to Job Seekers (9)

OSI Grant Proposal Development Workshop (8)
Thomas Jefferson and the Origins of Newspaper Competition in Pre-Revolutionary Virginia (11)
NMSU’s astronomy faculty and graduate students participated in NASA’s experiment to determine if water exists on the moon.

On June 18, NASA launched its Lunar Reconnaissance Orbiter (LRO) along with using an Atlas V rocket from Cape Canaveral. Launched with LRO was Lunar Crater Observation and Sensing Satellite (LCROSS) sent on the mission to search for water thought to be frozen in the polar craters of the moon.

This mission was the first part of NASA’s Constellation Program, a larger plan for establishing a manned base on the moon near one of the craters. The LCROSS mission will help them determine the nature of moon water and whether it exists on small parts of the moon or spread across larger areas.

On October 9, nearly four months after the launch of LRO and LCROSS, as planned, LCROSS sent the upper stage of the Atlas V rocket to impact a polar crater on the moon called the Cabeus A. The impact created a plume of dust where the LCROSS landed to collect information.

This impact was observed from the Earth by a team of scientists, including an NMSU team: Dr. Nancy Chanover (Astronomy Department), Ryan Hamilton (NM Space Grant Consortium) and Astronomy Graduate Students, Cat Wu, Chas Miller, Jeff Coughlin and Elizabeth Klimek.

I had the privilege of interviewing Dr. Nancy Chanover and Graduate Student Chas Miller about the project and its significance.

First I would like to congratulate you all, on behalf of the Office of VP for Research and the Office of Strategic Initiatives, on such a highly visible and prestigious mission well accomplished! Dr. Chanover, you were the leader of the team. What are your impressions?

Overall, it was an incredibly exciting experience. We were thrilled to get so much support and interest from the NMSU community, and particularly from the APO staff. Everyone at APO worked really hard to ensure that our observations were successful, and I am so grateful to all of their efforts. We all tried to get some rest during the day on Thursday October 8, but I think we were too excited to sleep very much. We arrived at the telescope control room LCROSS’ Apache Point Observatory team: from left: Russet McMillan (Lead Observing Specialist for the 3.5-meter and Co-Investigator on this investigation), Chas Miller (Graduate Student), Eric Ramesh (Undergraduate Student), Dr. Nancy Chanover (Astronomy Professor), Cat Wu, and Ryan Hamilton (Graduate Students)
shortly before midnight and got started right away. We executed our calibration observations and then looked at the Moon. We ensured that we could point to the correct location, then we acquired some more calibration images, and then we went back to the Moon. We set up an automated data acquisition script to take continuous data during the time of impact.

Chas, would you please take us back to the period before that night and talk about the preparations for this project?

During the past year, we practiced all aspects of our planned LCROSS observations during several dry runs on each telescope. From this experience, all three teams developed timelines breaking out each task (sometimes down to 15-minute intervals) starting from about 11:00 PM Thursday evening through to the time of impact at 5:30 AM Friday morning. These tasks included taking images of reference stars (and a few planets) for later calibration of the moon images, locating the exact impact site (our images covered an area only 300 kilometers along the lunar limb at the south pole), choosing the optimal filter for that night’s lunar brightness and the local atmospheric conditions, and verifying proper telescope tracking of the moon through transit (the moon’s highest point in the sky). A cold front passed through the area in the early evening and pushed a heavy cloud layer away, leaving us with clear skies throughout the night.

As we checked off our timelines, NASA Ames fed mission status and a countdown to impact via telephone to all astronomers assigned to the LCROSS mission. Eric Ramesh fielded the NASA countdown and relayed to our three teams (we were in a cozy control room but the other two teams were working in unheated telescope domes). Our practice runs paid off in that every timeline task went without a hitch and we were actually ahead of schedule at the impact minus one hour mark. By thirty minutes before impact, we were tracking the impact site with three telescopes. Fifteen minutes before impact, we began taking continuous images (and video). The plan from that point was to keep our hands off the controls and watch our monitors. The impact was to take place at the bottom of a dark crater, which was partially hidden behind a bright ridge as seen from Earth. The plume would have to rise about 2 kilometers to be seen above this ridge. NASA counted down the final seconds to impact of the Centaur booster, then counted down the time to impact of the Shepherding Spacecraft, which was following four minutes behind the Centaur.

By now it is known that no Earth-based telescope, either on the ground or in Earth orbit, captured images of a bright plume on the order of the brightness of the surrounding lunar limb. The team hoped (but by no means guaranteed) that a plume would be immediately visible. When none was visible on the

Continued on page 10
A. Andrew Wiget is Professor of NMSU’s Department of English and Director of the New Mexico Heritage Center. Since opening the Russian Indigenous Initiative, in 1990, Dr. Wiget has made twenty extended visits to Russia, totaling nearly four years in country, including two Fulbrights at Moscow State University and fourteen fieldwork expeditions to western Siberia. He has served as initiator, co-convener and co-organizer of Western delegations for annual International Working Seminars on the Problems of the Peoples of the North in Moscow, sponsored by the State Committee of the North of the Russian Federation. He has ten years of work on Siberian native issues, including consulting with the World Bank, and serving as project director and co-principal investigator with Dr. Olga Balalaeva on the following MacArthur-funded projects: Khanty Sacred Trust Project, Native Bridges, Khanty Traditional Land Use Atlas, Ethnoecological Survey of the Yugan, and Yuganskiky Khanty Cultural Resources Inventory projects. Before working in Russia, he had been involved in cultural conservation work and land claims cases with American Indian tribes for twenty years.

Can you tell our readers about yourself?

I received my Ph.D. in English from University of Utah in 1977. When I was in graduate school I became interested in the culture of Native Americans with a philological interest in the literary character of Native American oral texts. After joining NMSU in the mid-1980s I started my field work. New Mexico provided me the opportunity to put my knowledge and skills as a professional folklorist at the service of traditional cultures in general and Indian communities in particular. I have worked at Mistassini Cree (Quebec), Navajo, Ramah Navajo, but my closest relationship has been with the Zuni. Following up my thesis and dissertation interest in that community, I served as a legal expert for the tribe on Zuni oral history in their trust lands damages case, later wrote a large, National Education Association (NEA) grant for the tribe that funded Zuni-language cultural radio programs produced based on my original field recordings of traditional storytelling, and then developed a contract for the tribe with the Library of Congress, which preserved for Zunis more than 225 hours of rediscovered storytelling recorded, in the 1960s, an entire generation’s legacy. I also accepted an invitation from the
founders of *Keepers of the Treasures*, the association of tribal historic and cultural preservation professionals, to present a workshop on preserving oral traditions at their 1991 annual meeting at San Ildefonso Pueblo. In a series of important articles and chapters on Zuni and Hopi I have tried to deepen our understanding of the value and significance of Native American oral traditions.

**What led you to work in the former Soviet Union?**

I traveled to the former Soviet Union for the first time in 1990 and decided to expand my work with Native Americans to other northern indigenous peoples, turning the lessons learned by Native American communities, especially in the land claims process and cultural preservation efforts, to benefit native Siberians. Since that time, together with my wife and colleague, Olga Balalaeva, I have been working closely with Russian government officials and anthropologists, the World Bank, national and regional native organizations, and local Siberian native leaders. The MacArthur Foundation has supported this work with four, two-year grants, beginning with a project to document sacred sites among the Eastern Khanty. The goal of these projects is to assist the Yuganskiy Khanty people in developing a co-managed protected territory for their traditional lands. This would provide a Siberian indigenous people for the first time with both communal land tenure and local self-government. This work has attracted the attention of The International Association of Arctic Social Science, The International Working Group on Indigenous Affairs, and UNESCO.

In addition, I served as co-convener and Western delegation organizer for four international (U.S., Canada and Russia) working seminars on the problems of the indigenous peoples of the north, which I co-founded with representatives of the Russian government, in 1995. For these seminars we developed substantial participation from Native American and native Siberian communities.

**What does Yuganskiy Khanty mean in English?**

Yuganskiy is a Russian-language place-name adjective. It means basically "Khanty from the Yugan River basin" or "Yugan River Khanty".

**Are Khanty people the only indigenous ethnic group living in Siberia?**

No, they are one of 45 northern indigenous minority peoples officially recognized by the Russian government. Others include Nenets, Mansi, Yukaghir, Chukchi, and Inuit. The Khanty are one of the largest of Russia’s Siberian tribes. In early Russian literature the Khanty were called Ostyaks—perhaps a corruption of the Khanty phrase “As Iakh”, Ob River people—and their nearest linguistic relations, the Mansi, were called Voguls. Linguistically, both are identified as Ob-Ugrians because both speak Ugrian languages and live in the huge basin of the Ob and Irtyskh Rivers in Western Siberia. According to N. Vakhtin, the 1989 census listed approximately 31,000 Ob-Ugrians living in this area, both Mansi (8,461) and Khanty (22,521).

The Khanty are distinguished into three dialect groups: Northern, Eastern and Southern. Northern Khanty live in the Beloyarsk and Salekhard regions. The Southern Khanty, who lived along the Irtyskh River, were incorporated into Russian society by the middle of this century and no longer live a traditional lifestyle. We work with the 5,000 or so eastern Khanty, most of whom live along the rivers flowing into the middle Ob through Surgut, Nefteiuagans and Nizhevatovsk regions of Khanty-Mansiiski Autonomous Okrug.
How did settlement happen in Siberia? Did communities migrate?

Migration into Siberia from its southern margins (today's steppe region) happened as the ice withdrew northwards at the end of the last glaciation, around 11,000 BC.

What languages do the native Siberians speak?

Some speak Paleo-Asiatic (Yukaghir), some Turkic, and so on. Khanty language is part of the Ugric division of the Finno-Ugric language family. The Ugric division includes Hungarians (who left western Siberia for Europe early in the Christian era) and Mansi; the Finnic division includes Finnish, the Finns having left their Uralic homeland even earlier than the Hungarians.

Can you talk about their culture and traditions?

Most Khanty are literate in Russian and fluently bilingual, but prefer to speak Khanty. And despite the efforts of the Orthodox Church, which in some areas has gained converts of varying degrees of allegiance, and despite the suppression of native religion under the Soviets, traditional belief and ritual still flourish. The Khanty believe in a three-zone cosmos with this middle world existing between an upper, sky world and an underworld. Each of these is divided into seven levels. The high god, Numi Torum, cannot be approached directly but only through addressing one or more of his seven sons and seven daughters, each of whom became a patron of some dimension of the natural world: rivers, fish, animals. The youngest son in his human incarnation was elevated to the senior position among the sons, and in his animal incarnation became Bear, the master of the forest. As with many circumpolar peoples, a special Bear Festival is occasionally celebrated to honor a bear that has been killed (Schmidt 1985, 1989).

Because the patrons of the major tributary river systems are also lineage-founding deities, different Khanty clans claim traditional use rights to different river systems tributary to the Ob’. Most Khanty extended families live on traditional family hunting territories protected by family gods who are considered offspring of these lineage-founding deities. Khanty thus believe that sacred power has been historically invested in both the landscape and the lineage. These gods are said to live in specific sacred places, and often have shrines marking these sites. The gods are worshiped through blood sacrifice (yir) of animals, especially reindeer, and through bloodless sacrifice (pory) of boiled meat. Prayer and sacrifice insures protection from and healing of disease and injury, long life, tranquility, fertility and prosperity. A variety of factors contribute to this cultural persistence, but there continues to be enough acculturative pressures that some are redefining their cultural heritage in ways that have been called neotraditional.

What are their occupations?

Like many of Russia’s “minority tribal peoples,” the Khanty are surviving on territory that was their home for centuries before the Russians came. Their world, first known to Russians as Iugra, is dominated by the Ob-Irtysh river system, the world’s third largest in terms of volume of water. Most of the eastern Khanty live in extended family settlements scattered along the major tributaries of the middle part of the Ob River, which runs through Khanty-Mansi Autonomous Okrug-Iugra, a territory the size of Utah, Arizona and New Mexico combined. Eastern Khanty subsistence economies are specifically adapted to the complex of forests and swamp ecosystems known as the middle West Siberian taiga. The Khanty still maintain their clan system, their native religion and language, and their traditional way of life in widely separated extended family settlements on traditional hunting territories, often a day or more by boat from telephones and electricity. Away from the highways connecting the main cities along the Ob, travel is by helicopter, motorboat, snowmobile or reindeer drawn sled. Until relatively recently, the eastern Khanty—indigenous hunters, fishermen and reindeer herders living in the forests and swamps of western Siberia—were more or less isolated in the depths of a vast, rich country. Their culture altered over time, of course, and sometimes the cumulative effect was significant, but the shifting of cultural patterns was experienced as happening slowly and more or less incrementally. All that changed dramatically in the twentieth century as a result of the two cataclysmic events that undergird the story of the Khanty as told in this book: the establishment of the Soviet Union through revolution and civil war at the beginning of the last century, and its collapse 75 years later followed by the emergence of the post-Soviet petrostate. Now, after millennia, their land, and with it their culture, is threatened with destruction. The tragic irony is that, protected by their isolation, and having
survived the colonization of the Tsars, the missionizing of the Orthodox Church, and the repression and stagnation of the Soviets, the Khanty may not survive oil.

**Can you talk about their environment?**

Most of the eastern Khanty live in extended family settlements scattered along the major tributaries of the middle part of the Ob River, which runs through Khanty-Mansi Autonomous Okrug-Iugra. Rapid freezing in October leads to a winter period of uninterrupted frost from 145-155 days per year, with an average low of -20 to -35 C. Rapid thawing in late April or May causes the heavy ice to break up suddenly leading to ice jams and regular seasonal flooding which undercut the high sandy banks, toppling trees into the rivers, carrying debris downstream and rechanneling the rivers.

**How does their government work?**

The status of native Siberian peoples is very different from that of American Indian tribes. Without a history of treaty-making, Native Siberian communities do not have the unique political status of America’s Indian peoples. Although citizens, their communities have no legal standing, no acknowledged right to self government. They have only recognized traditional use-rights on their lands. Their lands, and the subsurface resources, are the property of the government. In short, their status is not unlike that of Vietnamese Americans or other ethnically self-identified groups of citizens in the U.S. Without a significant legal basis for asserting their claims for autonomy, native peoples in Siberia continually seek other means for self-determination and protecting their traditional lands, including establishing chartered organizations.

Siberia has ever been, and continues to be, the source of Russia’s wealth. The Russian North occupies two-thirds of the territory of Russia and supplies most of the country’s known sources of oil, gas, iron, aluminum, phosphates, nickel, cobalt, tin, lead, gold, diamonds and other precious metals. Many of these northern resources—not only oil and gas, but diamonds and precious metals, as well, have international significance. The northern region is also the main source of Russia's exports, generating about 60% of Russia's income from the sale of oil, gas, diamonds, ores and heavy metals, timber, coal, gas, fish, and furs. Yet, even today the total population of the Russian north is only 18 million, and of these only 181 thousand—a minority of a minority—belong to the forty-five indigenous tribes, or as they are officially designated in Russian, malochislennye korennye narody severa, the small-numbered (or minority) tribal peoples of the North.

**What is your message to NMSU faculty and researchers?**

There are many ways to measure the value of research. Universities engage in research because that is the frontier where what we teach meets the reality of how we live. Humanities and social sciences research is sometimes undervalued because it doesn’t produce the scientific breakthrough or create wealth. But humanities and social sciences research helps people to understand how different values produce different visions with different consequences, and it strengthens their capacity, as individuals and communities to shape their own futures. In this way, humanities and social sciences research provides the only just and healthy context for technological progress and shared prosperity.

The Caribbean poet and anti-colonialist Aimé Césaire famously wrote, “The work of man has only began and no race has a monopoly of beauty, intelligence and strength and there is room for all at the rendezvous of conquest.” Césaire died last year, but his words and vision still motivate a large part of the world. Humanities and social sciences research help us understand why.

Ever since joining NMSU, Dr. Wiget has developed a record of important, grant-funded work which has benefitted contemporary native communities. He established The New Mexico Heritage Center in 1986, as a vehicle for the kinds of research and cultural conservation activities described above. He has successfully written 21 grants and seven contracts, garnering $683,000 in support of his work.

To obtain more information about Dr. Wiget’s work, please visit the New Mexico Heritage Center’s website at: [http://www.nmsu.edu/~english/hc/hcmain.html](http://www.nmsu.edu/~english/hc/hcmain.html).

Dr. Wiget can be reached at awiget@nmsu.edu
Winners of the 9th Annual URC Research And Creative Activities

On October 2, NMSU’s faculty members and students demonstrated their diverse research and innovations during the 9th Annual University Research Council (URC) Research and Creative Activities Fair. The fair participants presented 45 projects in areas ranging from effects of fatigue on female athletes to algal biofuels. During the fair, a team of judges comprised of NMSU peer researchers evaluated the posters and announced the following projects as the winners of this year’s URC Fair:

1st place: “Growtopia in the Sunbelt: 50 Years of Land Cover Change in Southwestern New Mexico” John Wright, Michaela Buenenmann, and Kristen Hestir.

2nd place: “Agenda-Setting for Healthy Border 2010: Research Directions and Implications for Border Health Leadership, Advocacy and Practice” Chuck Kozel and Anne P. Hubbell.


The list of all participants is available online at http://Research.NMSU.Edu/urc/09

OSI Grant Proposal Development Workshop

The Office of Strategic Initiatives (OSI) is conducting a grant proposal development workshop on Friday, November 6, between 1:30 and 3:30 p.m. in Anderson Hall (N2018, 2nd floor conference room). The workshop will address basic grant proposal development, including analyzing the RFP and developing a proposal that is responsive to RFP requirements and evaluation criteria. In addition, the workshop will provide a brief demonstration of the NMSU Grants and Research Information Database (GRID) and how it can help researchers identify research and education funding opportunities.

GRID users can register by logging into GRID (http://grid.research.nmsu.edu), clicking on the Grant Proposal Development Workshop in the Workshops Section, and clicking on the registration link.

If you are not registered for GRID, please log in to GRID (http://grid.research.nmsu.edu) as a guest, click on the Grant Proposal Development Workshop in the Workshops Section, and click on the registration link.

NSF Interactive, Web-Based Proposal Writing Workshop

The Office of the Vice President for Research, Graduate Studies, and International Programs is hosting a proposal writing workshop on Monday, November 9, at 1 p.m. in Anderson Hall (N2018, 2nd floor conference room). The web-based workshop will be conducted by the Engineering Program Directors of the NSF Division of Undergraduate Education in two 75-minute segments. You are asked to arrive 15 minutes early to provide time for introductions and orientation. Please email OSI, osi@research.nmsu.edu, to confirm your commitment to attend the workshop no later than November 2, 2009.

AAAS Science & Technology Policy Fellows

The American Association for the Advancement of Science invites applications for AAAS Science & Technology Policy Fellows program. Eligibility & Criteria:

- U.S. citizenship is required
- Applicants must hold a PhD or equivalent degree (DVM, MD, etc.) in any physical, biological, medical/health, or social/behavioral science, any field of engineering or any relevant interdisciplinary field
- A master’s degree in any engineering field plus 3 years of post-MS degree professional experience also qualifies
- All degree requirement must be completed by the application deadline, December, 15 2009
- Federal employees are not eligible

Application Deadline: December 15, 2009. For complete information and to apply online, visit: http://fellowships.aaas.org
“We’re a small company of 91,000 employees. Maybe you’ve heard of us?” quips Rob Sinclair, Microsoft’s Director of Accessibility and Chief Accessibility Strategist. Sinclair, former NMSU Computer Science graduate, recently returned to speak to a group of NMSU students and faculty in the Department of Computer Science about his path to Microsoft, life and work at Microsoft, and what “accessibility” means for everyone.

Rob’s path to Microsoft provides a clear example of what you get when you combine hard work with passion. While putting himself through both bachelor’s and master’s programs, Rob looked for opportunities to turn the things he loves to do into professional experience. Although NMSU’s curriculum was helping him build a foundation in computer science skills, the field was advancing quickly. Web pages were popping up all over the place; businesses were asking for simpler ways to use computers to improve usability and efficiency; and Rob was interested in graphics. That interest drove him to expand on his NMSU course experience to develop user-oriented tools for businesses, seeking ways to help people get more out of their computers and make them easier to use. He spent many extra hours—pulling all-nighters and working weekends—teaching himself to write programs using emerging technologies. To learn programming for Windows and the web, Rob also invested his own money in then-pricey professional developer tools, tools which, he notes, are now free to students trying to learn software, game or robotics development for Windows.*

Since joining Microsoft in 1997, Rob has continued to focus on improving life for all computer users. Accessibility has traditionally sought computer solutions for the disabled user, but the same things that make computers accessible for people with disabilities, also make things easier for everyone. Rob explains that more of us experience impairments to our hearing (one in five) or vision (one in four) than the stereotypes. “And everyone in this room is aging,” he says to laughter, going on to say that age-related changes to vision, hearing, and dexterity increasingly challenge our ability to use technology. Marketers typically target people 18-40 years of age, but Rob explains that this isn’t the demographic growing fastest. Tech users between the ages of 65 and 74 are expected to double from 2007 to 2012, making accessibility a top priority, he says.

Furthermore, the perpetual changes to technology demand constant changes for making those technologies not only usable by all groups, but also sensitive to the richness of cultural difference across the globe. Rob uses the term “inclusive innovation” to describe how industry experts are beginning to think about accessibility. No longer an issue for one type of physically challenged user, inclusive innovation considers aspects of technology beyond accessibility, including hardware and software design, usability, collaboration, and interoperability—that is how devices like your cell phone, TV, and computer work with each other—as key pieces of the puzzle. Working toward universal accessibility takes partnerships across all sectors of the industry. Rob says Microsoft considers the problem to be too complex to be used as a market advantage for any particular company or country, and for that reason they are working to address these issues with many others around the world, including Adobe, Hewlett Packard, Novel, IBM, and dozens of specialty assistive technology vendors.

Speaking to the students, Rob emphasizes the importance of discovering how one’s own passions can generate skills and experience that attract employers. Rob’s résumé demonstrates diverse experience, including construction, carpentry, and photography. Often, he says, people don’t recognize what employers might consider a marketable skill. “Even being captain of your swim team could turn out to be relevant experience if you can demonstrate resulting leadership skills.” Because Microsoft works to solve so many different problems, develops such an array of products, and connect users to so many technologies, they hire people of every stripe: medical doc-
tors, engineers, fine artists, anthropologists, mathematicians, linguists, and other researchers, beyond the classically trained computer scientist. Pointing to an example from his own work, Rob says that he works with both social workers who understand the needs of people with disabilities, as well as engineers, who understand how to create the technologies that will accommodate those users. Microsoft offers a wide variety of opportunities to explore and develop new areas and many more people will be needed to make that happen. “Plus”, he adds with a ready smile, “you can’t beat the four million cans of free juice we drink annually.”

Rob Sinclair can be reached at Rob.Sinclair@Microsoft.com

*For more information, look for DreamSpark and other development tools at www.MSStudentLounge.com

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monitors in the four minutes between the Centaur and Shepherding Spacecraft impacts, I started to wonder if, after all our practice, we were really looking at the right crater! In fact, we were and we continued to take data for another thirty minutes after impact. It is often the case that dim features not immediately apparent can be found after later processing and calibration of images.

Earlier, NASA requested that all astronomers be prepared to transmit images or video to NASA Ames within one hour after impact for use at a follow-up press conference. We had practiced that procedure during our dry runs as well. Using a script written by team member Ryan Hamilton, I created a movie from a two-minute span of images and transmitted to Ames. This movie was one of the videos presented by NASA Ames during their televised press conference (with credit to Apache Point Observatory). We all stayed up to watch the post-impact press conference, which ran to about 9:00 AM Friday morning. Then, with the morning sun shining brightly, we all went to bed.

**Dr. Chanover, what was the significance of this project for NMSU?**

This project really helped draw attention to the fact that NMSU has a vibrant astronomy department with many enthusiastic students, and access to a world-class telescope facility at Apache Point. It also showed that our graduates can have long, successful, and exciting careers in astronomy. Our Co-Investigator, Dr. Rob Suggs from NASA/ Marshall Space Flight Center received his Ph.D. from the NMSU Astronomy Department in 1983. Rob led the teams at the NMSU 1-meter and the Tortugas Mountain Observatory telescopes, and it was a lot of fun to work with an alumnus of our program. The media attention that resulted from these observations was significant. Prior to and after impact, we were interviewed by representatives from Nature magazine, Space.com, KRWG, KVIA in El Paso, and KRQE in Albuquerque. This local and national interest in our observations brought a lot of positive attention to NMSU.

**What’s next for the LCROSS and NMSU?**

We are still analyzing our data and we are in regular communication with the LCROSS project team at NASA/ Ames. We plan to present some initial results of our research at the American Geophysical Union meeting in San Francisco in December. By then, hopefully, the ground-based observations will be put into a broader context and we will have a better understanding of what they are telling us about the Moon’s surface in these dark, shadowed craters near the Moon’s south pole.

**Thank you for giving us this opportunity. Is there anything else you would like to add?**

Chas: I would like to acknowledge the entire team representing NMSU, APO, and Marshall Space Flight Center (MSFC):

3.5 meter telescope – Nancy Chanover, Chas Miller, Eric Ramesh (NMSU), R. McMillan (APO), R.M. Suggs (NASA MSFC)

1.0 meter telescope – Jeff Coughlin, Liz Klimek (NMSU), Ron Suggs (MFSC)

0.6 meter A-Mountain telescope – Ryan Hamilton, Cat Wu (NMSU), Rob Suggs (MFSC)

For more information about this project visit: http://astronomy.nmsu.edu/rhamilt/LCROSS
The Core Ideals of the Mexican American Gang: Living the Presentation of Defiance

Current approaches to designing antigang policies overemphasize the notion that criminality is the defining characteristic of gangs and that solutions require a get-tough approach. As an ex-gang member, Dr. Robert Durán conducted a five-year ethnographic study and a fourteen-year informal study of Mexican American street gangs in two Southwestern states to understand the persistence of gangs. He found that the obstacles that have been imposed on low-income, ethnic minority neighborhoods have led to an adaptive strategy for survival in which gangs play a central, albeit destructive, role. “Gangs maintain their cohesiveness and longevity through four core ideals: displaying loyalty, responding courageously to external threats, promoting and defending gang status, and maintaining a stoic attitude toward the negative consequences of gang life,” says Dr. Durán in his recent article entitled, “The Core Ideals of the Mexican American Gang: Living the Presentation of Defiance.” This article was recently published in the Aztlan: A Journal of Chicano Studies (34, no2: 99-134). “State-sponsored opposition to gangs only further solidifies these ideals. Pragmatic solutions will require rechanneling the collective energy of current and former gang members toward community empowerment,” he adds.

Dr. Robert Durán is an assistant professor of Criminal Justice at NMSU. He received his Ph.D. in Sociology at the University of Colorado-Boulder in 2006 with an emphasis in criminology and race. His work experience includes juvenile probation, youth corrections, and child protective services. Dr. Durán's unique background of lived experiences has driven his study of racial and ethnic inequalities within the application of the law. From gang evolution and border surveillance to disproportionate minority contact and law enforcement shootings, his research seeks to provide greater insight into post-civil rights forms of racism and community resistance. Dr. Durán has been studying gangs for the last 14 years in several states: Colorado, New Mexico, Texas, and Utah. He can be reached at rjduran@nmsu.edu.
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http://research.nmsu.edu/news

For additional information about this newsletter or to request hard copies, please contact Hamid M. Rad at (575) 646-6429 or via email at hamid@nmsu.edu

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