



# Aerospace Education

March - April 2008

# News

Inspiring Students To Excel

## Fly-A-Teacher Blasts Off at Space Camp!

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### Aerospace Education News

Aerospace Education News is the official aerospace education bimonthly publication of the Civil Air Patrol at CAP National Headquarters, Maxwell Air Force Base, Ala.

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If you have news, events, or ideas we might consider for the newsletter, please submit them electronically to [jstone@cap.gov](mailto:jstone@cap.gov).

The U.S. Space & Rocket Center (USSRC) education department in Huntsville, Alabama, is partnering with Civil Air Patrol to offer the Fly-A-Teacher program to their educator *Space Camp* participants and alumni on Saturday, July 26, 2008 from 8 a.m. to 7 p.m. This experience is an exciting program of instruction, discovery, and flight for teachers, who can then share the excitement, knowledge and aerial photographs of their flight experience with their students.

This day-long experience will include:

- hands-on workshops based on the national standards-based aerospace educational materials developed by CAP, NASA, and the USSRC (topics include flight basics, instrumentation, safety, and careers)
- a 30-minute Cessna airplane flight (includes preflight safety check, airplane orientation, and basic flight maneuvers in addition to the opportunity to take aerial photos to share with students)
- transportation to the Municipal Airport (Saturday airport trip includes educational activities and materials, lunch, airplane flight, and dinner/graduation ceremony)

The total cost of

the workshop is \$99 (which includes the \$35 membership fee for joining CAP as an Aerospace Education Member-AEM). If the teacher is already a member, the \$35 membership fee will be deducted upon receipt of the membership ID number. This program is in conjunction with the Space Camp for educators that is held in the summer at the USSRC. For information on Space Academy for Educators, go to

<http://www.spacecamp.com/educators/camps/index.php>. If you are an alumni of Space Academy for Educators and are interested in this opportunity, please contact Kat Balch by email - [education@spacecamp.com](mailto:education@spacecamp.com) to reserve your spot.

For more information about the Fly-a-Teacher program, go to [www.cap.gov/ae](http://www.cap.gov/ae).



Alabama Wing CAP conducts Fly-A-Teacher



## In the AEM spotlight ...

# Chantelle Rose

Picture an enthusiastic portrayal of an aviation heroine - Harriet Quimby. Picture a group of high school students being transformed by the passion for aviation that "Harriet Quimby" brings to them. Chantelle Rose brings to life the aviatrix Harriet Quimby to her students at Graham High School in Ohio as part of the course she wrote called "Earth, Wind & Fire." The course is aligned with Ohio Science and Technology standards and was transformed into an on-line course this past summer to be delivered to students throughout Ohio by TRECA (Tri-Rivers Educational Computer Association) Digital Academy. Students construct timelines of the history of flight followed by choosing a historical aviator to research and "become" in a third person presentation to be "performed" in front of the class. Mrs. Rose begins the unit dressed as Harriet Quimby and demonstrates to students the presentation qualities and knowledge that she wishes them to exhibit in their project.

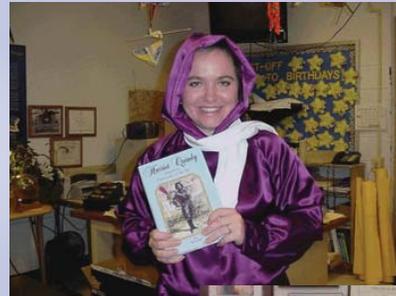
After the students learn about the history of flight, they build their way through aviation history by constructing hot air balloons, kites, gliders, powered balsa airplanes, and rockets. Students experience first-hand the forces of

flight, Newton's Laws of Motion and many other scientific principles. They study the Mercury, Gemini and Apollo space programs, learn about the Space Shuttle and explore the next generation space vehicles. The favorite activity for the year is a NASA Engineering Design Challenge on Thermal Protection Systems. Students work in teams to design, build and test heat shields for model spacecrafts.

**"Learning is a passion and we must provide our students with every opportunity to LOVE what they learn."**

**--Chantelle Rose**

Mrs. Rose's students have launched an experiment onboard a sounding rocket from NASA Wallops Flight Facility, competed in an International Remote Operated Vehicles Competition at NASA Johnson Space Center, met Homer Hickam and launched rockets from the "real Cape Coalwood" and presented their results from Engineering Design



Challenges at the National Earth to Orbit Symposium at Marshall Space Flight Center. These students are learning first hand what it takes to "make it" in the world of science, technology, engineering and math through authentic, real world experiences.

Chantelle is also a seven-year member of Civil Air Patrol as an Aerospace Education Member. She has applied for and received grants from the Air Force Association and has completed the CAP Aerospace Education Excellence Program with her students for the past six years. Mrs. Rose has participated in the CAP Fly-A-Teacher Program and has been both a participant and presenter for the National Conference on Aviation and Space Education. In 2007, she was selected as the Ohio Earth Science Teacher of the Year.

We value Mrs. Rose and appreciate her love of aviation and space as she relates this interest to her students. She is truly an inspiration to all she comes in contact with and continues to "spread the word" about aerospace education in her own unique and special way.



Chantelle Rose works with students on rockets

In the AEO Spotlight.....

## Maj Silvano Wueschner



When it comes to Aerospace Education, the Alabama Wing is on fire! The dynamic AE team, led by Maj Silvano Wueschner as Wing Director of Aerospace Education, is committed to bringing AE to the seniors, cadets, schools, and communities in Alabama Wing. To promote this idea, Maj Wueschner has not only participated in delivering orientation rides for cadets, but has also been instrumental in the educator Fly-A-Teacher Program's success in his wing. Recently, Alabama Wing flew 14 teachers from the Boaz School System. Participating teachers were brimming with excitement and could not wait to share their experiences with students. Maj Wueschner is eager to make this opportunity available to other educators in the state.

A wealth of experience and unmatched enthusiasm are the ingredients that Maj Wueschner brings to the Alabama Wing AE position. His previous assignments included Internal Aerospace Education Officer for the wing and prior to that he was Professional Development Officer for Maxwell Composite Squadron. He holds the Master Rating in Aerospace Education. In addition, Maj Wueschner has completed the requirements to serve as a Skills Evaluator, Mission Scanner, and Mission Observer. His educational background includes a PhD in history from the University of Iowa which he uses in his position as Staff Historian for Air University at Maxwell AFB. Not only is Maj Wueschner a dedicated volunteer for CAP but he has also served his country in a deployment to Iraq in 2006 as part of his Air University duties.

Maj Wueschner believes in the Aerospace mission and



Maj Wueschner and cadets prepare for Fly-A-Teacher

is working diligently to provide educators the opportunity to think about the possibilities of melding the subjects taught in the classroom with aviation and flying. He wants them to translate the flying experience into real time classroom instruction, using aviation as a tool to deliver a variety of subject matter.

In the AE cadet realm, Maj Wueschner has taught AE modules at squadron meetings and at the Summer Encampment at Ft. McClellan. He has supported the Alabama Iron Man competition by supervising the rocket launch portion of the event. Maj Wueschner has also enabled cadets to take advantage of special events such as the Prattville Fly-In, where they were able to provide marshaling services and at the end of the program to complete the launch portion of the hands-on activity in the Saturn Phase of the Rocketry Program.

In Maj Wueschner's life, CAP is a family affair. His wife, 1Lt Rasika Wueschner serves with him on the Wing staff. His children, Cadet/Chief Master Sergeant Esala Wueschner and Cadet/Technical Sergeant Sachini Wueschner, are members of the Maxwell Composite Squadron. The entire family is involved and takes pride in being a part of the CAP family. We wish them the best and hope they continue to foster their love of aviation and CAP. They are what CAP is all about!

*"A good deal of what we will be doing in the future will in some way be connected to Aerospace, and all of us, in the Alabama Wing, are committed to promoting Aerospace Education not only through our CAP activities but also by fostering AE in our communities."*

*--Maj Silvano Wueschner*



## School Enrichment Program Spotlight: Dreams Take Wing in Rural North Alabama Town

The birth of Alabama's first School Enrichment Program, the Boaz Middle School (BMS) Squadron 801, literally came "out of thin air." After students in Lynn Toney's gifted classroom began sharing their interest in aviation and their dreams "to fly," she began exploring ways that she could meet their needs. Ms Toney began a search for a mentor for her inquisitive students. The person with the "Wright Stuff" literally flew into the school system, and her classroom. Boaz School System's new assistant superintendent, Dr. Randall Haney, a pilot and the chief of aircraft maintenance with the Civil Air Patrol, was soon to be the link to her students' dreams coming true, and ultimately to become the entire community's link to the future.

Dr. Haney asked Ms Toney, who has been a middle school teacher for seventeen years, if she would like to start a CAP cadet squadron at their school. At that time, three years ago, Ms Toney hesitantly asked, "What IS CAP and, more importantly, what would I have to do?" Little did she know that CAP would soon become intricately entwined not only in her own life, but that of her students and her own children, as well.

Each Thursday afternoon, Lynn meets with her new cadet squadron in an after-school program. They practice drill, launch rockets and take tests that they actually enjoy! Her son, Jake, was too young to join the first year but watched the "older" students with eager anticipation until the second year, when he was old enough to join CAP. He is now a Cadet Airman who lives for Thursdays and week-ends to participate in the many CAP activities offered to the students.

Lynn's younger daughter, Erica, had a much longer wait to join CAP... but, this year, a miracle dropped "out of thin air" that would allow Erica and her fellow elementary students an opportunity to become "Junior Cadets." The CAP National Headquarters creat-



Cadet Casey Jones, Capt Lynn Toney, CAP pilot Talmadge Butler and Cadet Jake Toney ready for an orientation flight.

ed a prototype elementary program to allow younger students an opportunity to experience many of the same elements of the cadet program. Lynn Toney could not contain her excitement and enthusiasm when Dr. Haney asked her, once again, if she wanted to start a new CAP program.

Captain Toney is the Deputy Commander, the Finance Officer and Testing Officer of the BMS Squadron 801. She has also coordinated all three schools in the elementary Jr Cadet program. She worked with the Alabama Wing to coordinate CAP's Fly-a-Teacher program for the teacher members in the Jr Cadet program. Her older cadets assisted by marshalling the flight line and fueling the planes.

Lynn Toney and the other CAP leaders are all volunteers. There is no remuneration for the time spent after school, the Saturdays spent at the airport, or the money spent for the needs of the cadets. One would think there would be some sort of supplemental income, like coaches get. But, Lynn Toney has found the secret of CAP that volunteers across America have found for over 65 years--- "It isn't about getting paid back; it is about serving my family, my students, my community, and yes, even my country while truly making a difference in our lives today and tomorrow."

"You've come a long way, baby" is an appropriate catch-phrase for the baby squadron that Lynn has watched grow from a dozen or so "newbies" to 18 cadets who are all in proper uniform and "ranking up" each month. The

cadets and the adult leaders are all CPR and AED trained and all have completed the Emergency Services online tests. Most have completed the BASIC FTX training, some have been to encampments, and all have participated in Orientation flights (O-rides).

Today, the squadron's first recruits are in the newly-formed SEP at Boaz High School. The squadron has been awarded proclamations of merit from the Boaz Mayor for doing many community service projects. They perform the Color Guard duties for most of the ceremonies of the Boaz School System and for the City of Boaz. Cadets have gone to the Birmingham Museum of Flight, the Birmingham Airport, and the Space and Rocket Center. And, a tremendous new wave of excitement has come over the whole community since being named the National Lift-off site for the Jr Cadet program.

The leaders of the Boaz School System, Superintendent Leland Dishman and Asst. Superintendent, Randall Haney, are a visionary team. They are working with Alabama's educational and government leadership to develop "the next step" for the students of Boaz. Students in grades K-12 are being provided academic and leadership guidance that will prepare them to be competitive in the workforce development of north Alabama. New aerospace industry is locating in the area, and new post-secondary training is also in the works for the area---all because of a few students with a dream to fly...

**"It isn't about getting paid back; it is about serving my family, my students, my community, and yes, even my country while truly making a difference in our lives today and tomorrow."**

**---Lynn Toney**



## CURRICULUM CORNER .....

### Counting Your Lucky Stars

Activity from NASA Sci Files and presented at SEEC (Space Exploration Educators Conference) in Houston

**Objective:** Students will understand how astronomers use sampling to estimate the number of stars in the universe.

**National Science Standards:**  
Content Standard A: Science as Inquiry  
• Understanding about scientific inquiry  
Content Standard D: Earth and Space Science  
• Objects in the sky  
Unifying Concepts and Processes  
• Evidence, models, and explanation

**Grade Level(s):** 3-5

**Background:**  
There are two principal ways of gathering data; using census (counting) or sampling. Sometimes it is impractical to count every single item such as each character on a classified ad page in the newspaper. Instead, you can count the number of characters in a small area and then mathematically calculate an estimate of the total number on the page. This method is called sampling. Astronomers use sampling to estimate the number of stars in a galaxy and even in the universe.

**Materials:**  
• Star Field Sheet  
• pencils  
• scissors  
• science journal

**Procedure:**  
1. Observe the Star Field Sheet and estimate the number of stars it contains. Record your estimate in the chart on the next page.  
2. Cut out the sampling window (found on the next page) along the solid lines.  
3. Fold the window in half, with the

pattern lines on the outside, and cut along the dashed lines. Unfold the window.  
4. Hold the window about 30 cm above the Star Field Sheet and drop. Make sure the window lands completely within the boundaries of the star field. If not, drop the window again.  
5. Count the number of stars within the window, being careful not to bump or move the window. Count any stars that have at least 50% of their area in the window. Record the number of stars in the chart on this page.  
6. Repeat steps 3-5 for two more trials.  
7. Average the number of stars sampled and record. (Discuss how to average numbers).  
8. Look at the Star Field Sheet and count the number of squares that make up the star field.  
9. Multiply the number of squares in the star field by the average number of stars you counted in your samplings.  
10. To find out how close your sampling is to the actual number of stars, divide the squares among your classmates and have each person count the stars in his/her square. Record in a class chart and find the sum of all the squares (which should total about 447).

**Extension:**  
Conduct this experiment using the classified ad section of a local newspaper. Instead of stars, the students will be determining the number of characters on a page. Spaces don't count. To determine the actual number of characters on the page, cut the page into enough pieces for all students to have one and have them count the characters in their own sections.

**Conclusion Questions:**  
1. How did your prediction compare to the approximate number of stars determined by sampling?  
2. How did the approximate number of stars determined by sampling compare to the actual number of stars?  
3. Why would astronomers use sampling to estimate the number of stars in the night sky?  
4. What could you do to improve the accuracy of the sampling?  
5. How else could sampling be used?

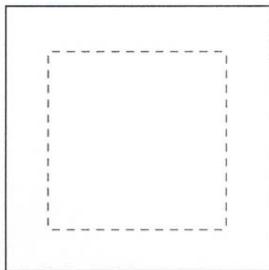
**Answers to Conclusion Questions::**  
1. Answers will vary.  
2. Answers will vary.  
3. Astronomers would use sampling to estimate the number of stars in the night sky because with billions of stars, it would be impossible to count them all in a person's lifetime.  
4. Answers will vary but might include that the number of trials could be increased. The more trials, the better the estimate. Securing the window to the paper so that it does not move would also help to increase the accuracy of the sampling.  
5. Sampling can be used in many ways, and some include: counting populations of insects; estimating the number of people at a sporting event; and so on.



For an interactive game about stars, go to [http://www.nasa.gov/audience/for\\_kids/kidsclub/flash/games/levelthree/KC\\_Star\\_Collapse.html](http://www.nasa.gov/audience/for_kids/kidsclub/flash/games/levelthree/KC_Star_Collapse.html)

# CURRICULUM CORNER .....

## Counting Your Lucky Stars.....(conclusion) ([http://scifiles.larc.nasa.gov/docs/guides/guide2d\\_03.pdf](http://scifiles.larc.nasa.gov/docs/guides/guide2d_03.pdf))

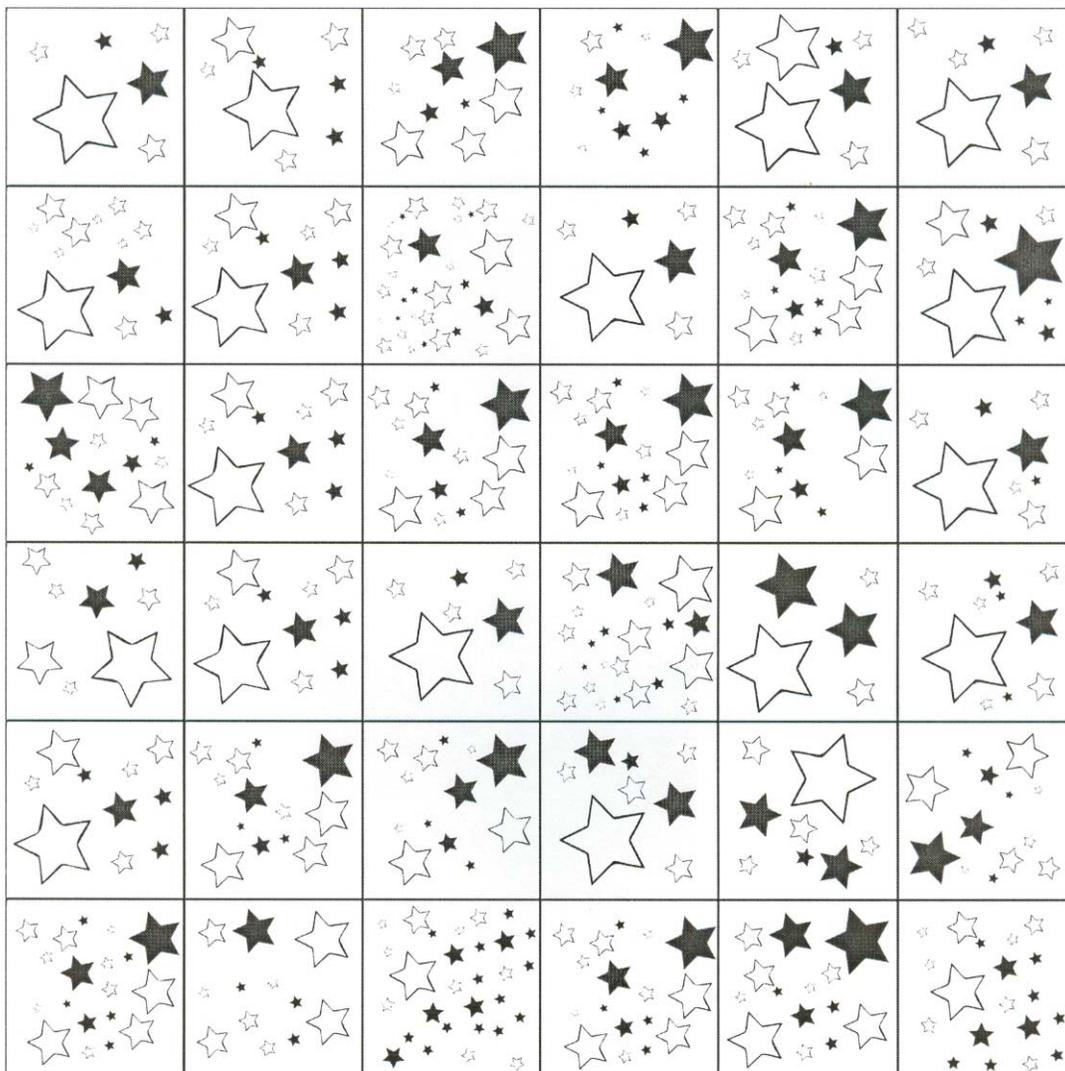


Sampling Window

	Prediction	Average	Number of squares in the Star Field	Approximate Number of Stars in Star Field	Actual Number of Stars
Trial 1					
Trial 2					
Trial 3					
Total:					

### Sampling Star Field

Multiply average number of stars by number of squares.





## AEO/AEM News and Views



**AFA** continues to provide outstanding support to Civil Air Patrol and aerospace education. AFA has now given CAP over \$240,000 in \$250 aerospace grants that have been used to promote aerospace education in CAP squadrons and in the classrooms of America. The next grant cycle is for educators and the deadline for submission of the application is **March 31, 2008**. Go to [www.cap.gov/ae](http://www.cap.gov/ae) for an application.

If you have any questions, please contact [jstone@cap.gov](mailto:jstone@cap.gov) or [jmontgomery@cap.gov](mailto:jmontgomery@cap.gov).

AFA Educator Grant winner Melanie Byers' student building rocket.



### Graduate Credit Opportunity

CAP, in partnership with Adams State College in Alamosa, Colorado, has developed another wonderful opportunity for our teacher members. Our aviation and space hands-on activities program called the Aerospace Education Excellence (AEX) Award Program has now been divided into six separate courses at Adams State. You can receive one hour of graduate credit for each of the AEX courses you completed. For further information on course content and how to go about receiving this credit, go to our website at [www.cap.gov/ae](http://www.cap.gov/ae) or email [ddahl@cap.gov](mailto:ddahl@cap.gov).

### NASA Smart Skies™ Distance-Rate-Time Investigations in Air Traffic Control - Great Resource

NASA Smart Skies™ offers two sets of free, standards-based, classroom-tested activities for teaching math to middle school students using real-life air traffic control (ATC) problems.

"FlyBy Math™" includes a hands-on experiment and six different math methods to examine two airplanes flying on intersecting routes.

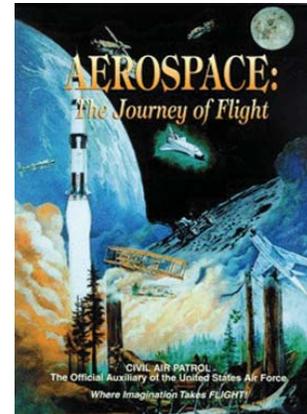
"LineUp With Math™" features an on-line interactive ATC simulator. Students act as controllers to "line up" several planes, with proper spacing, at an intersection of jet routes. Workbooks provide the underlying mathematics to help students optimize their solutions.

For more information, visit: [www.smartskies.nasa.gov](http://www.smartskies.nasa.gov). A student website, [www.atcsim.nasa.gov](http://www.atcsim.nasa.gov), provides direct access to the simulator. The FAA supports this education outreach: [www.faa.gov/education](http://www.faa.gov/education).

### National AEO School

It's not too soon to apply for the 7th Annual National AEO School to be held from June 25-29 at Pensacola NAS, Florida. This highly successful school discusses everything happening in CAP Aerospace Education today. It is a great opportunity for new AEOs and DAEs to learn more about our aerospace education programs and their aerospace responsibilities. There is always a good mixture of experienced AE officers and new ones that allows for great interaction and sharing. So far, 25 members have applied and there is room for about 50. Apply now to save a spot!

Plans are being made to present an AEO School in Washington Wing this summer. Details with follow soon. If you have any questions about AEO Schools, please contact Dr. Jeff Montgomery at [jmontgomery@cap.gov](mailto:jmontgomery@cap.gov).



### Journey of Flight Update

The 2nd edition of *Aerospace: The Journey of Flight* (CAP's comprehensive Aerospace textbook) will be available at Vanguard Industries for purchase by early April. This 2nd edition updated the space sections of the textbook and corrected all of the minor errors from the previous edition. This 680 page textbook was written for high school and college students as well as adults. For purchasing information go to <http://vanguardmil.com/store>.

### Satellite Tool Kit (STK)

Analytical Graphics, Inc. (AGI) is a great partner to CAP. One of their many products is STK, which is the leading off-the-shelf satellite software package that supports satellite systems from mission planning through operations. Basic applications include tracking satellites and determining locations.

AGI has given CAP hundreds of free copies of STK. We are offering these free disks to our teacher members for educational purposes in the classroom as well as continued support to the CAP squadrons. To receive a disk to excite your students/cadets with the wonders of space and satellites, please email [jmontgomery@cap.gov](mailto:jmontgomery@cap.gov). You will be provided instructions and licensing information. For more information on STK, go to [www.agi.com](http://www.agi.com).



## REGION TO REGION

### NORTHEAST REGION

**March 27-30**

National Science Teachers Association's 56th National Conference will be held in Boston, Massachusetts.

<http://www.nsta.org/conferences/2008bos>

**March 30-April 1**

New England League of Middle Schools (NELMS) will hold its 27th Annual Conference and Exhibit in Providence, Rhode Island.

[http://www.nelms.org/calendar07-08/annual\\_08/annual08.html](http://www.nelms.org/calendar07-08/annual_08/annual08.html)

### MIDDLE EAST REGION

**May 10**

Sally Ride Science Festival for middle school girls will be held at Towson University in Towson, Maryland.

<http://www.sallyridescience.com/festivals/08towson0510>

**June 22-27**

MY NASA DATA Teacher Workshop will be held at NASA Langley Research Center in Hampton, Virginia. **Application deadline is April 9.**

<http://mynasadata.larc.nasa.gov/workshop.html>

**October 16-18**

Sign up now for the 2008 National Conference on Aviation and Space Education (NCASE) to be held in Arlington, Virginia at the Crystal Gateway Marriott.

<http://www.ncase.info>

### GREAT LAKES REGION

**April 12**

Thunder Over Louisville Air Show will be held in conjunction with the Kentucky Derby Festival in Louisville, Kentucky.

<http://www.thunderoverlouisville.org/show/show-planes.asp>

### SOUTHEAST REGION

**March 12-14**

The Premier National AfterSchool Conference will be held in Fort Lauderdale, Florida, at the Greater Fort Lauderdale/Broward County Convention Center.

<http://www.naaconference.org/>

**April 8-13**

Sun 'N Fun Fly In will be held at Lakeland Linder Regional Airport in Lakeland, Florida.

<http://www.sun-n-fun.org/content/>

### NORTH CENTRAL REGION

**May 31-June 4**

Preparing for the International Year of Astronomy in 2009, the Astronomical Society of the Pacific will hold its 2008 annual meeting in St. Louis, Missouri.

<http://www.astrosociety.org/events/meeting.html>

### SOUTHWEST REGION

No events in this issue.

### ROCKY MOUNTAIN REGION

**April 4**

Space Career Fair will be held in conjunction with The Space Foundation's 24th National Space Symposium at the Broadmoor Hotel in Colorado Springs, Colorado.

<http://www.nationalspacesymposium.org/education/careermain>

**July 13-19**

(Applications due April 7). Floods and Flows: Exploring Mars Geology on Earth - a field-based workshop for teachers will visit the site of Ancient Glacial Lake Missoula and trace the path of its flood waters through Montana, Idaho, and into Washington.

<http://www.lpi.usra.edu/education/fieldtrips/2008/floods2008/st.shtml>

### PACIFIC REGION

**March 29**

Sally Ride Science Festival for middle school girls will be held at Santa Clara University in Santa Clara, California.

<http://www.sallyridescience.com/festivals/08scu0329>

**April 13-16**

TechEd 2008: 13th Annual Technology in Education Conference & Exposition will be held in Ontario, California.

<http://www.techedevent.org/2008-updated/>

### Special Events

Cratering the Moon - NASA Quest Challenge - Help NASA scientists find water on the lunar poles.

[http://quest.nasa.gov/challenges/lcr\\_oss/index.html](http://quest.nasa.gov/challenges/lcr_oss/index.html)

The Cosmic Lesson Competition - High School and Middle School teachers are invited to participate in a unique, year-long learning adventure and the opportunity to win a Digital STARLAB Planetarium system valued at \$58,000. For more details, go to

<http://www.cosmiclesson.com>

FIRST (For Inspiration and Recognition of Science and Technology) presents the FIRST LEGO Robotics Competition. <http://www.usfirst.org/what/fll/default.aspx?id=390>

Sun-Earth Day 2008 - March 20 as part of Solar Week from March 17-21 <http://sunearthday.nasa.gov/2008/index.php>

<http://www.solarweek.org/>

17th Annual Sky Awareness Week (SAW) - April 20-26 <http://www.weatherworks.com/skyawarenessweek.html>

Celebrate Space Day - May 2 <http://www.spaceday.org/index.html>

Astronomy Day - May 10 <http://www.astroleague.org/al/astroday/astrofacts.htm>