California Innovation Corridor

This workforce solution was funded by a grant awarded under Workforce Innovation in Regional Economic Development (WIRED) as implemented by the U.S. Department of Labor's Employment and Training Administration. The solution was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership.

COSPONSORS:

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SIL Space Information Laboratories, Inc.

SpaceTEC™ National Aerospace Technical Education Center

CALIPSO/CloudSat

EDUCATORS' LAUNCH CONFERENCE

EARTH SCIENCE & ATMOSPHERIC MONITORING MISSION

Allan Hancock College, Lompoc Valley Center

Endeavour Center • Vandenberg AFB, California

April 19 - 21, 2006

Funding provided by Department of Labor, Employment & Training Administration: WIRED Initiative

SCHEDULE

WEDNESDAY, APRIL 19, 2006

TIME	EVENT	LOCATION
11:45 am – 12:45 pm	**Registration/Check-in**	Allan Hancock College Lompoc Valley Center Bldg. 1-103
1:00 – 1:10 pm	**Welcome**	Bldg. 2-212
	▪ Edmund Burke President/CEO Space Information Labs, Inc.	
	▪ Roger Welt, Ed.D. Executive Dean, Off-Campus Programs Allan Hancock College	
1:10 – 2:30 pm	**Session I – Breakout Workshops**	
	▪ Rocketry: 3-2-1 Liftoff!	Bldg. 3-109
	▪ Voyage on the High Seas: A NASA Oceanic Adventure	Bldg. 1-202/203
	▪ NASA CloudSat Mission: Revealing the Inner Secrets of Clouds	Bldg. 2-212
	▪ Aerosols & You: From the Ground to Space	Bldg. 2-202
	▪ The GLOBE Program	Bldg. 2-121
	▪ Solar Journey	Bldg. 2-203
2:30 – 2:40 pm	**Break** (refreshments)	Bldg. 1-103
2:40 – 4:00 pm	**Session II – Breakout Workshops** (Workshops repeated as per Session I)	
4:00 – 4:10 pm	**Break** (refreshments)	Bldg. 1-103
4:10 – 5:30 pm	**Session II – Breakout Workshops** (Workshops repeated as per Session I)	
5:45 – 6:00 pm	**Reconvene – Closing Comments**	Bldg. 2-212

Each workshop will be offered three times. Attend the workshops of your choice. Seating is on a first-come, first-served basis. If a room is filled to seating capacity, please move to another workshop room and return to the previously filled workshop at the next breakout session. **Conference schedule and workshop locations subject to change.**

APRIL 19 – 21, 2006

TIME	EVENT	LOCATION
6:00 – 8:00 pm, Apr. 19	**Check-in and rest period at Quality Inn Hotel** No bus transportation provided to hotel.	Quality Inn Hotel, Lompoc
8:00 – 8:15 pm	**Board bus at Quality Inn Hotel** Depart for Endeavour Center	
8:15 – 10:00 pm	**Social Hour, followed by Buffet Dinner**	Endeavour Center
10:00 pm – midnight	**Evening Program Introductory Remarks**	Endeavour Center
	Mr. Edmund Burke President/CEO; Space Information Labs, Inc.	
	Keynote Presentations with Q&A Sessions	
	▪ R. Scott Messer, Ph.D. Program Manager, NASA Launch Services The Boeing Company, ELS Division	
	▪ Dianne Q. Robinson, Ph.D. Professor, Hampton University and Director, CALIPSO Outreach Mission	
	▪ Teresa Kennedy, Ph.D. Director, International & U.S. Partnerships/Outreach, The GLOBE Program	
	▪ Debra Krumm, Ph.D. Director, CloudSat Outreach Mission	
9:00 am – 1:30 pm, Apr. 20	**Tour of Vandenberg AFB** Roudtrip transportation from Quality Inn Hotel and lunch provided.	Vandenberg AFB
2:00 – 2:15 am, Apr. 21	**Board bus at Quality Inn Hotel** Depart for Delta II launch viewing site at Vandenberg AFB	
3:02:08 am	**Launch of the CALIPSO/CloudSat Satellites**	Delta II Launch Viewing Site, Vandenberg AFB
3:05 – 3:30 am	**Board bus at VAFB to return to Quality Inn Hotel** (Check-out by 1:00 pm on April 21, 2006)	

Rocketry: 3-2-1 Liftoff!

Grade Level: Elementary – Middle School

Description: This hands-on workshop will provide an introduction to rocketry basics featuring classroom activities and NASA education materials.

Presenter: Carlo Ortega Cayetano is a member of a team of aerospace education specialists employed by Oklahoma State University to acquaint the education and civic communities with the role of the National Aeronautics and Space Administration (NASA) in the exploration of air and space. Mr. Cayetano is presently assigned to the Jet Propulsion Laboratory (JPL) in Pasadena, California.

Mr. Cayetano attended Occidental College, Los Angeles and graduated with a degree in human anatomy and physiology. He also attended Harvard Graduate School of Education, Cambridge, Massachusetts, where he completed a master's degree in Education – Science Teaching and Curriculum. Mr. Cayetano is a certificated science teacher, grades 5 -12.

Prior to joining the Aerospace Education Specialist Program, Mr. Cayetano taught science at King Kekaulike High School in Pukalani, Hawaii.

Voyage on the High Seas: A NASA Oceanic Adventure

Grade Level: Elementary – Middle School

Description: This presentation focuses on NASA Jet Propulsion Laboratory's use of satellites to study global ocean phenomena including sea-level height, near-surface winds, and currents. It will provide an overview of several oceanography education products developed by the Education and Public Outreach team for NASA JPL's Jason satellite altimeter mission. Participants then have an opportunity to play the Jason board game (which doubles as an educational poster), attempting to be the first to sail their research vessel from the Mediterranean Sea to Seattle while gaining the requisite discovery points. All participants will receive a free game.

Presenter: Annie Richardson is an Education and Public Outreach (EPO) Coordinator at NASA JPL in the Earth Science Public Engagement Office and supports ocean surface topography projects. As an EPO Coordinator, she helps develop activities and products for the K-12 education community and for the general public that are consistent with project science goals. She is a frequent workshop presenter at education conferences and guest speaker in public and educational venues.

Supporting JPL's Earth and Space Science proposal activities as an EPO lead, Ms. Richardson also designs programs for Earth and Space instruments and missions, and seeks out and develops EPO partnerships and partnering opportunities. She has worked at JPL since 1977.

NASA CloudSat Mission: Revealing the Inner Secrets of Clouds

Grade Level: Elementary – Middle School

Description: This hands-on workshop will provide an introduction to the NASA CloudSat mission and its educational opportunities, including participation in the NASA-sponsored GLOBE Program. Attendees will explore tools and methods to increase student knowledge of clouds, weather, climate and Earth's radiation budget and discuss how students can become real scientists. Participants will leave the workshop as GLOBE-certified teachers with the ability to immediately implement GLOBE in their classrooms.

Presenter: Dr. Debra Krumm is the education and public outreach coordinator for the NASA CloudSat mission. Her background is in geology and marine science, but finds herself "looking to the skies" in her work with the CloudSat Principal Investigator at Colorado State University in Fort Collins. She received her bachelor's degree from the University of South Carolina, her master's degree from the University of Florida, and her doctoral degree from the University of Colorado.

Aerosols & You: From the Ground to Space

Grade Level: Middle – High School

Description: So, what are aerosols? Why should I worry? How can I use the study of aerosols to meet science and mathematics standards and assessments? These are some of the questions that will be addressed during this workshop as participants grasp the effect of aerosols in our daily lives, conduct a calculator-based laboratory investigation that models the impact of aerosols as light passes through the atmosphere, and explore how an inexpensive hand-held sun photometer can be used to participate in the CALIPSO educational outreach mission.

Presenter: Paul Adams, Ph.D., is professor of physics and Anschutz professor of education at Fort Hays State University in Hays, Kansas. He received his B.S. degrees in physics and mathematics at Heidelberg College in Tifflin, Ohio; his M.S. degree in physics at Washington State University; and his doctoral degree in science education with an emphasis in physics and earth science from Purdue University.

The GLOBE Program

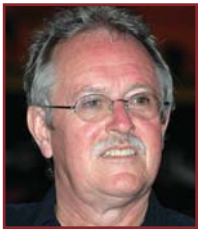
Grade Level: Middle – High School

Description: This workshop will provide an introduction to the GLOBE Program with an emphasis on connections to the CALIPSO and CloudSat missions. Participants will leave the workshop as GLOBE-trained individuals with instructions on how to implement GLOBE materials in the classroom as early as the next day!

Presenter: Rebecca A. Boger, Ph.D., is an International Project Scientist at the University Corporation for Atmospheric Research and GLOBE Deputy Director of International and U.S. Partnerships/Outreach. With an educational background consisting of a B.S. in mathematics, M.S. in geography, and Ph.D. in marine science, combined with equally impressive professional work experiences, Dr. Boger possesses a strong interdisciplinary background in earth science, biology, geography, statistics, and geographic information systems (GIS).

In 1998, Dr. Boger received a Knauss Fellowship in marine science and worked for GLOBE on the science team. In 2000, she began dividing her time between the science and partner support teams at the GLOBE Program. As an international project scientist, she oversees the development of GLOBE materials, represents GLOBE at science-related activities and is a master trainer in all GLOBE investigation areas. As the deputy director of International and U.S. Partnerships, Dr. Boger is a GLOBE representative at international events, providing implementation support to over 30 partner countries; assists in the negotiation of agreements with prospective GLOBE partner countries; and organizes and facilitates conferences, international workshops, and symposia. Her strong and varied scientific and educational background enables her to identify areas of overlapping interests among non-governmental and governmental agencies, universities, and private sector corporations, thereby promoting collaborations that are mutually beneficial for GLOBE and other such organizations and entities.

Solar Journey



Grade Level: High School

Description: On-line solar image and materials sources and educational programs will be used to investigate and learn about the sun's surface features and their effects on earth. Participants will explore coronal mass ejections (CMEs) and other solar features through a program Coutts has created, calculate the speed of CMEs, and predict their arrival time on earth. Participants will also view and discover sources for spectacular up-to-date solar images.

Presenter: Robert Coutts is a part-time faculty member at California State University, Northridge (CSUN), teaching physical science in the geology department and supervising student teachers. A graduate of Oakland University, Mr. Coutts formerly taught physics at Van Nuys High School for 40 years and led workshops for teachers at CSUN, UCLA, USC and various private organizations. He was a Woodrow Wilson Fellow at Princeton University, a National Science Foundation Fellow at CSUN, and an ISME Fellow for the Research Corporation. Other experiences include being a Flight Opportunities for Science Teacher Enrichment instructor aboard the Kuiper Airborne Observatory, a California High School Cosmic Ray Observatory experimenter, and creator of the Solar-Terrestrial Interaction Project.

EVENING KEYNOTE SPEAKERS

R. Scott Messer, Ph.D.

R. Scott Messer, Ph.D., was born in Cedar City, Utah, attended Southern Utah Sate College and graduated with a B.S. in civil engineering and a minor in mathematics from Utah State University. He then moved to Virginia and attained his master's and doctoral degrees in aerospace engineering from Virginia Tech in 1992. That same year, he joined The Boeing Company and eventually became the engineering project lead for the development of a new upper stage for the Delta II expendable launch vehicle. In 2000, Dr. Messer was appointed program manager of the NASA Launch Services contract, working closely with NASA and various spacecraft builders to launch the Mars rovers, Spirit and Opportunity, as well as providing managerial support for the Aura, Swift, and Deep Impact missions.

Dianne Q. Robinson, Ph.D.

Dr. Robinson is a science professor and Chair of the Interdisciplinary Science Center (ISC) at Hampton University (HU) in Virginia. In addition to her duties as professor, she works closely with the HU Center for Atmospheric Sciences, directing three of their education and outreach programs for NASA satellite-based research missions, CALIPSO, AIM, and SABER. As ISC Chair, Dr. Robinson directs four GEOSCIENCE student and teacher outreached programs funded by the National Science Foundation and a NASA earth systems science online course for teachers and undergraduates. Prior to becoming a professor, Dr. Robinson taught fifth through twelfth grade science courses. She holds a doctorate in Science Education from the University of Iowa.

Teresa Kennedy, Ph.D.

Dr. Teresa Kennedy has been involved with GLOBE since 1996 in several capacities: GLOBE teacher; a United States and International GLOBE trainer; a U.S. Partner Co-Director for the State of Idaho for six years; and prior to the program's restructuring in 2003, as Deputy Chief Educator and Assistant Director of U.S. Partnerships.

Dr. Kennedy currently leads all national and international partnership and outreach efforts for the GLOBE program. Her responsibilities include ensuring that the development and ongoing support of GLOBE partnerships is fully integrated with science and education activities; monitoring and improving systems development; and promoting GLOBE pre-service education at institutions nationally and internationally, including at University Corporation for Atmospheric Research (UCAR) member universities. UCAR is a consortium of member universities with the mission "to support, enhance, and extend the capabilities of the university community, nationally and internationally; to understand the behavior of the atmosphere and related systems and the global environment; and to foster the transfer of knowledge and technology for the betterment of life on earth." Prior to her work in pre-service education with UCAR, Dr. Kennedy was an associate professor of education at the University of Idaho for 8 years and also taught bilingual science education in the K-12 system for 15 years.

Debra Krumm, Ph.D.

Dr. Debra Krumm is currently the outreach director for the NASA CloudSat Mission, based in the Atmospheric Science Department of Colorado State University in Fort Collins. She is a former museum curator and marine educator at Harbor Branch Oceanographic Institution in Florida; as well, she is a former coral reef bioerosion paleoecologist. Dr. Krumm received her doctoral degree in geology from the University of Colorado.

ACKNOWLEDGMENTS

Thank you to all of the cosponsors:

- Allan Hancock College
- California Space Authority
- Colorado State University
- Endeavour Center,
  NASA Educator Resource Center
- Hampton University
- NASA Ames Research Center
- NASA JPL
- NASA KSC
- NASA KSC Resident Office, Vandenberg AFB
- National Science Foundation SpaceTEC
- Space Information Labs, Inc.
- and **Allan Hancock College's staff and MESA students** for helping to make this conference a success. Funding in part for this conference was provided by grants from NASA and National Science Foundation SpaceTEC.

PROVIDERS OF EXCEPTIONAL SERVICES

- Accommodations: Quality Inn and Executive Suites, Lompoc
- Dinner: American Host, Lompoc
- Facilities: Lompoc Unified School District
- Program design: David Richards (design) and Gordon Rivera (printing), AHC Campus Graphics
- Workshop refreshments: Petersen Catering, Lompoc

EDUCATORS' LAUNCH CONFERENCE COMMITTEE

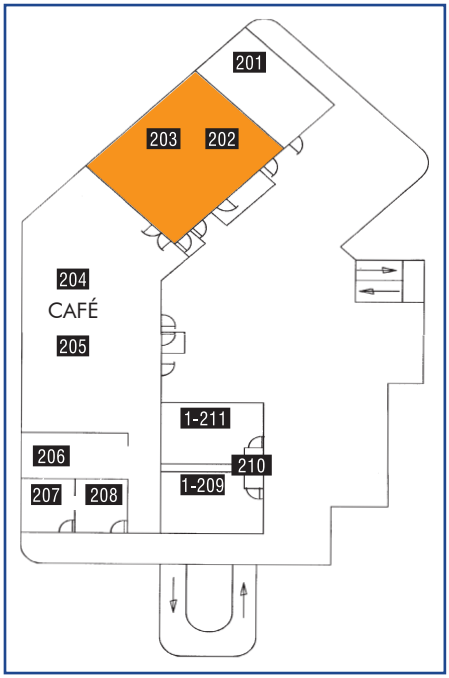
Edmund Burke, Chair
President/CEO
Space Information Labs, Inc.

Moksha Badarayan
Education Manager
Endeavour Center

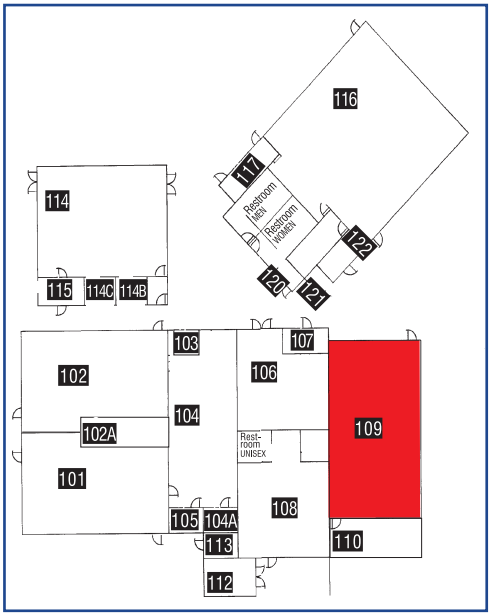
Margaret Lau
Interim Coordinator, Economic Development
Allan Hancock College

Jeanie Tyler
Lompoc Valley Center Administrative Technician
Allan Hancock College

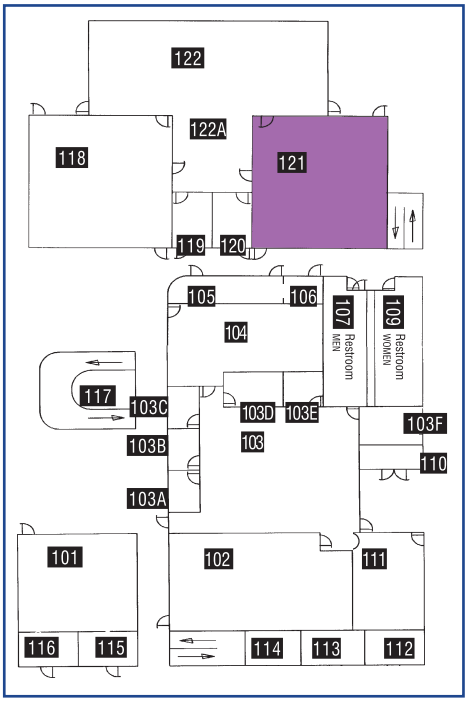
ALLAN HANCOCK COLLEGE



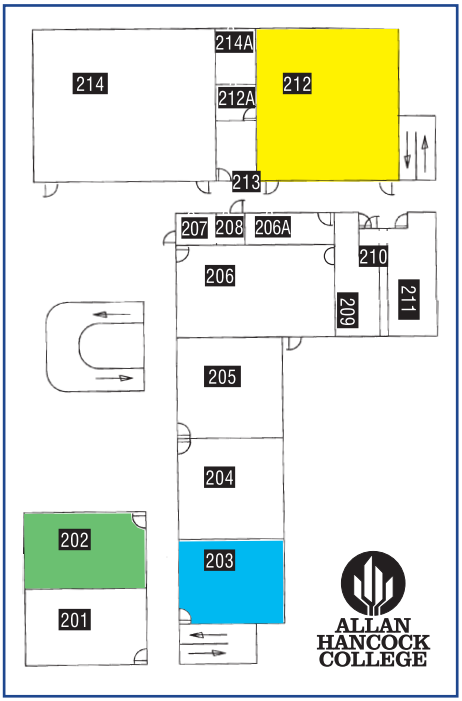
Building 1 | Administration | 2nd Floor



Building 3 | Science & Fine Arts



Building 2 | Business & Technology | 1st Floor



Building 2 | Business & Technology | 2nd Floor

Funding provided by Department of Labor, Employment & Training Administration: WIRED Initiative

COSPONSORS:

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Wired TALENT DRIVING PROSPERITY

The GLOBE Program

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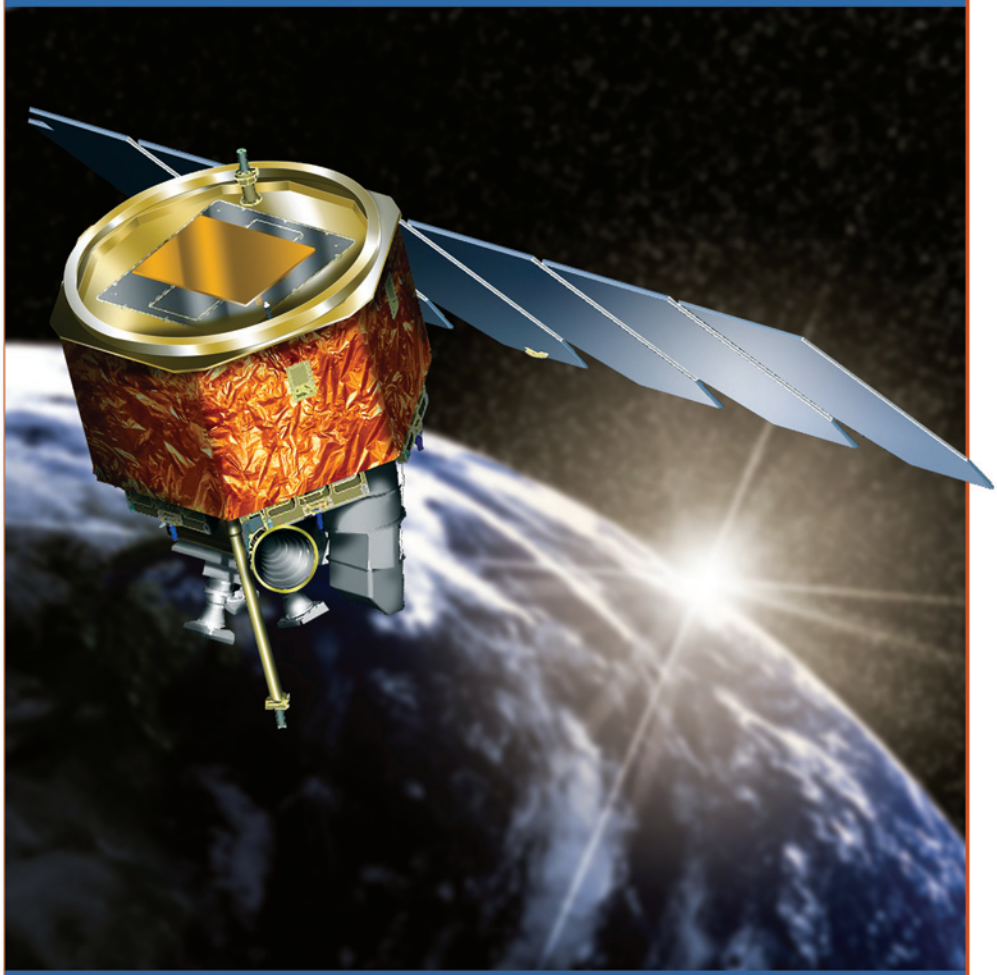
SIL Space Information Laboratories, Inc.

SpaceTEC National Aerospace Technical Education Center

Aeronomy of Ice in the Mesosphere (AIM)

EDUCATORS' LAUNCH CONFERENCE

EXPLORING CLOUDS AT THE EDGE OF SPACE



Allan Hancock College, Lompoc Valley Center
Endeavour Center • Vandenberg AFB, California
April 24 - 25, 2007

Funding provided by Department of Labor, Employment & Training Administration: WIRED Initiative

SCHEDULE

TUESDAY, APRIL 24, 2007

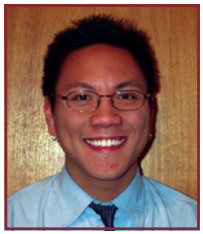
TIME	EVENT	LOCATION
9:00 – 9:45 a.m.	**Registration/Check-in**	Allan Hancock College Lompoc Valley Center Bldg. 1-103
10:00 – 10:10 a.m.	**Welcome**	Bldg. 1-202/203
	▪ Edmund Burke President/CEO Space Information Labs, Inc.	
	▪ Jeanie Tyler Interim Director, Off-Campus Programs Allan Hancock College	
10:15 – 11:35 a.m.	**Session I – Breakout Workshops**	
	▪ Rocketry: 3-2-1 Liftoff!	Bldg. 2-104
	▪ Voyage on the High Seas: A NASA Oceanic Adventure	Bldg. 3-101
	▪ Light & Waves Fun: The Electromagnetic Spectrum	Bldg. 2-204
	▪ Clouds & More Clouds	Bldg. 2-206
	▪ The GLOBE Program	Bldg. 2-214
	▪ Geologic Attenuation of Cosmic Rays	Bldg. 1-202/203
11:35 am – 12:35 p.m.	**Lunch**	Buffet service in Bldg. 1-204 (Café); Dine in Bldg. 1-202/203
12:40 – 2:00 p.m.	**Session II – Breakout Workshops** (Workshops repeated as per Session I)	
2:00 – 2:10 p.m.	**Break** (refreshments)	Bldg. 1-103
2:15 – 3:35 p.m.	**Session II – Breakout Workshops** (Workshops repeated as per Session I)	
3:40 – 4:00 p.m.	**Reconvene – Closing Comments**	Bldg. 1-202/203

Each workshop will be offered three times. Attend the workshops of your choice. Seating is on a first-come, first-served basis. If a room is filled to seating capacity, please move to another workshop room and return to the previously filled workshop at the next breakout session. **Note: conference schedule and workshop locations subject to change.**

APRIL 24 – 25, 2007

TIME	EVENT	LOCATION
4:00 – 5:30 p.m., Apr. 24	**Check-in and rest period at Quality Inn Hotel** No bus transportation provided to hotel.	Quality Inn Hotel, Lompoc
5:30 – 5:45 p.m.	**Board bus at Quality Inn Hotel** Depart for Endeavour Center	
6:00 – 7:30 p.m.	**Social Hour, followed by Buffet Dinner**	Endeavour Center
7:30 – 9:30 p.m.	**Evening Program Introductory Remarks**	Endeavour Center
	Mr. Edmund Burke President/CEO; Space Information Labs, Inc.	
	Keynote Presentations with Q&A Sessions	
	▪ Dianne Q. Robinson, Ph.D. Professor, Hampton University and Director, AIM Education Outreach	
	▪ James M. Russell, III, Ph.D. AIM Principal Investigator Professor and Co-director Center for Atmospheric Sciences, Hampton University	
	▪ Robert T. Richards Vice President, Orbital Launch Systems Orbital Sciences Corporation	
9:00 a.m. – 11:30 p.m., Apr. 25	**Tour of Vandenberg AFB** Bus pick up at Quality Inn Hotel at 8:45 am	Vandenberg AFB
11:45 a.m. – 12:45 p.m.	**Lunch**	Officers' Club, VAFB
1:00 – 2:00 p.m.	**Viewing of Pegasus Launch** Launch off the California coastline targeted at 1:26 p.m.	NASA Mission Control Center
2:30 p.m.	**Board bus at VAFB to return to Quality Inn Hotel**	

Rocketry: 3-2-1 Liftoff!



Grade Level: Elementary – Middle School

Description: This hands-on workshop will provide an introduction to rocketry basics featuring classroom activities and NASA education materials.

Presenter: Carlo Ortega Cayetano is a member of a team of aerospace education specialists employed by Oklahoma State University to acquaint the education and civic communities with the role of the National Aeronautics and Space Administration (NASA) in the exploration of air and space. Mr. Cayetano is presently assigned to the Jet Propulsion Laboratory (JPL) in Pasadena, California.

Mr. Cayetano attended Occidental College, Los Angeles and graduated with a degree in human anatomy and physiology. He also attended Harvard Graduate School of Education, Cambridge, Massachusetts, where he completed a master's degree in Education – Science Teaching and Curriculum. Mr. Cayetano is a certificated science teacher, grades 5 -12.

Prior to joining the Aerospace Education Specialist Program, Mr. Cayetano taught science at King Kekaulike High School in Pukalani, Hawaii.

Voyage on the High Seas: A NASA Oceanic Adventure

Grade Level: Elementary – Middle School

Description: This presentation focuses on NASA Jet Propulsion Laboratory's use of satellites to study global ocean phenomena including sea-level height, near-surface winds, and currents. It will provide an overview of several oceanography education products developed by the Education and Public Outreach team for NASA JPL's Jason satellite altimeter mission. Participants then have an opportunity to play the Jason board game (which doubles as an educational poster), attempting to be the first to sail their research vessel from the Mediterranean Sea to Seattle while gaining the requisite discovery points. All participants will receive a free game.

Presenter: Annie Richardson is an Education and Public Outreach (EPO) Coordinator at NASA JPL in the Earth Science Public Engagement Office and supports ocean surface topography projects. As an EPO Coordinator, she helps develop activities and products for the K-12 education community and for the general public that are consistent with project science goals. She is a frequent workshop presenter at education conferences and guest speaker in public and educational venues.

Supporting JPL's Earth and Space Science proposal activities as an EPO lead, Ms. Richardson also designs programs for Earth and Space instruments and missions, and seeks out and develops EPO partnerships and partnering opportunities. She has worked at JPL since 1977.

Light & Waves Fun: The Electromagnetic Spectrum

Grade Level: Elementary – Middle School

Description: This presentation will feature fun activities with light and waves designed to introduce youth to the concepts of the electromagnetic spectrum and how the different energy forms that are found within that spectrum are produced. Diffraction grading glasses will be used to separate white light into colors of the rainbow, and creative, hands-on ways to explore frequency, Doppler shift, and their relation to astronomy will also be shared. Build your own spectroscope!!!

Presenter: Timothy M. Strickland is an outreach instructor for K-12 students at the Endeavour Center. Mr. Strickland received his B.S. degree in physics and astronomy from Valdosta State University and his M.S. degree in physics from Florida State University. Mr. Strickland has ten years of experience teaching several math, astronomy, and physics courses at two- and four-year institutions in Florida and seven years of experience as a physicist at Eglin Air Force Base, Florida.

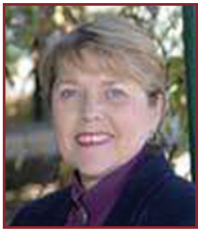
Clouds & More Clouds

Grade Level: Middle – High School

Description: One of the goals of the AIM mission is to study mesospheric clouds. How do these clouds differ from those that form in the troposphere? Why do we study mesospheric clouds? This session will explore cloud formation processes in the troposphere and the mesosphere and the differences and similarities between these types of clouds. Demonstrations, investigations, and web-based activities from the AIM mission education and public outreach site will be explored.

Presenter: Paul Adams, Ph.D., is professor of physics and Anschutz professor of education at Fort Hays State University in Hays, Kansas. He received his B.S. degrees in physics and mathematics at Heidelberg College in Tifflin, Ohio; his M.S. degree in physics at Washington State University; and his doctoral degree in science education with an emphasis in physics and earth science from Purdue University.

The GLOBE Program



Grade Level: Middle – High School

Description: This workshop will provide an introduction to the GLOBE Program with an emphasis on connections to the AIM and CloudSat missions. Participants will leave the workshop as GLOBE-trained individuals with instructions on how to implement GLOBE materials in the classroom as early as the next day!

Presenter: Susan Lini has been the research program coordinator for Graeme Stephens Research Group at Colorado State University for over 20 years. She spends significant time negotiating contracts, implementing cost accounting standards, and responding to requirements for NASA and JPL. She also coordinates meetings, works extensively in human resources areas, and participates actively in AIM, CloudSat, and GLOBE outreach activities.

Geologic Attenuation of Cosmic Rays

Grade Level: High School

Description: This seminar will discuss experiments that high school science teachers can do with students to measure attenuation of cosmic rays at different altitudes (sea level vs. 10,000 feet), and under the earth in tunnels. A geological profile can be developed using imaging attenuation data from the cosmic ray measuring sensor/instrument.

Presenter: Robert Coutts is a part-time faculty member at California State University, Northridge (CSUN), teaching physical science in the geology department and supervising student teachers. A graduate of Oakland University, Mr. Coutts formerly taught physics at Van Nuys High School for 40 years and led workshops for teachers at CSUN, UCLA, USC and various private organizations. He was a Woodrow Wilson Fellow at Princeton University, a National Science Foundation Fellow at CSUN, and an ISME Fellow for the Research Corporation. Other experiences include being a Flight Opportunities for Science Teacher Enrichment instructor aboard the Kuiper Airborne Observatory, a California High School Cosmic Ray Observatory experimenter, and creator of the Solar-Terrestrial Interaction Project.

EVENING KEYNOTE SPEAKERS

Dianne Q. Robinson, Ph.D.

Dr. Robinson is a science professor and Chair of the Interdisciplinary Science Center (ISC) at Hampton University (HU) in Virginia. In addition to her duties as professor, she works closely with the HU Center for Atmospheric Sciences, directing three of their education and outreach programs for NASA satellite-based research missions, CALIPSO, AIM, and SABER. As ISC Chair, Dr. Robinson directs four GEOSCIENCE student and teacher outreached programs funded by the National Science Foundation and a NASA earth systems science online course for teachers and undergraduates. Prior to becoming a professor, Dr. Robinson taught fifth through twelfth grade science courses. She holds a doctorate in Science Education from the University of Iowa.

James M. Russell, III, Ph.D.

James M. Russell, III, Ph.D., is the AIM principal investigator, as well as professor and co-director at the Center for Atmospheric Sciences at Hampton University. As such, Dr. Russell studies long-term trends, chemistry, dynamics, and transport of trace gases in the middle atmosphere. He analyzes data to study the properties of polar mesospheric clouds and aids in the development of retrieval algorithms for the SABER experiment. He received his bachelor's degree in electrical engineering from Virginia Polytechnic Institute and State University, his master's degree in electrical engineering from the University of Virginia, and a doctoral degree in aeronomy from the University of Michigan.

Robert T. Richards

Robert T. Richards, Vice President of Orbital Launch Systems at Orbital Sciences Corporation, has full responsibility for customer satisfaction, mission success, and financial performance of Pegasus and Taurus space launch vehicles. These vehicles were designed to provide the commercial space enterprise with low cost access to space. In addition to commercial missions, NASA continues to be a primary user of these vehicles to launch small satellites to support scientific research. Mr. Richards has managed a successful launch record that includes all 37 Pegasus missions and seven Taurus missions.

Mr. Richards is also responsible for adaptation of Pegasus for technology demonstration projects, such as the NASA Demonstration of Autonomous Rendezvous Technology (DART), funded under the Space Launch Initiative and the President's Vision for Space Exploration Program.

An associate fellow of the American Institute of Aeronautics and Astronautics, Mr. Richards has received the National Medal of Technology and the National Air and Space Museum Trophy for the technical achievement of the Pegasus development team. He is also a recipient of several NASA group achievement awards.

ACKNOWLEDGMENTS

Thank you to all of the cosponsors:

- Allan Hancock College
- California Space Authority
- Colorado State University
- Endeavour Center, a NASA Educator Resource Center
- Hampton University
- NASA Ames Research Center
- NASA JPL
- NASA KSC
- NASA KSC Resident Office, Vandenberg AFB
- National Science Foundation SpaceTEC
- Space Information Labs, Inc.
- Workforce Innovation in Regional Economic Development
- And Allan Hancock College's staff and MESA students for helping to make this conference a success. Funding in part for this conference was provided by grants from NASA and National Science Foundation SpaceTEC.

PROVIDERS OF EXCEPTIONAL SERVICES

- Accommodations: Quality Inn and Executive Suites, Lompoc
- Lunch and refreshments at Lompoc Valley Center: Petersen Catering, Lompoc
- Dinner: American Host, Lompoc
- Endeavour Center facilities: Lompoc Unified School District
- Program: Allan Hancock College Campus Graphics

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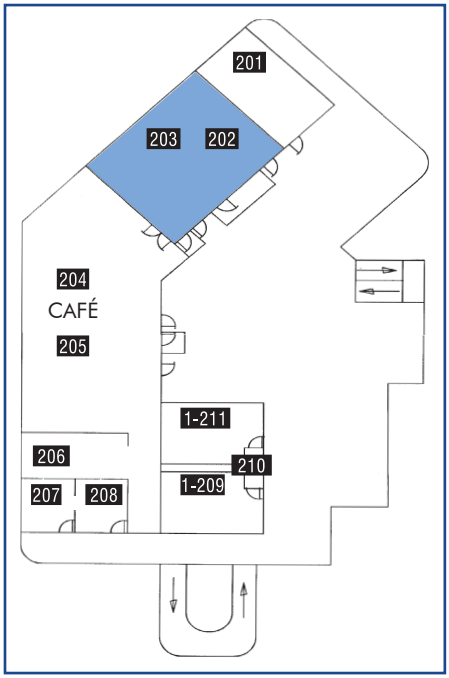

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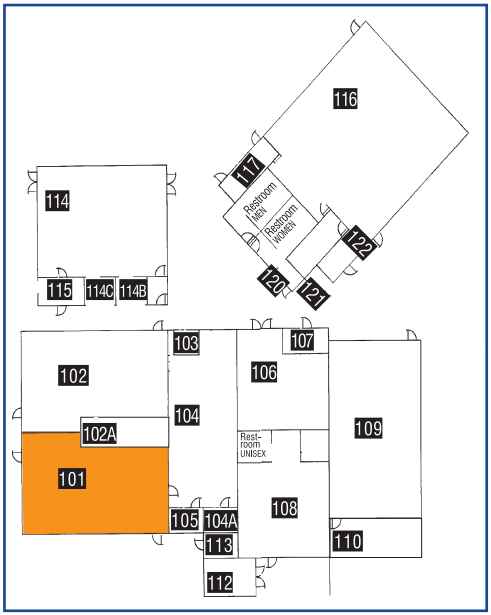
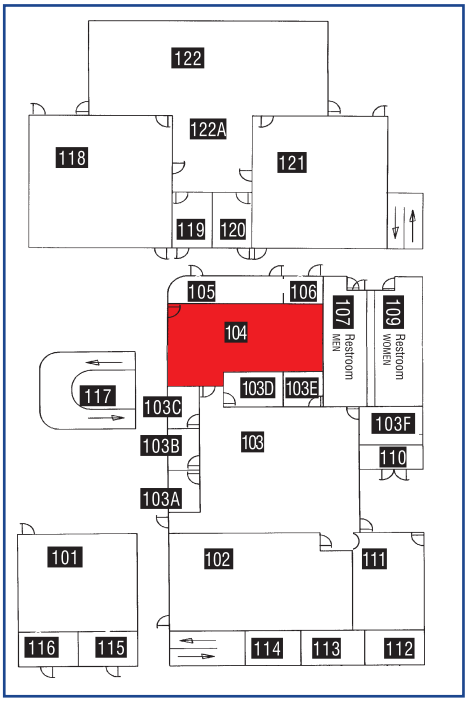


Building 3 | Science & Fine Arts



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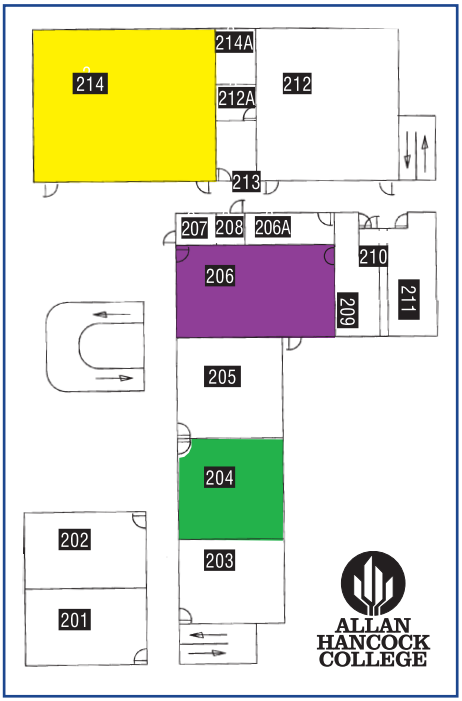

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EDUCATORS' LAUNCH CONFERENCE

THE NEXT GENERATION OCEAN SURFACE TOPOGRAPHY MISSION

Allan Hancock College, Lompoc Valley Center
Pacific Coast Club • Vandenberg AFB, California
June 14 - 15, 2008

Funding provided by Department of Labor, Employment & Training Administration: WIRED Initiative

SCHEDULE

SATURDAY, JUNE 14, 2008

TIME	EVENT	LOCATION
9:00 – 9:45 a.m.	**Registration/Check-in**	Allan Hancock College Lompoc Valley Center Bldg. 1-103
10:00 – 10:10 a.m.	**Welcome**	Bldg. 1-202/203
	▪ Edmund Burke President/CEO Space Information Labs, Inc.	
	▪ Jeanie Tyler Interim Director, Off-Campus Programs Allan Hancock College	
10:15 – 11:30 a.m.	**Session I – Breakout Workshops**	
	▪ Web-based Student Activities for NASA Satellite Missions	Bldg. 2-121
	▪ NASA Satellite Missions Study: Climate Change	Bldg. 2-202
	▪ My NASA Data	Bldg. 2-118
	▪ Resources for Teaching Earth Science	Bldg. 2-205
	▪ Polar Animals and Satellites: Witnesses to Climate Change	Bldg. 3-101
	▪ Meteorites	Bldg. 3-109
	▪ What's Up With Gravity?	Bldg. 2-101
	▪ Ocean Waves: Forecasting, Measuring, and Creating Renewable Energy	Bldg. 1-202/203
	▪ Mission to Planet Earth Systems	Bldg. 2-102
11:35 am – 12:35 p.m.	**Lunch**	Buffet service in Bldg. 1-204 (Café)
12:20 – 1:35 p.m.	**Session II – Breakout Workshops** (Workshops repeated as per Session I)	

Each workshop will be offered three times. Attend the workshops of your choice. Seating is on a first-come, first-served basis. If a room is filled to seating capacity, please move to another workshop room and return to the previously filled workshop at the next breakout session. **Note: conference schedule and workshop locations subject to change.**

JUNE 14–15, 2008

TIME	EVENT	LOCATION
1:40 – 1:50 p.m.	**Break** (refreshments)	Bldg. 1-103
1:55 – 3:10 p.m.	**Session III – Breakout Workshops** (Workshops repeated as per Sessions I and II)	
3:15 – 3:25 p.m.	**Post-Workshop Plenary Session**	Central Courtyard
3:30 – 5:30 p.m.	**Tour of VAFB & NASA Mission Control Center** Round trip bus transportation from Lompoc Valley Center	Vandenberg AFB
5:45 – 7:40 p.m.	**Check-in and rest period at Quality Inn Hotel** No bus transportation provided to hotel.	Quality Inn Hotel, Lompoc
7:45 – 7:50 p.m.	**Board buses at Quality Inn Hotel** Depart for Pacific Coast Club	
8:00 – 9:40 p.m.	**Social Hour, followed by Dinner Banquet**	Pacific Coast Club, Vandenberg AFB
9:45 pm – 1:00 a.m.	**Evening Program Introductory Remarks**	Pacific Coast Club
	▪ Mr. Edmund Burke President/CEO; Space Information Labs, Inc.	
	Keynote Presentations with Q&A Sessions	
	▪ Ralph R. Basilio, Ph.D. Deputy Project Manager, OSTM/Jason-2 Mission Jet Propulsion Laboratory, California Institute of Technology	
	▪ Lee-Lueng Fu, Ph.D. NASA Project Scientist, OSTM/Jason-2 Mission Jet Propulsion Laboratory, California Institute of Technology	
	▪ Josh Willis, Ph.D. Scientist, Ocean Circulation Group Jet Propulsion Laboratory, California Institute of Technology	
	▪ Representative of Senior Management, Space Launch Systems United Launch Alliance-Delta II	
1:00 – 1:10 a.m.	**Board buses at Pacific Coast Club** Depart for Delta II Launch Viewing Site	
1:47 – 1:56 a.m.	**Launch of the OSTM/Jason-2 Satellite**	Delta II Launch Viewing Site, Vandenberg AFB
2:00 a.m.	**Board buses at VAFB to return to Quality Inn Hotel** (Check-out by 1:00 pm on June 15, 2008)	

Web-based Student Activities for NASA Mission Satellites

Grade Level: Elementary – Middle School

Description: During this hands-on session, participants will explore problem-based learning modules, games and concept animations that relate to atmospheric science and global climate change.

Presenter: As outreach director for the Department of Atmospheric and Planetary Sciences (DAPS) at Hampton University, Barbara H. Maggi works closely with scientists and agencies such as NSF, NASA and NOAA to develop and implement education and public outreach programs.

Ms. Maggi previously served as a public school teacher and education specialist for the Virginia Space Grant Consortium, in charge of developing and instructing K-12 teacher enhancement programs in science and technology. At Hampton University, she helped implement a NASA online earth system science course and executed a four-year NASA undergraduate summer mentorship program in which participants researched optical radiation in the atmosphere. Ms. Maggi currently serves as education manager for two NASA satellite-based research missions, Aeronomy of Ice in the Mesosphere (AIM) and Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations (CALIPSO), developing mission-specific professional development and public awareness programs.

NASA Satellite Missions Study: Climate Change

Grade Level: Middle School

Description: This workshop features an overview of data on climate change related to NASA satellite missions and includes graphical representations of data and pictures from recent AIM and CALIPSO missions. The implications for developing models that can predict the climate over the next ten years will be discussed, and activities that educators can implement in their classrooms to teach these concepts will be explored.

Presenter: Dianne Q. Robinson, Ph.D., is a science professor and, as director of the Interdisciplinary Science Center (ISC) at Hampton University, develops science education projects for K-12 teachers and students. Since the ISC is located within the school of science, Dr. Robinson enjoys access to numerous scientists for collaborations with science educators. For over 25 years she has partnered with science faculty to develop and implement professional development workshops for K-12 teachers, including a statewide model middle school science in-service program for teachers, funded by the National Science Foundation and, for the past five years, national educator workshops in the study of earth systems and climate change in support of NASA's AIM and CALIPSO satellite missions. Recent efforts have included developing professional development programs in association with the National Oceanic and Atmospheric Administration, Virginia State Council for Higher Education, and international programs in Mexico and France.

My NASA Data

Grade Level: Middle – High School

Description: My NASA Data (http://mynasadata.larc.nasa.gov/) is a free web-based program that provides access to easy-to-use earth system data, obtained and processed from NASA satellites, for teachers, students and citizen scientists. The power of My NASA Data is its flexibility for students to investigate their own questions about the physical world. This workshop will provide a hands-on overview of My NASA Data and a discussion about how this resource can be implemented in the classroom.

Presenter: Paul Adams, Ph.D., holds an endowed professorship at Fort Hays State University in Kansas, where he teaches astronomy, science methods, curriculum and assessment. He has led several teacher workshops in the areas of physical science and earth systems science and assists with education and public outreach efforts of NASA's CALIPSO and AIM missions.

Dr. Adams received BS degrees in physics and mathematics from Heidelberg College in Tifflin, Ohio; an MS degree in physics from Washington State University in Pullman, Washington; and a Ph.D. in science education from Purdue University in West Lafayette, Indiana.

Resources for Teaching Earth Science

Grade Level: Middle – High School

Description: Two CDs, *Earth Observations from Space* and *Our Dynamic Planet*, will be presented during this workshop. *Earth Observations from Space* highlights the many achievements made possible by 50 years of satellite observations and includes images about weather, climate, oceanography, biosphere, and global change. *Our Dynamic Planet*, developed by UC Santa Barbara professor emeritus, Dr. William Prothero, addresses various aspects of plate tectonics and enables viewers to locate earthquake sites, identify and locate volcanoes and explore the depths of the ocean floor. Both of these CDs contain lesson plans that can be readily implemented in earth science classes.

Presenter: Debbie Bereki is a Ph.D. candidate in science education. With 20 years of experience teaching grades K-14, she has been involved in many aspects of science education, including service as a science mentor, department chair, curriculum designer, board member for numerous educational organizations, conference/workshop presenter, and educational coordinator for a science-based Web site and numerous professional development programs. Ms. Bereki has also coordinated an outreach program for sixth grade teachers at UCSB, acting as an educator/liaison between teachers and geologists. Standards-based professional development and resulting change in the classroom are the focus of her current research efforts.

Polar Animals and Satellites: Witnesses to Climate Change

Grade Level: Middle – High School

Description: Polar animals such as penguins, sea elephants and albatrosses are at the top of the food chain and therefore provide scientists with a convenient way of studying ecosystems. Animals are fitted with Argos transmitters and highly miniaturized sensors and probes. These monitoring devices, in conjunction with satellite missions like OSTM/Jason-2, give scientists credible data on the inter-annual climate variations of the polar oceans. Data will help to develop models of climate change for the next 10 years.

This workshop will show how teachers and students can use a Web site to follow animals' daily movements and correlate their routes to environmental characteristics – currents, temperature, salinity, ocean color, etc. – that are given by satellite instrumentation.

Presenter: Danielle de Staerke, Ph.D., an engineer with CNES, the French Space Agency, is responsible for educational projects linked to earth-observing satellites. She leads French educators in the international science education network, GLOBE, known in France as CALIS'PH'AIR. It is through this network that students can study earth's atmosphere with the CALIPSO satellite mission and participate in the Argonautica oceanographic education program affiliated with the Jason satellite mission.

Dr. de Staerke continues to work in close collaboration with the US outreach director of CALIPSO at Hampton University and the Jason outreach lead at JPL in implementing professional development workshops for teachers. She also develops and implements international K-12 student-centered science research programs.

Meteorites

Grade Level: Middle – High School

Description: Meteorites are a window into the cosmos. What are they, where do they come from, and how can we collect samples for classroom use? We will demonstrate a simple activity that you can use with your students.

Co-presenters: Rick Yessayian is a retired science educator of 30+ years. He has worked with JPL as an educational consultant for more than 15 years, working on numerous projects for NASA. He is also involved in the K-12 Alliance and other science organizations. A noted and accomplished lecturer with expertise spanning physics, biology, botany, photography, geology, astronomy and space science, Mr. Yessayian has been the subject of national and international electronic and print media attention.

Jackie Gallaway is an educator, lecturer, science mentor and staff development specialist for the Montebello Unified School District and the K-12 Science Alliance, a nationally recognized entity for science reform. She has helped to author resource and training materials for both organizations. Ms. Gallaway is currently a sixth grade science teacher and a part-time lecturer at CSU Long Beach.

What's Up With Gravity?

Grade Level: High School

Description: Earth's gravity field and general ocean circulation both cause variations in ocean surface topography. To accurately determine the portion of topography caused by circulation, oceanographers must subtract the effects of gravity from the total topography measured by satellite altimeters.

How does gravity work? Why do falling objects all have the same acceleration? Why do astronauts appear to float while in orbit? How does an orbit work? What is the difference between Newton's and Einstein's conceptions of gravity? All of these questions and more will be answered in this workshop. Many hands-on student activities and classroom resources will be demonstrated. The workshop will be useful for any high school or middle school teacher who is teaching physical science or physics.

Presenter: Dan Burns has been the science department chair for the past 9 years at Los Gatos High School, where he has taught earth and space science and AP physics since 1992. He is past president of the Northern California/Nevada section of the American Association of Physics Teachers and currently holds the position of faculty scholar at Lawrence Livermore National Laboratory, where he participates in the Science on Saturday program, the Edward Teller Symposium, and the Fusion and Astrophysics Teacher Research Academy. Mr. Burns has developed curriculum and presented workshops for the SETI Institute, the USGS, NASA, AAPT, San Jose State, LLNL, and previous Endeavour Center launch conferences. He has a BS in aeronautical and astronautical engineering from the University of Illinois. Prior to becoming a teacher, Mr. Burns was a senior research specialist at the Lockheed Missiles and Space Company. An avid amateur astronomer and astrophotographer, he has had several pictures published in astronomy magazines.

Ocean Waves: Forecasting, Measuring, and Creating Renewable Energy

Grade Level: High School

Description: In this workshop, how to forecast and measure ocean waves will be discussed. Participants will also examine how these cascading walls of water moving across the Pacific Ocean are a potential type of clean energy, and how they, along with other renewable energy sources, can help reduce our carbon footprint.

A lead-in presentation will provide an overview of JPL operations and its volunteer Solar System Ambassador program.

Co-presenters: John Lindsey is a corporate relations representative for Pacific Gas & Electric Company (PG&E) at the Diablo Canyon Power Plant. As liaison between the local community and PG&E, he provides information about nuclear power and other clean energy sources. Prior

to joining PG&E in 2003 as an environmental specialist, he was a marine meteorologist with Tenera Environmental and had served in the US Navy for over 24 years. He has been forecasting weather and oceanographic conditions along the central coast of California for over 17 years.

Mr. Lindsey has as AS degree from Santa Rosa Junior College and a BS degree from Cal Poly. He successfully completed the US Navy aviation meteorology and oceanography program at Naval Air Station Pensacola in Florida.

Walter Reil has spent 30 years working in commercial nuclear power generation. He has been president of the Central Coast Astronomical Society for the past six years and, for the past four years, a volunteer for NASA and JPL as a JPL Solar System Ambassador, providing community and educational outreach in astronomy and space exploration.

Mission to Planet Earth Systems

Grade Level: High School

Description: This seminar will provide an overview of a recently developed Mission to Planet Earth Systems (MTPES) course that meets California and national earth science standards for 9th grade and fulfills the area "d" lab science requirement in the University of California a-g scheme. MTPES is an integrated science course featuring exciting hands-on labs in astronomy, oceanography, geology, atmospheric science and renewable energy. This new curriculum also brings an inquiry/engineering orientation to earth systems science education.

Presenter: Andrew Williams is an instructor and the director of the Endeavour Academy, an applied science and engineering high school program. He is also the primary developer of the MTPES high school course, a key component of which is an Internet and Curriculum Foundry learning community. Mr. Williams is currently leading an effort to start up a Torrance Endeavour Academy in the Los Angeles area, which will focus on increasing the number of students pursuing science, technology, engineering and mathematics (STEM) disciplines in college and high-tech career pathways. Previously he was the Endeavour Academy instructor at the California Academy of Mathematics and Science, where he had developed the program, tailoring it to the unique student learning environment with its emphasis on STEM education.

In New Zealand, Mr. Williams researched, designed, developed, taught and proposed a national high school curriculum in computer science. It was there that he also researched and developed small online learning communities. He began his professional career as a systems analyst with a focus on operations research and system optimization.

Ralph R. Basilio, Ph.D.

Dr. Basilio, of the Jet Propulsion Laboratory, California Institute of Technology, is the deputy project manager for OSTM/Jason-2 and for the Orbiting Carbon Observatory. Dr. Basilio has 20 years of experience working on manned and unmanned space missions, and during the last 10 years, has focused on the development and operations of earth-orbiting satellite systems. These systems improve understanding of the hydrological process, will allow for long-term trending of sea surface height, and will identify regional scale sources and sinks of carbon dioxide, a major anthropogenic gas. Dr. Basilio is a recipient of two NASA Exceptional Achievement Medals, a Space Act Award, and over a dozen Group Achievement Awards. He earned his BS degree in aerospace engineering from the California State Polytechnic University, his MS and Ph.D. degrees in aerospace engineering from the University of Southern California, and an engineering management certificate from the California Institute of Technology.

Lee-Lueng Fu, Ph.D.

Dr. Fu is a senior research scientist at the Jet Propulsion Laboratory, California Institute of Technology and the NASA project scientist for the joint US/French Jason-1 mission and the joint NASA/CNES/NOAA/Eumetsat OSTM/Jason-2 mission. He received a BS degree in physics from National Taiwan University and a Ph.D. in oceanography from Massachusetts Institute of Technology and Woods Hole Oceanographic Institution. He joined JPL in 1980 as a member of the technical staff.

Dr. Fu's research has been focused on the dynamics of ocean waves and currents, ranging from internal gravity waves (scales of meters to kilometers) to the general circulation of the ocean (scales of hundreds to thousands of kilometers). Since 1988 he has led an international team of oceanographers and geophysicists in the development of precision altimetric measurement of ocean surface topography from TOPEX/Poseidon and its follow-on, Jason-1, resulting in a decade-long data record for the study of large-scale ocean variability, ranging from El Niño Southern Oscillation to global mean sea level variations.

Dr. Fu is a member of the National Academy of Engineering and a Fellow of the American Geophysical Union and the American Meteorological Society. He is a recipient of the Verner E. Suomi Award from the American Meteorological Society for his leadership and contributions in satellite altimetry and its applications to earth sciences. He is also a recipient of the NASA Exceptional Scientific Achievement Medal, the NASA Outstanding Leadership Medal and the Centre National d'Etudes Spatiales Medal for his scientific and programmatic contributions to satellite remote sensing of the ocean.

Josh Willis, Ph.D.

Dr. Willis is a scientist in the Ocean Circulation group at the Jet Propulsion Laboratory, California Institute of Technology. He earned a BS degree in physics and mathematics at the University of Houston; a MS in physics at UC San Diego; and a Ph.D. in oceanography at the Scripps Institution of Oceanography, UC San Diego.

Dr. Willis' research interests include estimating ocean warming and sea level rise on regional and global scales; the role of the ocean in Earth's climate system under global warming; understanding large scale changes in the ocean and its circulation on inter-annual to decadal time scales; and development of analysis techniques for global oceanographic data sets.

Dr. Willis is a contributing author to the 2007 Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report: Climate Change 2007. The IPCC shared the 2007 Nobel Peace Prize with former Vice President Al Gore "for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change."

Notes

Acknowledgements

Thank you to all of the cosponsors:

- Allan Hancock College
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- Hampton University
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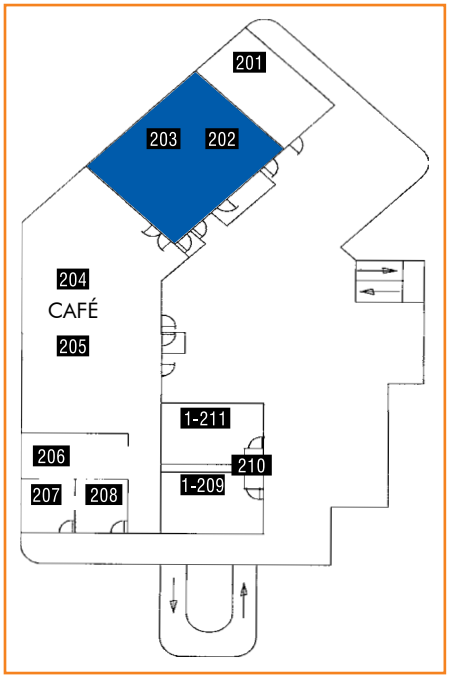

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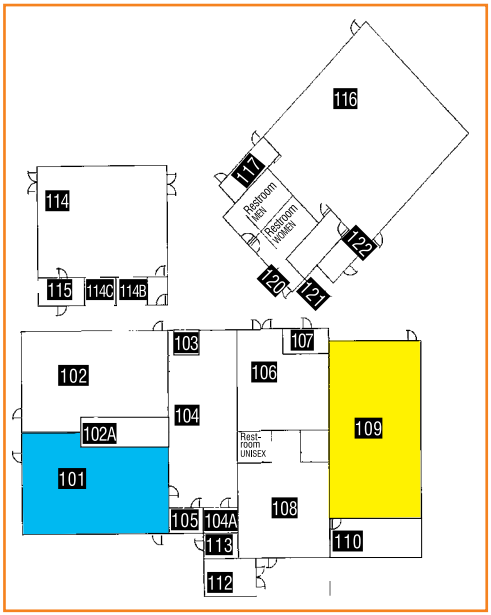

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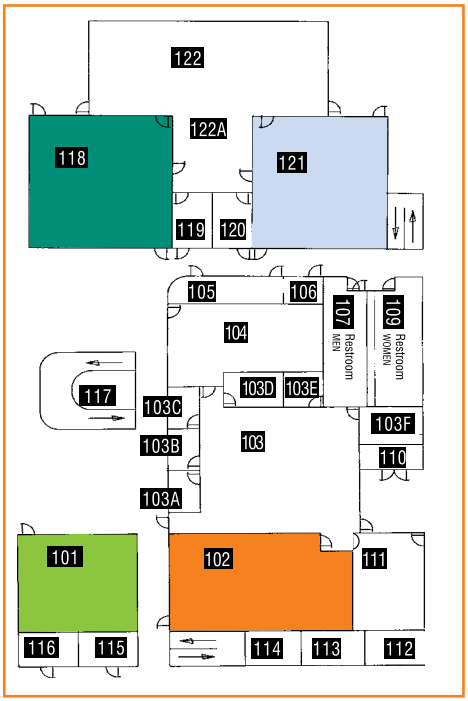

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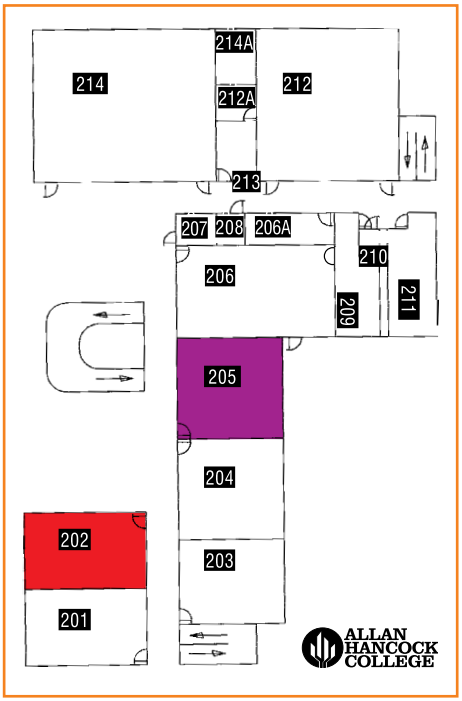

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