

# Spaceship Earth

Celebrating 50 Years of Space Exploration

Featured NASA Speakers:

**Astronaut Mike Fossum**

**Dr. Jack Bacon**

**Thomas Durkin**

**Dr. Jitendra Joshi**



## South Dakota **SPACE DAYS**

**Grades 7-12 Track**

**October 16 & 17, 2008**

**Watertown Event Center**  
Watertown, South Dakota

South Dakota Space Days are part of a national celebration of our quest to explore and utilize the "Final Frontier". Space Days will offer space-related activities for students in grades 7-12 and the general public. All activities will be held in cooperation with NASA, the South Dakota Space Grant Consortium, and Lake Area Technical Institute.

South Dakota  
**SPACE DAYS** Schedule of Events  
**Thursday, October 16 & Friday, October 17**

**FEATURED SPEAKERS SESSIONS\***

9:00 AM, 9:40 AM, 10:20 AM, 11:50 AM, 12:30 PM, 1:10 PM

**Heritage Theater**

Astronaut Mike Fossum  
Dr. Jack Bacon - International Space Station Program  
Dr. Jitendra Joshi - NASA Space Life Sciences Lab  
Tom Durkin - SD Space Grant Consortium

**CONCURRENT SESSIONS\***

9:00 AM - 1:40 PM

**Event Center Conference Rooms & Parking lot**

**MISSION Option 1 - South Dakota Science on the Move...** Perform science lab activities with advanced equipment, technology, and methods incorporated into a 53 ft. semi-trailer that allows students an exciting opportunity to experience an enjoyable, educational event.

**MISSION Option 2 - Space Life...** Making repairs to space shuttles is an everyday occurrence for astronauts. Find out how different it is to work with nuts and bolts and how to manipulate a lever when working in space in this hands-on session.

**MISSION Option 3 - Rover Races...** Navigate and perform missions with remote controlled "mini-rovers" on the Mars' terrain.

**MISSION Option 4 - Earth Resources Observation and Science (EROS)...** An EROS scientist will facilitate this activity that showcases the facility's ability to affect millions of lives by providing data collected by orbiting satellites to scholars, engineers, and land managers around the world.

**MISSION Option 5 - Weather and Climate...** How is NASA involved with the weather? Is global warming really affecting South Dakota? This session takes a look at these questions.

**MISSION Option 6 - NASA's Exploration Experience Trailer...** This NASA-provided semi-trailer enables its visitors to simulate a visit to the moon and touch an actual moon rock. Enter the theater and be introduced to NASA's plan to return to the moon in vehicles that are now being developed. Take a look at the NASA-inspired technologies that have led to the improvement of the quality of life on earth.

**MISSION Option 7 - Gilligan's Island Meets the Space Age...** We take electricity for granted every time we so much as turn on a light switch. But have you ever wondered what it takes to make the electricity? Participate in this activity and you'll find out first hand that to generate electrical power it takes mechanical power, and in this case a human-powered bicycle generator. How many electrical things do you think we'll be able to run? And for how long?

**MISSION Option 8 - Mapping the Surface of Venus...** Hidden by an atmosphere so harsh that its surface reaches temperatures high enough to melt lead and surrounded by clouds of corrosive sulfuric acid, the planet Venus engages our imagination. How do we learn more about this mysterious world when landing a probe on it is impracticable? Using a hands-on activity, learn how radar technology enables scientists to create images of the Venus surface.

**MISSION Option 9 - Space Scavengers...** Would you enjoy exploring and seeking answers to space-related or spin-off technology questions? The many exhibits will include space program, alternative energy, and agriculture in the space age and much more. Prizes will be given to those who accurately answer the majority of questions from this scavenger hunt.

**MISSION Option 10 - GPS Hunt...** Learn about the amazing system of satellites orbiting the earth for the purpose of helping us find our way by navigating a course using a GPS unit. You'll accurately locate hidden items using instructions, directions, and a hand-held GPS unit.

**MISSION Option 11 - Phases of the Moon...** Explore and identify the phases of the moon through an interactive website "Wonderville."

**MISSION Option 12 - Crater Impact...** Ever wonder how meteors (falling stars) create such a big crater when they impact the Earth, moon, or other solid bodies of our solar system? This flying space debris can also do damage to satellites and perhaps the International Space Station. This session will explore what properties of the meteoroid create the crater size. Be ready to create craters and do some cool analysis!

**MISSION Option 13 - Star Lab...** Enter an inflatable dome and learn about the constellations in the night-time sky. You'll learn which constellations are visible during the various times of the year and their locations in the sky.

**MISSION Option 14 - Astronaut Farmer...** Students will gain an understanding of how remote sensor imaging and zone mapping has evolved into what we now call "Precision Farming". Through precision farming we are able to become better stewards of our land and natural resources. Students will also be afforded the opportunity to learn about the challenges of food production, processing, transportation and consumption of food - both here on Earth and in space.

**MISSION Option 15 - One Small Click for Mankind...** This is a multimedia space adventure beyond books and blackboards that is based on NASA's Space Educators' Handbook. This activity led by a NASA Aerospace Education Specialist will be a guided tour using a computer for each participant. Participants will be able to keep the CDROM at the end of their sessions!

**\*SUBJECT TO CHANGE.**

**LUNCH BREAK**

11:00 - 11:40 AM

**Lunch will not be provided. Please bring sack lunches or make arrangements with local eating establishments.**

## EXHIBITS & EXHIBITORS (Thursday & Friday)

- NASA Exploration Experience Trailer
- South Dakota Science on the Move
- NASA Exhibits
- Space Shuttle Stack
- Augustana College
- Lake Area Technical Institute
- EROS
- Aerostar
- SD Air Cadets
- South Dakota State University
- South Dakota Space Grant Consortium
- South Dakota School of Mines & Technology

## EVENING SESSIONS (Open to the public)

6:30 - 8:30 PM

### FEATURED SPEAKERS

6:30 - 7:30 PM - Dr. Jitendra Joshi

7:30 - 8:30 PM - Dr. Jack Bacon

*Heritage Theater*

### EXHIBITS

*Evert Center Concourse & Parking Lot*

## Featured Speakers

**Michael E. Fossum - NASA Astronaut** Born December 19, 1957 in Sioux Falls, South Dakota, and grew up in McAllen, Texas. Selected by NASA in June 1998 and reported for training for Astronaut Candidate training with intensive instruction in Shuttle and International Space Station systems, physiological training and ground school. As a Capsule Communicator (CAPCOM) in Mission Control, Fossum supported several flights, including Lead CAPCOM for Space Station Expedition-6. Mike Fossum completed his first space flight on STS-121 in 2006, logging over 306 hours in space, including over 21 hours in 3 EVAs. Fossum was assigned to the crew of STS-124 as the lead spacewalker in the May/June 2008 launch. The STS-124 mission to the International Space Station was the second of three flights that launched components to complete the Japanese "Kibo" laboratory.



**Jack Bacon Ph.D - Systems Integrator, International Space Station Program** Dr. Bacon has conducted numerous assignments in the integration of all US & international systems contributions to the International Space Station program. Dr. Bacon currently serves as lead of the Mission Analysis and Integration (MAI) team of the Vehicle Integrated Performance, Environments, and Resources (VIPER) team in the International Space Station Program Office. He holds a seat on the ISS executive International Mission Management Team, in cooperation with representatives from the crew, flight operations, engineering, flight medicine, payloads, safety, EVA, and Russia, ESA, Japan, and Canada. Dr. Bacon is an exciting motivational speaker for all ages.

**Jitendra Joshi Ph.D. - Technology Advisor, Advanced Capabilities Division of the Exploration Systems Mission Directorate** Dr. Jitendra Joshi received his Ph.D. from Rutgers. The State University of New Jersey in Environmental Sciences, and his MS from The University of Bombay in Microbiology and a BS from Wilson College, Bombay in Microbiology and Chemistry. His Ph.D. work was in the area of Waste Processing and resource recovery in the context of Advanced Life Support for long-duration space missions. Since 1998, Dr. Joshi has supported the Bioastronautics Division's Advanced Human Support Technology (AHST) Program in coordinating the Peer Review, as a Senior Scientist for the Advanced Life Support (ALS) discipline and Deputy Program Manager for the AHST Program. In his recent role as the Chief Technology Advisor for the Advanced Capabilities Division (ACD) in the Exploration Systems Mission Directorate, he facilitates coordination between the Exploration Technology Development, Human Research and the Lunar Precursor and Robotic Programs.



**Thomas V. Durkin - Deputy Director and Outreach Coordinator, NASA South Dakota Space Grant Consortium** Tom Durkin is the Deputy Director of the NASA South Dakota Space Grant Consortium, headquartered at the SD School of Mines & Technology in Rapid City. He has been in this position for the past 9 years. Tom has a Masters degree in Geology from SDSM&T and a Bachelor's degree in Earth Science from Adelphi University in New York. He often visits schools to speak with students about space and NASA's missions. As the link between NASA and the citizens of South Dakota, the SD Space Grant Consortium strives to instill the spirit of exploration and discovery in students that is essential for the development of the nation's workforce, particularly in the fields of science, technology, engineering, and math. Tom will speak to us about NASA's highly successful Mars Exploration Rover Mission.



**This event meets most South Dakota Science, Social Studies and Math Standards.**

# Space Days Partners

## Institutional Members

South Dakota School of Mines and Technology, Rapid City, SD; South Dakota State University, Brookings, SD; USGS Center for Earth Resources Observation and Science (EROS), Sioux Falls, SD; Augustana College, Sioux Falls, SD; South Dakota Discovery Center and Aquarium, Pierre, SD

## Educational Affiliates

Black Hills State University (BHSU), Spearfish, SD and the Center for the Advancement of Mathematics and Science Education operated by BHSU; [REDACTED]; Lake Area Technical Institute, Watertown, SD; The University of South Dakota (USD) Vermillion, SD; Dakota State University (DSU), Madison, SD; Badlands Observatory, Quinn, SD; Black Hills Astronomical Society; [REDACTED] Kirby Science Discovery Center and NASA "Educator Resource Center" (ERC); Washington Pavillion, Sioux Falls, SD; The Journey Museum; Lower Brule Community College, Lower Brule, SD; Ogalala Lakota College, Kyle, SD; Sinte Gleska University, Rosebud, SD; [REDACTED]

## Industrial Affiliates

Cynetics Corp., Rapid City, SD; Honeywell; Horizons, Inc., Rapid City, SD; Raven Industries, Sioux Falls, SD; RESPEC, Rapid City, SD; Science Applications International Corporation (SAIC)

## State and Federal Government Affiliates

Office of Aeronautics, South Dakota Department of Transportation, National Weather Service Forecast office, Aberdeen, SD

# Register for South Dakota Space Days TODAY!

## FREE EVENT!

Contact Lake Area Technical Institute @ 1-800-657-4344 ext. 321/328 or (605) 882-5284. Due to limited space, all groups must pre-register. At least one adult chaperone/teacher is required for every 10 students. Last day to register is September 12, 2008.



**Lake Area**  
**TECHNICAL**  
**INSTITUTE**  
230 11th St. NE, PO Box 730  
Watertown, SD 57201

Free event!  
Open to school groups and the public.