

Opening Session
Friday, August 14, 2009
9:00 am, Golden Eagle Ballroom

Dr. Barbara Shannon
Vice Chair, California Teacher Advisory Council



Dr. Barbara Shannon is currently the Vice Chair of the California Teacher Advisory Council and Co-Founder/ Principal of the Synergy Kinetic Academy. The California Teacher Advisory Council (Cal TAC) is modeled after the highly successful National Teacher Advisory Council which was established by the National Academies in 2002 to provide a valuable and often absent connection between the teaching community and the educational experts and policy makers who shape California's educational system. As Vice Chair she has facilitated meeting the Cal TAC goals to disseminate public policy information from the state level to teachers, hold forums with members of the business community and provide feedback to and from the National Teacher Advisory Council. She helps the Cal TAC members integrate their 'wisdom of practice' and contribute a valuable perspective to the California Council on Science and Technology education research and projects. At the same time, she is co-founder and principal of the Synergy Kinetic Academy. Synergy Academies are award winning, fully accredited schools in the Los Angeles area whose goal is to eliminate the achievement gap among educationally disadvantaged students whose resources are limited. They do this by creating a sense of *synergy* among all community stakeholders and by showing the educational community how to make better use of those resources that are available in order to achieve greater results. Prior to these positions, Dr. Shannon also served as Science Department Chair as well as Director of Multicultural Affairs at Westridge School.

Concurrent Session 1
 Friday, August 14, 2009
 10:30 am - 11:30 am
 3 Options

| International Year of Astronomy | Climate Change Information for the Classroom and Home | You Too Can Receive Live Weather Satellite Images In Your Class |
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| KH D2071 | KH D2074 | KH C2091 |
| <i>Robert Sparks</i> | <i>Ron Gird</i> | <i>Ed Murashie</i> |
| NASA Educator Ambassador | Outreach Program Manager, NOAA | Principal Engineer, Beckman Coulter |

“International Year of Astronomy” by Robert Sparks, NASA Educator Ambassador and Science Education Specialist, National Optical Astronomy Observatory, Tucson, Arizona. During this year of 2009, the world is celebrating the International Year of Astronomy as it commemorates the 400th anniversary of Galileo’s use of a telescope to study the skies, and Kepler’s publication of *Astronomia Nova*. This year is also the anniversary of many other historic events in science, including Huygen’s 1659 publication of *Systema Saturnium*. This session will reflect on the history, explore the future, and discuss how you can join in the celebrations in the present.

“Climate Change Information for the Classroom and Home” by Ron Gird, Outreach Program Manager, NOAA-National Weather Service. Climate change continues to dominate the science news in the broadcast industry, television, radio, newspapers, the Internet, and now the classroom. The National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service are leaders in providing climate science information to the education and broadcast communities and the public. NOAA hosted a Sally Ride Science Workshop for Teachers July 23 – 24, 2008. The purpose of this workshop was for teachers to learn how to integrate the science of Earth’s changing climate into their classrooms. In June, the American Meteorological Society held their annual Broadcast Conference. A major topic for the attendees was climate change, with several technical sessions presenting the latest science information on climate change. The results of these two workshops will be discussed. Climate change handout materials suitable for the classroom and the home will be distributed.

“You Too Can Receive Live Weather Satellite Images in Your Classroom” by Ed Murashie, Principal Staff Electronic Engineer, Beckman Coulter; member of Group for Earth Observation. Have you ever wondered where the nightly news weather satellite photos come from? Now is your chance to find out. You will learn about the two types of weather satellites and the pictures they transmit. Do you have a computer? Then you are one third of the way to setting up your own receiving station. You will learn about what antennas and receivers to use and will see a complete station and demonstration. If you decide to build your own station, you will leave with a list of the manufacturers, publications and resources that can help you each step of the way. If you find you can’t set up your own receiving station, don’t worry, you will learn about many Internet resources of free data. Once you have the data you will learn how to process and display it. As an educator, a weather satellite station in the classroom is a wonderful tool to spark student interest and promote math, science, geography and computer technology.

LUNCH

11:45 am - 1:30 pm in the Golden Eagle Ballroom

Concurrent Session 2
Friday, August 14, 2009
1:45 pm - 2:45 pm
3 Options

| NPOESS - New National Weather Satellite | Middle School and Microsatellites | Cleaning Up Our Oceans |
|--|--|-------------------------------|
| KH D 2071 | KH D 2074 | KH C 2091 |
| <i>Thomas Lee</i> | <i>Gladys Munoz</i> | <i>Duane Laursen</i> |
| Naval Research Laboratory | Earth Science Teacher, Puerto Rico | Physics Teacher, Retired |

“NPOESS the New National Weather Satellite” by Thomas Lee, Naval Research Laboratory; Jeffrey D. Hawkins, Melinda Surratt, Kim Richardson, Arunas Kaciauskas. We will present the many capabilities of this new series of satellites and show examples of the expected imagery. Attendees will be introduced to a large amount of online training, appropriate to the high school and college level that has been developed through the NPOESS Integrated Program Office, much of it from the Cooperative Program for Operational Meteorology, Education and Training (COMET). This training can benefit students now, even before NPOESS launch, because it reviews important capabilities from existing polar-orbiting satellites. Free to use and publicly available, COMET modules are fully voice narrated and interactive, ending with quizzes to test knowledge. The presenter will also discuss the NexSat web site showing prototype examples of the NPOESS products in near-realtime. It will enable students to make live weather forecasts. Mr. Lee will demonstrate of NexSat live using available Internet resources.

“Middle School Students and Microsatellites” by Gladys Muñoz, Earth Science Teacher, NASA Explorer School, Puerto Rico. Middle school students design, build, launch, track, recover and analyze microsatellites. Together with Puerto Rico Space Grant’s support we have been able to implement a program that has among its objectives to increase students’ interest in science, gives them new content knowledge in science and technology and shows them how to do research. Our rural school in Dorado, Puerto Rico, is part of the NASA Explorer Schools Program and has a population where 77% live below the poverty level. This experience opens up their eyes to career choices in technology that they had not imagined before and, after five years running this program in our school, I can say it helps with students’ feelings of competence. Other objectives include: provide the challenge of access to space to students at low cost and with real weight and environmental conditions; develop cooperative work skills; develop leadership skills; develop problem resolution skills for situations within their time, materials and budget limitations. This has proven to be just as much learning and fun for the teachers!

“Cleaning Up Our Oceans” by Duane Laursen, Physics Teacher, Retired, California; Holly Gray, Algalita Marine Research Foundation. Marine pollution represents one of the most significant environmental problems facing humankind. The ocean has historically been viewed as a dumping ground. The Algalita Marine Research Foundation is dedicated to the protection of the marine environment and its watersheds through research, education, and restoration. This session will provide an overview of the work by the Foundation aboard the Alguita Oceanographic Research Vessel and educational resources available to teachers to raise public awareness and inform students about this critical issue. Resources include GIS maps, education resource kits, videos on marine conservation, and units for studying marine debris.

Concurrent Session 3
 Friday, August 15, 2009
 3:00 pm - 4:00 pm
 3 Options

| Using Remote Telescopes | Survival in a Galactic Wilderness | NOAA-19 & GOES-O |
|--|---------------------------------------|-----------------------|
| KH D 2071 | KH D 2074 | KH C 2091 |
| <i>Robert Sparks</i> | <i>Pamela Whiffen</i> | <i>Tom Wrublewski</i> |
| National Optical Astronomy Observatory | NASA Heliophysics Educator Ambassador | Outreach, NOAA/NESDIS |

“Using Remote Telescopes to Teach Science, Math, Engineering and Technology” by Robert Sparks, NASA Educator Ambassador; Tucson, Arizona. Learn how to involve your students in using technology to control a telescope remotely and perform scientific research by becoming part of the Global Telescope Network (GTN) and support the Fermi Gamma Ray Space Telescope, Swift and the SMM-Newton satellites. The GTN is comprised of students, teachers, amateur astronomers and scientists who collect ground based images of objects related to the primary science goals of these missions. The GTN consists of remote telescopes equipped with modern CCD cameras. The observations can be set up during the day and the telescope takes the images automatically at night. The images can be downloaded for use in the classroom the next day. Your students will learn how to become part of the GTN, how CCD cameras take astronomical images and about active galactic nuclei, some of the most energetic objects in the universe! Activities will include modeling how CCD cameras are used in astronomical imaging, and how to control a remote telescope to take research quality CCD images that you can use in your classroom. Participants in the workshop will receive free access to telescopes to take images and receive a CD of freeware and public domain image processing programs to analyze the images. Online tutorials are available to assist in data analysis.

“Survival in a Galactic Wilderness: Exploring Our Solar System’s Invisible Boundaries” by Pamela Whiffen, NASA Heliophysics Educator Ambassador; Phoenix, Arizona. Journey far beyond the protective layers of our earth’s atmosphere, leave our sheltering magnetosphere far away in the distance, and experience the invisible boundary of our solar system. Explore the region where the solar wind interacts with the interstellar medium and carves out our own protective bubble, the heliosphere. At this distance, about 100 times the distance between the Earth and the Sun, hydrogen atoms travel at speeds from 125,000 to 45 million kilometers per hour and carry clues to the overall shape of our life preserving bubble. Conducted by a NASA Heliophysics Ambassador, each participant will receive a CD-ROM with a selection of materials from the IBES, AIM, THEMIS, and TIMED missions.

“Introducing NOAA’s Newest Operational Satellites NOAA-19 and GOES-O” by Tom Wrublewski, Outreach, NOAA/NESDIS. Participants will obtain an overview of: (1) NOAA’s newest Geostationary Operational Environmental Satellite (GOES-O) that should be on orbit as GOES-14 by the time of the conference and (2) NOAA-N Prime which was launched on February 6, 2009 and became NOAA-19. GOES-O will (among other things) provide the images and data used by U.S. weather forecasters and NOAA-19 is the last of the Advanced TIROS-N Series of Polar-orbiting Operational Environmental Satellites that is used primarily for longer term weather forecasts and climate studies. Find out all the things these satellites do for us every day.

4:00 pm - 6:00 pm Break

Conference Reception
6:00 - 6:30 pm Golden Eagle Patio
No-Host Bar Available

Conference Banquet
Beginning at 6:30 pm, Golden Eagle Ballroom

Dr. Josh Willis
Oceanographer, NASA JPL



Josh Willis completed his Ph.D. in Physical Oceanography at Scripps Institute of Oceanography, U.C. San Diego. His other degrees are in physics and mathematics from University of Houston, Honors College, Houston, Texas, and U.C. San Diego. His areas of expertise include climate and oceanography. Two years ago Dr. Willis helped the M.Y. S.P.A.C.E. (**M**ultinational **Y**outh **S**tudying **P**ractical **A**pplications of **C**limatic **E**vents) high school students at our conference understand the issues they were grappling with in temperature changes of the ocean surface and how those might affect local marine life. He is currently examining the contributors to sea level rise, the general circulation of the ocean, and the ocean's role in global climate change. This involves analyzing satellite and in situ data to investigate the causes of sea level rise, ocean warming, changes in ocean heat transport and the ocean's general circulation, particularly the Atlantic Meridional Overturning Circulation. We welcome Dr. Willis's return to our conference.

Concurrent Session 4
 Saturday, August 15, 2009
 9:00 am - 10:00 am

3 Options

| How To Teach Space Exploration | Astronishing Astronomy | Teaching Climate Change Using Problem-Based Learning |
|---------------------------------------|-------------------------------|---|
| KH D 2071 | KH D 2074 | KH C 2091 |
| <i>Robert Trout</i> | <i>Pamela Whiffen</i> | <i>Steve LaDochy, Pedro Ramirez</i> |
| NASA Solar System Ambassador | NASA Educator Ambassador | Geography Professor Cal State L.A. |

“How To Teach Space Exploration” by Robert Trout, NASA Solar System Ambassador; Chemistry Teacher, Bellflower, California. As a Solar System Ambassador, Robert Trout has taught K-12 students about space exploration and gotten them excited about learning more. He shares his approach with these essential elements: 1) A look back: 1950 to today; combining inspiration with exploration (Sputnik, October Sky, and the Sci-Fi motivational effect on our Jimmy Neutrons); 2) JPL: Robotic exploration of the solar system (Dr. Stone and Voyager; other missions); 3) New Horizons – Where are we boldly going? (and how can we get there?); and 4) Bringing the Stars to Students (a lot of cool pictures, JPL educator resource center with free stuff, inspirational movie listings, experiments for kids, internet educator sites, and the outstanding “Astronomy Picture of the Day”).

“Astronishing Astronomy: NASA’s Fermi Gamma-Ray Space Telescope” by Pamela Whiffen, NASA Educator Ambassador. Launched in 2008, Fermi detects radiation with energies billions of times more energetic than the light visible to the human eye. Extending our vision to gamma-ray sources near the edge of the visible universe, Fermi could contribute to an entirely new understanding of our Universe. Come learn about some of the most exotic objects in our Universe including: supermassive black holes, supernovae, dark matter, and the astonishing power of gamma-ray bursts. Conducted by a NASA Educator Ambassador, each participant will receive a CD-ROM with a selection of powerpoints and inquiry-based classroom activities.

“Teaching Climate Change Using Problem-Based Learning Modules and Earth System Science” by Steve LaDochy, Professor, Department of Geography & Urban Analysis; Pedro Ramirez, Professor, Department of Geological Sciences; Bill Patzert and Josh Willis, NASA/JPL. Global climate change has become a hot topic in schools. Many new educational materials on global change are now available to teachers at all grade levels. Finding appropriate educational tools that are both strong on climate science and technology and engaging for students is difficult. One method that has proven effective in the study of Earth system science is to use a problem-based and event-centered approach. In such a module, an event occurring in the Earth system and its influence on each of the Earth’s spheres (the atmosphere, hydrosphere, biosphere and lithosphere) is determined. In this workshop, we present a new inquiry-based module for use in high schools’ Earth science classrooms centered on recent climate change and its impacts on California. Participants are asked to form a Climate Action Team (CAT) of scientists to investigate climate change in California and its implications in the areas of water resources, energy, agriculture and health. They will use real data to analyze climatic trends and use critical thinking in reporting on possible impacts. The module comes with links to government reports, journal and newspaper articles, which provide additional information to the Team.

Concurrent Session 5
 Saturday, August 15, 2009
 10:15 am - 11:15 am

3 Options

| After IRAS | Magical Mars | Eyes on the Earth 3-D |
|--|--------------------------|--|
| KH D 2071 | KH D 2074 | KH C 2091 |
| <i>Jillian Tromp</i> | <i>Nel Graham</i> | <i>Kevin Hussey</i> |
| Graduate Student, Physics & Astronomy CSULA | Earth Science Teacher | JPL's Visualization Technology Applications & Development |

“After IRAS: Revisiting the Brightest Far-Infrared Sources in Taurus with the Spitzer Taurus Survey” by Jillian Tromp, Graduate Student, Department of Physics & Astronomy, California State University, Los Angeles. The IRAS satellite provided the first uniform survey of embedded young stars in the Taurus star-forming region. To better characterize the embedded population we present data for the brightest far-infrared objects from the 43 square degree Spitzer Taurus Survey, comprising a sample of seventy sources brighter than 0.85 Jy at the 70 micron wavelength. Combined with companion data from SDSS, CFHT, XEST Optical Monitor, 2MASS, and IRAS, the wavelength coverage spans from 0.29 to 160 microns. As identified from SIMBAD the sample composition is 74% young stellar objects (YSOs), 11% galaxies, 9% stars, and 6% miscellaneous objects. The sample includes all known and suggested class 0 and 1 YSOs in this region prior to NASA’s Spitzer Space Telescope. We present spectral energy distributions and revise the classifications of several objects.

“Magical Mars: The World Next Door” by Nel Graham, Earth Science and Science Teacher, Eagle Rock High School, Los Angeles. Mars has aroused our curiosity and imagination for over 150 years. From Percival Lowell’s intelligent civilizations to our first close up looks at a devastated world we have wondered about fundamental questions, the main one being: Is there or was there life on Mars? We now have technology in the form of orbiting satellites, rovers and stationary landers to answer age old questions and look for clues to the newest ones. This session will feature an introductory presentation about the history of exploration and the geology of Mars and how it compares with Earth. I will follow this with a lesson plan and material for a classroom lesson on the potential search for life on Mars. The lesson is a simulation involving students’ examining four sand samples from different locations on Mars and looking for evidence of past or present life. This lesson could be used to support the 5th grade Solar System science content standard, 8th grade Earth’s place in the Solar System, high school Earth Science content standards, or the Planetary Geology in a Physical Geology course.

“Eyes on the Earth 3-D” by Kevin Hussey, JPL’s Visualization Technology Applications & Development Group. Join this demonstration of a new interactive feature on NASA’s Global Climate Change Web site that gives you the opportunity to “fly along” with NASA’s fleet of Earth science missions and observe Earth from a global perspective in a 3-D environment. “Eyes” displays in real time, the location of all of NASA’s 15 currently operating Earth-observing missions, which are constantly monitoring our planet’s vital signs, such as sea level height, carbon dioxide concentrations, global temperatures, and Arctic sea ice extent. It makes an effective tool for educators who want an interactive, game-based approach to engage students grades 3 through 14 in learning Earth Science.

Concurrent Session 6
 Saturday, August 15, 2009
 11:30 am - 12:30 pm
 3 Options

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| NASA's Swift Mission Brings You Newton's Laws | Endangered Glaciers: A Response to Climate Change | POES-GOES Outreach |
| KH D 2071 | KH D 2074 | KH C 2091 |
| <i>Lynn Cominsky, Kevin John</i> | <i>Angelique Hamane</i> | <i>Tom Wrublewski</i> |
| Professor, Department of Physics & Astronomy | Professor, Department of Geology | Outreach, NOAA/NESDIS |

“NASA’s Swift Mission Brings You Newton’s Laws of Motion” by Lynn Cominsky, Professor, Department of Physics and Astronomy; Kevin John, Sonoma State University, California. Facilitate your students’ deeper understanding of Newton’s Laws of Motion by participating in a series of hands-on minds-on activities. Investigations featured in this workshop will allow your students to gain a more rich appreciation of Newton’s Laws of Motion and see how they relate to common real life events. Students and teachers will be drawn into the connections to the Swift Mission as the posters are displayed around the room and discussed. You will engage your students so they can develop their own activities to demonstrate these principles, too.

“Endangered Glaciers: A Response to Climate Change” by Angelique Hamane, Professor, Department of Geology; Shelley Shaul, Graduate Student, California State University, Los Angeles. Glaciers are an excellent indicator of climate change. Generally, glaciers retreat during warm periods and advance through cold periods. Presently, most of our world glaciers are shrinking at an alarming rate, which may lead to their eventual demise. This workshop will use satellite images, pictures and real data to illustrate examples of glacial withdrawal as a result of warmer climate conditions. Participants will take measurements of glacial regression, plot graphs, and interpret findings. This exercise is used in one of CSULA’s online Natural Disasters courses to complement and reinforce lectures on the effects of global climate change. Anecdotally, students have responded favorably to this exercise by increasing their awareness of the impacts of global weather patterns.

“POES and GOES Outreach and Informal Educational Items” by Tom Wrublewski, Outreach, NOAA/NESDIS. Find out what outreach and informal educational materials are available from NASA and NOAA related to Polar-orbiting Operational Environmental Satellites (POES) and the Geostationary Operational Environmental Satellites (GOES). An overview of relevant web sites, videos, games, posters, technology teacher articles, post cards, bookmarks, calendars, CDs, DVDs, etc will be provided.

Lunch and Plenary Session
12:30 pm - 2:00 pm
Golden Eagle Ballroom

**NASA ArctiQuest Expeditions:
Exploring Ice in the Solar System
Dr. Richard Shope**



Participants will experience how to create conditions for authentic, hands-on, minds-on scientific inquiry by learning how to apply a conceptual change framework that emulates how scientists work together as project teams, and collaborative inquiry tools such as the: 1) *INQUIRY Wheel Game*, an expanded approach to the “scientific method”; 2) *X-SAT*, Experimental Science-in-Action Theatre, evoking creative expression of conceptual understanding; and 3) the *ED3U Science Coaching* model, teaching for conceptual change.

NASA ArctiQuest Expeditions

This is a walk through an experiential learning progression about an ice phenomenon that can be adapted for various age and grade levels, structured by the ED3U Teaching for Conceptual Change model, that underlies the NASA product, Exploring Ice in the Solar System.

M.Y. S.P.A.C.E. Team

(Multinational Youth Studying Practical Applications of Climatic Events)

These students from England, China and the United States share their research and experiences, using NOAA and NASA data, and give us challenges for the future. Their reports can be found at www.SatED.org. **The 2008 M.Y S.P.A.C.E. students are:**

From China:

Mr. Jie Lan
Ms. Yangzhi Zhang
Mr. Zhongkai Zhang
Ms. Paiyun Cai
Mr. Yue Zhou
Mr. Jun Zhang
Mr. Yukun Zhou
Mr. Zeyu Zhao

From California:

Ms. April Burgos
Mr. Martin De Leon
Ms. Jessica Garcia
Mr. Antonio Gonzalez
Ms. Emily Nosenotl
Ms. Marlene Valencia

From Florida:

Ms. Natalie Diaz
Ms. Sophie Diaz
Ms. Kiera Russell
Ms. Tiffany Virgin
Ms. Andrea Rabassa
Ms. Elena Lancelotta

From England:

Mr. Michael Tagg
Ms. Sophie Buckingham
Mr. Joshua Stevenson



M.Y. S.P.A.C.E. Team 2008

2008 M.Y. S.P.A.C.E. Teachers are (front row, left to right): (from Florida) Alan Crockwell; (from California) Pete Arvedson; (from China) Xiqiang Wu, Xiaohong Song, Rongsheng Mu; (from England) Simon Cracknell and Marcileida Dos Santos; (from New Jersey) John Moore; (from Washington, not shown) Michael Holst.

EXHIBITORS

**National Oceanic and Atmospheric Administration
NESDIS, NWS, and Education Coordinated by NESDIS
Contact: Nina Jackson (Nina.Jackson@noaa.gov)**

The National Oceanic and Atmospheric Administration's (NOAA's) mission is to understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs.

NESDIS: National Environmental Satellite, Data and Information Service is dedicated to providing timely access to global environmental data from satellites and other sources to promote, protect, and enhance the Nation's economy, security, environment and quality of life. To fulfill its responsibilities, NESDIS acquires and manages the Nation's operational environmental satellites, provides data and informational services and conducts related research.

NWS: Jamie Meier and Dave Sweet will present the NWS exhibits. The National Weather Service is the primary source of weather data, forecasts and warnings for the United States. Television weathercasters and private meteorology companies prepare their forecasts using this information. The NWS is the sole United States official voice for issuing warnings during life-threatening weather situations.

Office of Education: The Office of Education, in conjunction with the NOAA Education Council, coordinates education activities across NOAA and oversees the implementation of the NOAA's Education Plan and Policy. These efforts help to ensure that NOAA's education programs and activities are based on NOAA science and support the agency's cross-cutting priority of promoting environmental literacy. The Office of Education also works with external partners to promote environmental literacy efforts that directly benefit the NOAA mission.

**Satellite Educators Association
Contact: John Moore (jmoore@bcit.cc)**

The Satellite Educators Association was established in 1988 as a professional society to promote the innovative use of satellite technology in education and disseminate information nationally to all members. Membership includes master educators who are orchestrating the learning process for their students. We have the ability to connect teachers with the appropriate discipline. We can teach the technology skills needed to study practical questions and problems. SEA contributes to the perspective and expertise of our membership in K-16 education to help students understand Space and Earth Science. Teacher resources, curriculum and hands-on activities are developed in accordance with the current National Standards and Assessment. Services to educators include providing resources and materials, offering support, training, networking and continuously updating curriculum. SEA is the owner and coordinator of the Satellites & Education Conference.

NASA/Jet Propulsion Laboratory

Contact: Annie Richardson (Annie.H.Richardson@jpl.nasa.gov)

The Jet Propulsion Laboratory, managed by the California Institute of Technology, is NASA's lead center for robotic exploration of the solar system. Their spacecraft have visited all the planets in the solar system except Pluto. JPL telescopes are observing distant galaxies in the universe to study how the solar system was formed. They also manage the worldwide Deep Space Network, which communicates with spacecraft and conducts scientific investigations from its complexes in California's Mojave Desert near Goldstone; near Madrid, Spain; and near Canberra, Australia. JPL cameras and sensors are aboard satellites circling Earth to study the ozone, oceans and other Earth sciences. To support continued exploration, JPL is making advances in technology with new instruments and computer programs to help our spaceships travel farther and our telescopes see farther than ever before.

Northrop Grumman Corporation

Contact: Ray Haynes (ray.haynes@ngc.com)

Northrop Grumman Corporation is a global defense company headquartered in Los Angeles, California. Northrop Grumman provides technologically advanced, innovative products, services and solutions in systems integration, defense electronics, information technology, advanced aircraft, shipbuilding and space technology. With approximately 125,000 employees and operations in all 50 states and 25 countries, Northrop Grumman serves U.S. and international military, government and commercial customers.

Northrop Grumman with NPOESS

Contact: Jane Whitcomb (jane.whitcomb@noaa.gov)

The National Polar-orbiting Operational Environmental Satellite System (NPOESS) is a future satellite system which will merge the current civilian and military polar environmental satellite systems. The development of NPOESS is a team effort by the federal government (NOAA, Department of Defense, and NASA) and private sector contractors led by Northrop Grumman. This booth provides teachers with educational materials developed by the government and private sector partners, including a complete satellites and orbits module developed with assistance from classroom teachers.

NASA/NOAA SciJinks

NASA Space Place

Contact: Alexander Novati (Alexander.Novati@jpl.nasa.gov)

NASA's and NOAA's "SpacePlace" and "SciJinks" outreach efforts include award winning web sites and other programs targeting elementary and middle-school students with entertaining, interdisciplinary space, Earth science and technology content.

COSEE-West Marine Science Programs
Contact: Gwen Noda (gwennoda@ucla.edu)

UCLA and USC have several outreach programs in marine science education for K-12 teachers and students. The most recent of these is COSEE-West, a collaborative effort by USC and UCLA, funded by the National Science Foundation for 5 years (2002-2007). The primary goal of COSEE-West is to integrate ongoing research in the ocean sciences with K-12 education and outreach. COSEE-West increases public awareness of current ocean sciences through lectures by research scientists, helps teachers present these issues in the classrooms through workshops, online courses and materials, and heightens the interest of students in science and in ocean science careers through connections with university/college faculty and students. Our Conference exhibit showcases information about COSEE-West events plus other marine science education programs offered by UCLA and USC and their COSEE-West partners.

American Institute of Aeronautics & Astronautics
Contact: Dean E. Davis (Dean.E.Davis@boeing.com)

The Los Angeles Section of the American Institute of Aeronautics & Astronautics (AIAA), the world's largest technical society dedicated to the global aerospace profession, will be providing a booth showcasing its pre-college Science, Technology, Engineering, and Mathematics (STEM) educational outreach capabilities, tools, and resources available to teachers and students.

Along with information on AIAA hands-on, interactive, STEM educational outreach programs, free AIAA Educator Associate Membership Applications, which entitle teachers to apply for \$200 classroom grant money and free access to the AIAA Space 2009 Education Alley program in September, will be available at this booth.

***Lunar Pioneers* - A Novel for Middle-Grade Readers**
Contact: Robert A. Black (<http://www.rablack.com/>)

Lunar Pioneers is a story that depicts the thrill and adventure of space travel while still being grounded in scientific fact. It gives young readers a realistic look at the wonders and challenges of the final frontier, through the eyes of someone living a life much like their own. SEA Conference speaker Pete Arvedson writes, "The vocabulary is good for middle school students and yet it holds the interest of adults like me. It is exciting, engaging - and especially important - scientifically accurate."

Lunar Pioneers is the third novel by author Robert A. Black, who previously wrote for the Nickelodeon cable series, *You Can't Do That On Television*. He also has a degree in mechanical engineering and mathematics from Vanderbilt University, and has spent twenty years in manufacturing as a lab test engineer, project manager, engineering manager and quality assurance manager.

Los Angeles County Office of Education, Science Education

Contact: Dean C. Gilbert (gilbert_dean@lacoed.edu)

“LACOE is a premier provider of integrated, educational programs and services, from birth to adulthood, in a richly diverse and multicultural global environment.” – Vision Statement, The Los Angeles County Office of Education (LACOE) is the nation’s largest regional education agency. Under the leadership of County Superintendent of Schools Darline P. Robles, Ph.D. and the County Board of Education, LACOE is dedicated to promoting the achievement of the county’s 1.7 million public school students and 80 school districts.

NASA Education and Public Outreach at Sonoma State University

Contact: Dr. Lynn Cominsky (cominsky@sonoma.edu)

The Sonoma State University Education and Public Outreach group supports four NASA high-energy astrophysics missions: The Fermi Gamma-ray Space Telescope, the Swift Gamma-ray Burst Explorer, the joint NASA/ESA X-ray Multi-mirror Newton (XMM-Newton) mission, and the Nuclear Spectroscopic Telescope Array (NuSTAR). The mission of the SSU E/PO group is to develop exciting formal and informal educational materials that use high-energy space science as a means to inspire students in grades 5-14 to pursue STEM careers, to train teachers nation-wide in the classroom use of these materials, and to enhance science literacy for the general public.

Interorbital Systems

Contact: Randa Milliron (ios@interorbital.com)

Interorbital Systems offers a new, “personal satellite” program at an affordable price even for schools. The small satellite community includes secondary schools, universities, hobby electronics enthusiasts, scientists, artists, and commercial advertisers. Shipment of the TubeSat Personal Satellite Kit will begin in late August of this year. What can your students do with their own satellite launched on a Neptune 30 (payload capacity: 30 kg payload to orbit) and in circular orbit 310 kilometers above the Earth?

Our Deepest Gratitude to Our Supporters

CSULA’s Charter College of Education

