



AFRL LA LUZ ACADEMY

“CREATING THE POSSIBILITIES”



INSPIRING FUTURE SCIENTISTS AND ENGINEERS

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Space Weather STEM Activities Flare Up at Roundhouse

The 2011 New Mexico Legislature Math and Science Day event was held at the State Capitol "Roundhouse" building in Santa Fe, NM on 11 March 2011.

Various science, technology, engineering, and math (STEM) education outreach organizations, including AFRL La Luz Academy, set up booths at the event to display hands-on STEM activities and distribute promotional items and literature to visitors.

Students, parents, teachers, dignitaries including Senator Kent Cravens, Representative James Smith, NM Tech President Dr. Dan Lopez, and NM Tech Vice President of Administration and Finance Mr. Lonnie Marquez, and other guests

visiting AFRL La Luz Academy's booth saw hands-on demonstrations of STEM activities related to Space Weather.

Booth visitors explored the effects of charged particles with a Van de Graaff generator, used magnets to investigate sunspot activity, attracted plasma energy towards their fingers by touching a plasma globe, and examined three-dimensional images of solar flares through 3-D glasses, among other activities.



We provided visitors with newsletters, brochures, alien flashlights, and other promotional items and information about our program.

Chamiza Family Science Night

Over 100 elementary school students and their parents attended the Chamiza Elementary School Family Science Night on 8 March 2011, and participated in various hands-on STEM activities.

Visitors to the AFRL La Luz Academy booth got to test their knowledge of the Red Planet with a game of Mars Fact Bingo, explore a scale model of a Mars Missions Flight habitat, investigate the laws of motion with a Newton's Cradle, and launch Alka-Seltzer® rockets up a launch tube.

Plop, plop, fizz, fizz, oh, what fun Family Science Night is!



Teachers Fly

AFRL La Luz Academy hosted/participated in a Civil Air Patrol (CAP) Teacher Orientation Program (TOP) event (formerly called Fly a Teacher) on 26 February 2011.

CAP representatives trained teachers and AFRL La Luz

Academy staff about flying, with a little help from our flight simulators.

Practice flights in actual CAP aircraft were held on a later day.

See www.capmembers.com/aerospace/education/aem_specific/index.cfm for more info about TOP.





Mars Missions Flight

Mars Cave Skylight Investigation (CSI) Mission 2010-11

Link-Up Day: Things to Know

- Media representatives from Kirtland AFB, local TV stations and newspapers, or elsewhere, may take video footage and pictures of the Link-Up Day event, and ask to interview students.

Student Media Release forms were distributed at the mid-year teacher meeting. We

Notice: Video coverage and photos will be taken during the Link-Up Day event.



Some parents and students may object to having their picture taken.

can send additional forms to you if you need them. Also, a Spanish version of the Student Media Release form is now available for those that *habla español*.

Bring the signed Student Media Release forms with you on Link-Up Day and turn them in at the Docking Station (Registration).



We will supply special "Please, No Pictures!" badges for those who do not turn in, or indicate "consent denied," on the Media Release form.

- Before the event, please emphasize with students that the

Link-Up Day facility is not a playground, and not a place for roughhousing and horsing around. This means no running, jumping over habitat tunnels, going behind tunnels after construction is complete, or unplugging of power cords or fans as pranks.

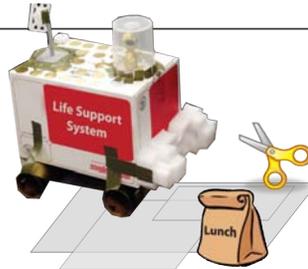
Remind students that they are on a serious mission to colonize Mars and should behave accordingly. Thanks!

Link-Up Day: Things to Bring

- Pre-Cut Plastic Habitat Pieces**

TEAM A: Front Wall, Airlock (Door Panel), Floor
 TEAM B: Left Wall, Right Wall, Two Connecting Tunnels
 TEAM C: Ceiling, Back Wall, Fan Tunnel

- Life Support System**
You'll need this to do your



Technical Briefing--and to survive on Mars!

- Link-Up Day Lunch**
Empty stomachs make for very long journeys and very

How to Find Mars

If you're looking for Mars, it's the big red ball orbiting the Sun between us and Jupiter.

If you're looking for your Link-

grumpy astronauts.

- Other Items**
For a complete list, see the **Manifest List** included with this newsletter, or in your manual on page 103.

Up Day site, detailed information and directions will be included with your *invitation packets*, which will be mailed out soon.

Let us know if you don't receive your invitation packets.



Your **commitment** to this mission is crucial to its success.

Link-Up Day Dates and Sites

Date	Site	# of Habitats
26 April 2011	Roswell	2
6 May 2011	Albuq. Conv. Ctr.	62
13 May 2011	Las Cruces	14

Roswell LUD Flips 60-Year Legend

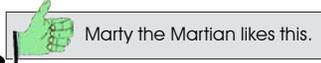
Ever since 8 July 1947, when an official press release claimed that personnel from the Roswell Army Air Field's 509th Bomb Group had recovered a crashed "flying disc" from a ranch near Roswell, NM,

Roswell has had kind of a reputation as the favorite "go-to" place on Earth for aliens.

But at the Link-Up Day event



on 26 April 2011, the human Roswell-area fifth grade Mars Missions Flight students will flip this around a bit, because they will be the alien life forms...on *Mars*!



Marty the Martian likes this.

DoD STARBASE Flight

They See Me Rollin'

"They see me rollin', they start learning STEM."

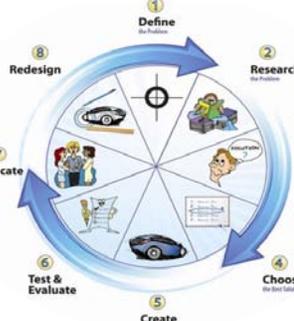
The sixth grade students participating in Day 4 this semester roll around the engineering design wheel by designing a safety restraint device incorporating Newton's Laws of Motion to protect Eggbert from a crash-landing in his shuttle.

Students also design a space station using PTC Pro/ENGINEER® software, investigate forces with Vernier® force sensors, and explore

Newton's Laws some more with Newton's Cradles.

Instructor Ms. Claranita Williams even rolls around on roller skates to help students understand Newton's Laws!

Students exploring engineering de-



sign and STEM hands-on—that's just how we roll!

Don't forget to turn in your Media Release Forms!

At least one week in advance, please give us the name of each adult per driver's license, the last four digits of their Social Security Number, and the estimated number of students you're bringing.





PETES Flight

Providing Engineering and Technology Experiences for Students Flight

Space Meteorologist Speaks to Students

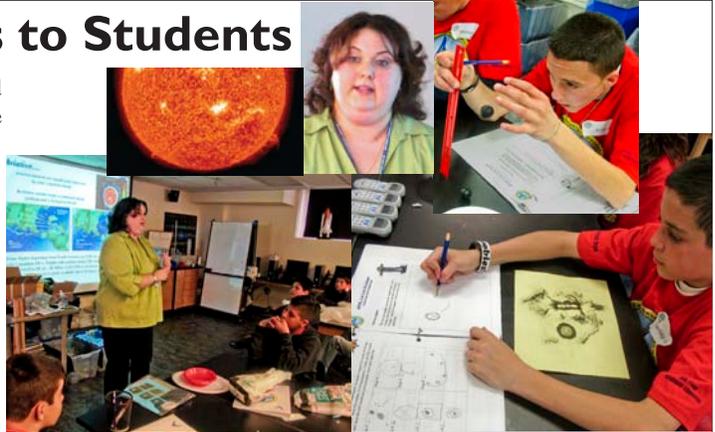
The Van Buren middle school students attending Day 2 of the PETES Flight on 25 Feb 2011 got a special treat. Ms. Misty Crown, a Space Meteorologist from AFRL's Space Vehicles Directorate, came to talk to the students about Space Weather.

Ms. Crown told them how radiation and charged particles from solar storms like *coronal mass ejections* can travel *one to five million miles per hour*.

She said these solar events can cause communications prob-

lems for aircraft; electrical grid collapse and blackouts; satellite orientation, drag, and tracking problems; degraded GPS service; and even cause pigeons, who have an internal biological compass made of *magnetite*, to become disoriented!

Other Day 2 student activities include Listening to the Light, exploring Materials Science with memory metal and Happy/Sad Balls, graphing sunspot activity, and constructing series and parallel circuits to turn on light bulbs.



Don't forget to turn in your Media Release Forms!

At least one week in advance, please give us the name of each adult per driver's license, the last four digits of their Social Security Number, and the estimated number of students you're bringing.



Intro to Systems Engineering Flight

Expo Prep

For Day 2, Intro to Systems Engineering students review the programming skills they learned on Day 1, such as writing *For-Next loops*. Using a Basic Stamp Board, they review how to control *piezo speaker circuits* and *servo motors*.

Then, teams of students construct their Boe-Bot® robots, and, with the aid of *flowcharts*, program them to move forward, backward, and turn on an obstacle course.

It's all in preparation for the Robotics Expo, coming in Day 3!



Don't forget to turn in your Media Release Forms!

At least one week in advance, please give us the name of each adult per driver's license, the last four digits of their Social Security Number, and the estimated number of students you're bringing.



STEM Challenge Flight (formerly the SPACE Flight)

A Systems Engineering Approach to STEM Projects

QRs Are Getting Hot! It's Symposium Time!



Uh-oh! It's time for Qualifying Reviews (QRs) to wrap up, but some STEM Challenge teams still haven't scheduled theirs yet!

The STEM Challenge Symposium is THIS MONTH, Tuesday, 19 April 2011, so getting your QR done is getting *very hot!*

If you have completed your QR, and qualified, great job! Start

finalizing your presentation and display for the Symposium.

Turn in paper and electronic copies of your briefing, plus any special booth needs (like electrical outlets) to us a week before the event.

Invitations are being sent out with directions and further information. Let us know if you don't get yours.



The Next Step...



1. SCHEDULE YOUR QR right away, if you haven't!
2. Finalize your project.
3. Prepare your ten-minute Powerpoint briefing, and an electronic and hard copy of your Annotated Briefing.
4. Prepare your booth.
5. Practice your presentation.
6. One week before the Symposium, turn in your electronic briefing slides and other ma-

terials (i.e. video tape), electronic/hard copies of your Annotated Briefing, and special needs for your booth (i.e. electrical outlet).

7. At the Symposium, do your briefing and man your display booth.
8. Don't get nervous about giving your presentation in front of an audience. You'll do fine! Remember, all the other teams in the audience have to give a briefing, too!



Teacher Institute

Pick A Date!



This is it, Fellows! The moment you've all been waiting for. The Teacher Institute Symposium is *this month*. Start wrapping up those projects and presentations!

Also, pick which Symposium date you plan to attend; you have two to choose from! Whichever one you pick, mark that date on your calendar. Can't wait to hear about your projects!



AFRL LA LUZ ACADEMY

AFRL La Luz Academy
PO Box 9556
Albuquerque, NM 87119



(505) 846-8042
AFRLLaLuzAcademy@Kirtland.af.mil

Website: www.vs.af.mil/LaLuz/

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Mr. Steve Burke, Technical Writer, or
Ms. Ronda Cole, Director.

Important Terms and Acronyms

- AF:** Air Force
- AFB:** Air Force Base
- AFRL:** Air Force Research Laboratory
- AFRL/RD:** The Directed Energy Directorate of the AFRL (formerly AFRL/DE)
- AFRL/RV:** The Space Vehicles Directorate of the AFRL (formerly AFRL/VS)
- CSI:** The Mars Cave Skylight Investigation mission
- DoD:** Department of Defense
- KAFB:** Kirtland Air Force Base, Albuquerque, N.M.
- LF:** Leadership Flight
- PETES:** Providing Engineering and Technology Experiences for Students
- PRS:** Phillips Research Site
- R&D:** Research and Development
- STEM:** Science, Technology, Engineering, and Math
- TI:** Teacher Institute
- T²:** Technology Transfer
- TTE:** Technology Transfer for Education
- USAF:** United States Air Force

Finish Your Presentations!

Hurry, the Teacher Institute Symposium is the last week of April! Here's some tips to help you finish your presentations.

- On the Cover Sheet, remember to put, "This report, *'Team Name Project Name'* provides the results of the science, technology, engineering, and mathematics (STEM) project completed during the 2010 AFRL La Luz Academy Teacher Institute summer session."
- Include all Work Breakdown items in your Gantt Timeline.
- Lessons Learned: Include what



went right *and* wrong, and how you overcame problems.

- On your Conclusion slide, include a summary of your findings, the recommended next step for the project, and any potential uses for the results from your project.

The Next Step...



- **Finalize your STEM lesson plan** in your classroom
- **Finalize your presentation** for the Symposium
- **Pick a date** to attend the Symposium: 26 April from 5-7 pm, or 30 April from 10 am to noon, **mark that date** on your calendar, and **send us an email** to let us know your date
- **Attend the Symposium** on the date you selected, and **give your presentation**
- Congratulate yourselves and your students on a job well done!

STEM Bytes

Let's Talk About the Weather

If you've ever watched KOB-TV4's weather segment, you've probably noticed that the meteorologists will often refer to the current weather conditions at a local middle school.

That's because AFRL La Luz Academy and KOB-TV4 have teamed up with AWS Convergence Technologies, Inc. to provide weather stations and student weather activities to middle schools around New Mexico.

The WeatherBug.com site has some wonderful educational resources for students, whether your school has a weather station or not. Here's how to find them:

1. Go to <http://weather.weatherbug.com/>.
2. Select the green "About WeatherBug > WeatherBug Schools" tab.



3. Click the big blue button marked "For Teachers."
4. Click on the "Sample Interactive Lessons" graphic.

There are a number of interactive weather activities there to choose from. See if any might complement *your* curriculum!

Mars Needs Leadership

According to recent movies coming out of Hollywood, what Mars needs most right now is *moms*.

We, however, are still looking for 5-10 additional middle school Leadership Flight students to help as members of Mission Control for our Mars CSI Mission

Link-Up Day event on **Friday, 6 May 2011** at the Albuquerque Convention Center.

If you would like to nominate any students to be Mission Control members for this event, please contact Ms. Ronda Cole at 846-8042 or ronda.cole.ctr@kirtland.af.mil.



Space News

- 12 April 2011: 50th anniversary of manned spaceflight. See www.yurigagarin50.org.

- Mercury has a spacecraft named *Messenger* orbiting it for the first time ever! See www.nasa.gov/mission_pages/messenger/main/.

Our thoughts and prayers go out to all the victims and families of the recent earthquake/tsunami tragedy in Japan and elsewhere.

Coming Next Issue...

- LUD Mission Accomplished
- Bottle Rockets
- I've Got the Power
- Robotics Expos
- STEM Challenge and TI Symposiums



Watch for it!