



## NEWSLETTER

# RITTENHOUSE ASTRONOMICAL SOCIETY

Founded 1888 [WWW.RITTENHOUSEASTRONOMICALSOCIETY.ORG](http://WWW.RITTENHOUSEASTRONOMICALSOCIETY.ORG)

February 2011

OPEN TO PUBLIC AND STUDENTS  
Upcoming Meeting on February 2nd  
**NOTE: Special Meeting Date!**

7:15 PM  
The Franklin  
20th Street and Benjamin Franklin Parkway



## February's Meeting

A warm welcome home to Laura who was a previous lecturer and show producer here at the Fels Planetarium. Her extensive background in planetarium education coupled with running her own business as she pioneered development of all-sky visuals for planetaria in the early 1990's gives her a rich background from which to talk about the influence of planetaria on our media and culture. Laura now works with Zeiss as a planetarium consultant and sales representative.

### Meeting Agenda

7:15 - Introduction  
7:30 - Astronomy Lesson  
President's Message  
Sky This Month  
Guest Speaker  
Observatory/Q&A/Social Mixer

## January's Meeting

Dr. Robert Nemiroff

### *Astronomy Picture of the Day*

January's meeting drew over a hundred people to view the stunning pictures shown to us by Dr. Nemiroff. It was fascinating to hear how some of the pictures were created by amateur photographers. Dr. Nemiroff shared with us some of the more popular pictures since the web sites creation as well as the best of the past 3 years. It was a real treat!



The Planet and the Radio Dish  
Credit & Copyright: Alex Cherney (Terrastro)  
APOD: 2010 August 3

**Explanation:** *What planet is this? Although seemingly something out of *The Little Prince*, the planet is actually Earth. More specifically, it is a small part of the Earth incorporated into a four image stereographic "Little Planet" projection. The central fisheye image points down, while the surrounding wide-angle images were taken at a 30 degree tilt and added digitally later. Earth-anchored items surrounding the image center include green grass, dark shadows, and trees near and far. At the image top ("noon" if the planet were a clock) is the well-lit Parkes Radio Telescope dish in New South Wales, Australia. The surrounding sky contains many jewels of the night including the Moon at 9 pm, the plane of our Milky Way Galaxy at 1:30 pm and 7 pm, and the Small Magellanic Cloud galaxy at 5 pm. APOD 2010 August 3*



## President's Message

### "Horrible Days at NASA"

*Dr. Milton Friedman*

If you were born after 1986, you missed one of the most tragic days for NASA, the nation and me. At 11:39 a.m., EST, the Challenger Space Shuttle suffered a leak in the right solid-rocket booster O-ring resulting in an explosion 73 seconds into its flight.

The leak ignited the main fuel tank as millions of people watched the tragedy unfold on television around the world. All seven astronauts on the Challenger died.

One of those on board was Christa McAuliffe, the first teacher to fly in space. She had been chosen from thousands to speak from space and generate interest in science for students back on Earth. None of those dreams became a reality.

For months before the Challenger accident, I was in contact with the public relations and speaker's bureau at the National Aeronautics and Space Administration requesting that Christa appear at the Franklin Institute after she flew in space. NASA agreed and sent me a letter asking if it could be arranged for Christa to start at the Philadelphia Museum of Art and arrive at the Franklin Institute via a parade from the Art Museum. I contacted the City of Philadelphia which approved the request.

When the tragic Challenger accident occurred, I was in my medical office in Philadelphia. The announcement came out of the radio changing my life forever. Christa's life ended high above millions of students and the rest of the population on that tragic Tuesday on January 28, 1986.

Twenty-five years have passed but the memory will always be with us. The other astronauts who died on Challenger were Commander Dick Scobee, Shuttle Pilot Michael J. Smith, Mission Specialists Judith Resnick, Ronald E. McNair and Ellison S. Onizuka, Payload Specialist, Gregory B. Jarvis.

## Weekly Challenge

Join in viewing the sky together this spring. We are just trying out a new weekly feature (our challenge) to motivate those interested in looking for some easier targets (binocular sights.) When I first became interested in astronomy, I had the need to purchase a telescope and learn the night sky view by view which for me was from one wonder to another. It took time and patience (no go to assistance) and when you found your target, you could feel elated. I really totally overlooked the practice of binocular astronomy in favor of the amazing views I could seek out with the telescope.

This past summer and fall at our public star watches, Joe and others constantly used their binoculars to view along with their telescopes. After borrowing a few good pairs and taking a look, I was hooked again. I was stunned at how the sights I had viewed many times with the scope, now had a context, a much wider field, from which they become a part of the view.

With that inspiration, a resolution of sorts this year was to rediscover the night sky by binoculars. It can only assist my presentations in planetariums, and might benefit anyone else just starting out with viewing the night sky. Even the long time observers out there might want to take a look again, and share the view with fellow members. We have posted our weekly challenge on our Members network which you are entitled to join with your membership. Some of our January sights include: Star clusters of Auriga, the Pleiades along with Kemble's Cascade. You will find some simple maps and pictures to help with the search on our member's network.

Please know I am just starting, these challenges remain posted and are still easily visible throughout the next month. You are welcome to look at as many or few, and consider sharing the view! Yes, your view. We all interpret the sky slightly differently, different patterns or associations of stars, even colors that we see. Some challenges will be for binoculars, and others may be naked eye visible clusters. Starting in January, might yield us a year of challenges when complete.

Check out the Gazing group on our membership network, or contact us to get an invitation to join 40 other members (and growing) on a network to share our understanding of the Universe. (In this instance, map by map, sight by sight.)



**JAN 27 ~ FEB 3**

Can you spot the Perseus Double cluster with just eyes? Binoculars?

## Philadelphia Science Festival

*Ted Williams*

Fern and I recently met with Derrick Pitts of the Franklin to share ideas that were suggested by members on our member's on-line network for the upcoming Science Festival. To get enough people involved to make some of these ideas come to fruition, it was decided that expertise of members from the area astronomy clubs would all be invited to work together with the Franklin Institute and RAS to ensure success.

A way to involve the surrounding community, area astronomy clubs will be asked to take it to the streets. April 21 (rain date April 26) from 6:00 to 11:00 pm. There will be a night of City Wide Telescope Observing. Telescopes will be set up for the general public to take a view at multiple spots around the city during the city wide festival which runs from April 15-28.

On April 16, there will be a festival along the Parkway. Demonstrations/activities that our members suggested included:

- Celestial sphere demonstrations
- I-pad astronomy demonstrations
- Model Stonehenge, Pyramids on lazy Susan mount to align to sun
- Atmospheric optics or demonstrations with prisms and sunlight
- Scale model walk through solar system stretched along the parkway.
- Scale model universe, along the parkway
- Scale model of time from big bang, again along parkway possibly out river drive.
- Telescopes for solar viewing, alternatively viewing building tops or distant sights
- Sun-spotters
- Solar Viewer
- Donation of our Blue RAS history book in local libraries as promotional lead up to Festival.

We will establish a link on our webpage to post a city map to assist to coordinate efforts of the City Wide Telescope Observing Night.

The Philadelphia Science Festival

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Photo: The Giant Heart at The Franklin Institute

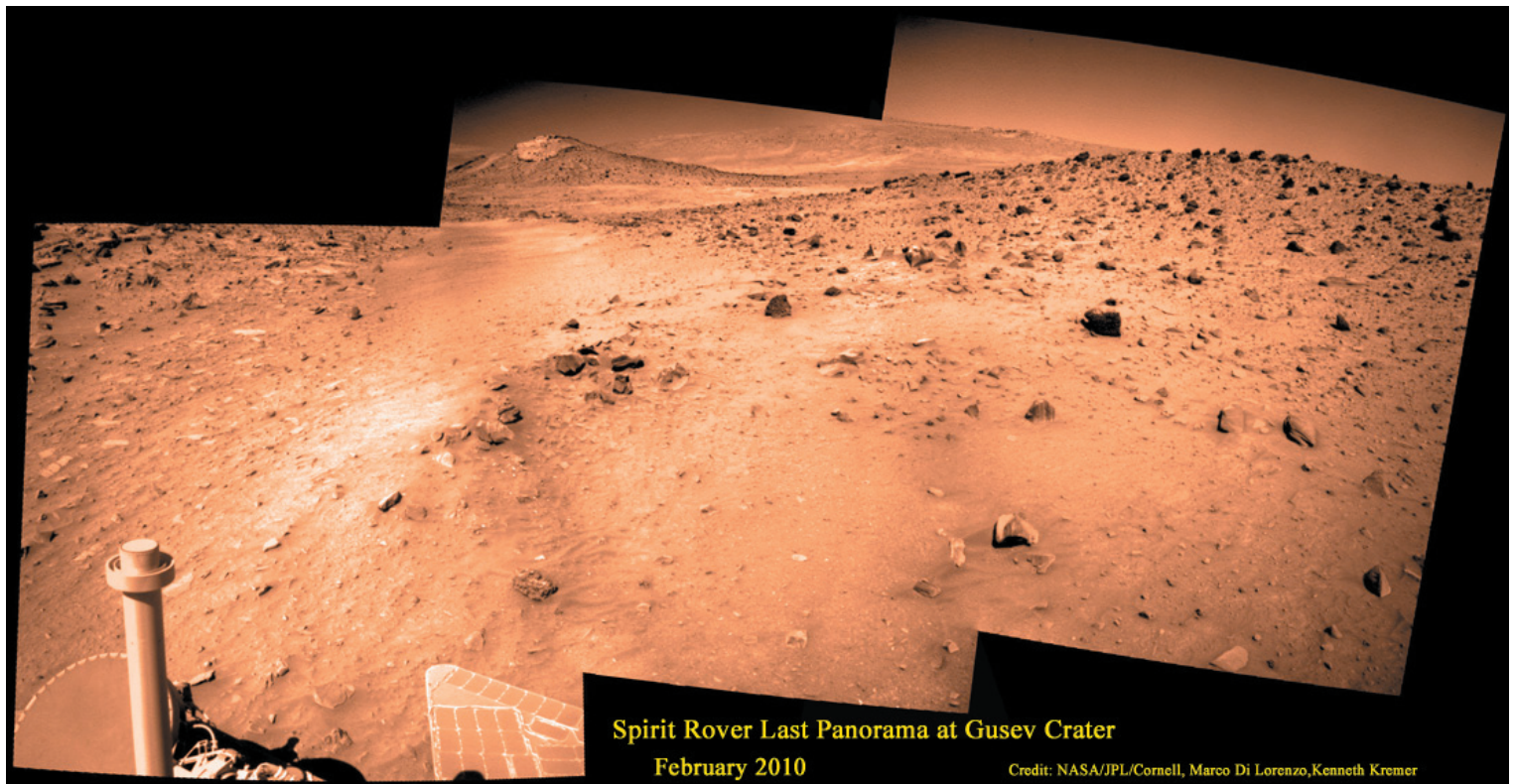
Home

**The Philadelphia Science Festival**  
April 15 - April 28, 2011

**What is the Philadelphia Science Festival?**

The Philadelphia Science Festival is a two-week, community-wide celebration of science that will take place annually in April, featuring lectures, debates, hands-on activities, special exhibitions and a variety of other informal science education experiences for Philadelphians of all ages.

CONNECT



**Spirit Rover Last Panorama at Gusev Crater**

**February 2010**

Credit: NASA/JPL/Cornell, Marco Di Lorenzo, Kenneth Kremer

*Spirit's Last Picture Show - for now. Spirit's final panoramic mosaic was taken on Sol 2175 in February 2010, a few weeks before entering hibernation mode in March 2010 Credit: NASA/JPL/Cornell, Marco Di Lorenzo, Kenneth Kremer*

## Mars Rovers Celebrate 7th Anniversary on the Red Planet

*Dr. Ken Kremer*

NASA's twin Mars rovers Spirit and Opportunity surely rank as one of the greatest triumphs in the history of space exploration. Seven years ago this month the dynamic duo landed on opposite sides of the Red planet on Jan. 3 and Jan. 24, 2004. They were originally designed to operate for just 90 Martian days, or sols, with an outside possibility they might last a few months longer.

In actuality - during the extended mission phase - they have endured light years beyond the mere 3 month "warranty" proclaimed by NASA as the mission began with high hopes following the nail biting "6 minutes of terror" as the twins plunged through the Martian atmosphere and with no certainty as to the outcome of the landing.

Since 2004, the rovers longevity have far exceeded all expectations and no one on the science and engineering teams that built and operate the twins can believe they lasted so long and produced so much.

Spirit and Opportunity have accomplished a remarkable series of scientific breakthroughs, far surpassing the wildest dreams of all the researchers and NASA officials. Indeed both rovers are currently positioned at scientific gold mines on the red planet's surface.

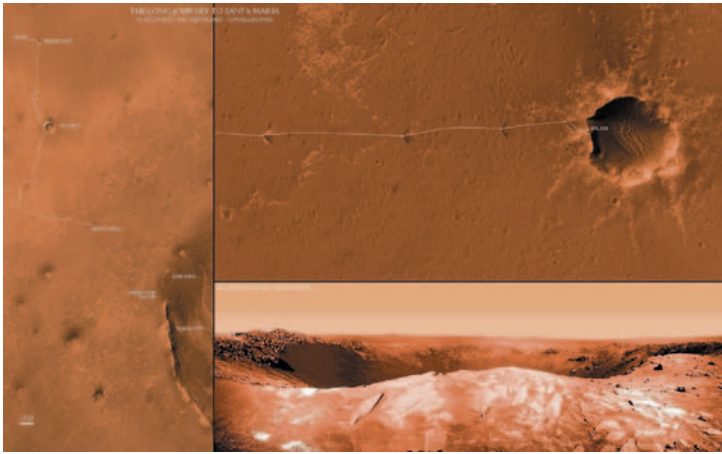
Opportunity is still alive and trekking across the Martian plains, now 84 months into the 3 month mission. By the time of her last dispatch from Gusev crater, Spirit had lasted for nearly six years of bonus mission time.

New images taken by the rovers appear at NASA's Mars Rover websites on a continuing basis. See my Mars photomosaics herein to show the current environments explored by both rovers.

Spirit last communicated with mission controllers back on Earth on March 22, 2010. The rover had entered hibernation mode as the autumn sunlight available to power her life giving solar arrays was diminishing. NASA hopes to reawaken Spirit from a long slumber and reignite her illustrious campaign of exploration and discovery.

No one is giving up hope for Spirit and NASA is stepping up operational efforts to contact the plucky rover since the amount of springtime Martian sunlight is now increasing over the next few months.

Although Spirit has been stalled at a place called 'Troy' since April 2009. She made a significant science discovery at that exact spot. Spirit examined the soil in great detail and found key evidence that water, perhaps as snow melt, trickled into the subsurface fairly recently and on a continuing basis. Our photomosaic herein shows the very last panoramic view taken by Spirit at 'Troy'.



*The Long Journey to Santa Maria: This collage of two maps and a new close up panorama of Santa Maria crater (bottom right) shows the route traversed by the Opportunity Mars rover during her 7 year long overland expedition across the Meridiani Planum region of Mars. Opportunity arrived at the rim of Santa Maria Crater on Dec. 16, 2010 on Sol 2451. The mosaic of Santa Maria at bottom right was taken by Opportunity about 5 meters from rim on Sol 2451. Credit: NASA/JPL/Cornell, Marco Di Lorenzo, Kenneth Kremer. This map mosaic published in the Jan. 17, 2011 issue of Aviation Week & Space Technology magazine on p. 45.*

While driving on the western edge of an eroded over volcanic feature named ‘Home Plate’, she unknowingly broke through a hard surface crust (perhaps 1 cm thick) and sank into hidden soft sand beneath. At ‘Troy’, Spirit discovered that the crust was comprised of water related sulfate materials and therefore found further evidence for the past flow of liquid water on the surface of Mars – a great science discovery!

Meanwhile, Opportunity is blazing a trail of discovery in the Meridiani Planum region of Mars. She is currently exploring the stadium sized Santa Maria Carter which holds deposits of water bearing minerals that will further elucidate the potential for habitability on the red planet.

The rover arrived at the western edge of the relatively fresh impact crater on Dec. 16, 2010 (Sol 2451). This intermediate stop on the rovers 19 km long journey from Victoria Crater to giant 14 km wide Endeavour Crater will provide important ground truth observations to compare

with the orbital detection of exposures of hydrated sulfate minerals.

Opportunity is driving to different vantage points around the steep walled crater and snapping a series of gorgeous Martian vistas. The rock strewn crater is a Martian geologists dream. The robot was imaged on New Years Eve in exquisite high resolution from Mars orbit while parked at the sharp edge as she was simultaneously snapping a multitude of awesome views peering inside the stunning and scientifically interesting crater. See our photomosaics.

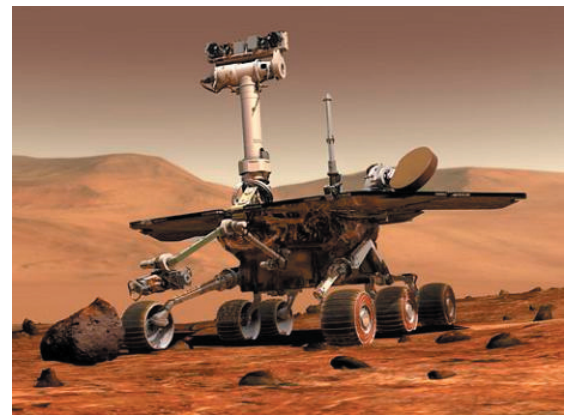
Santa Maria is just 6 km from the western rim of Endeavour which shows spectral signatures of phyllosilicates, or clay bearing minerals, which formed in water about 4 billion years ago and have never before been directly analyzed on the Martian surface.

Phyllosilicates form in neutral aqueous conditions that could have been more habitable and conducive to the formation of life than the later Martian episodes of more harshly acidic conditions in which the sulfates formed that Opportunity has already been exploring during her 7 year long overland expedition.

Opportunity remains healthy and has abundant solar power for the final leg of the long eastward march to Endeavour which will resume in mid-February and should arrive at later in 2011.

Read more in my new 7 Year Anniversary story online at Universe Today:

<http://www.universetoday.com/82784/7-years-of-opportunity-on-mars-and-a-science-bonanza/>

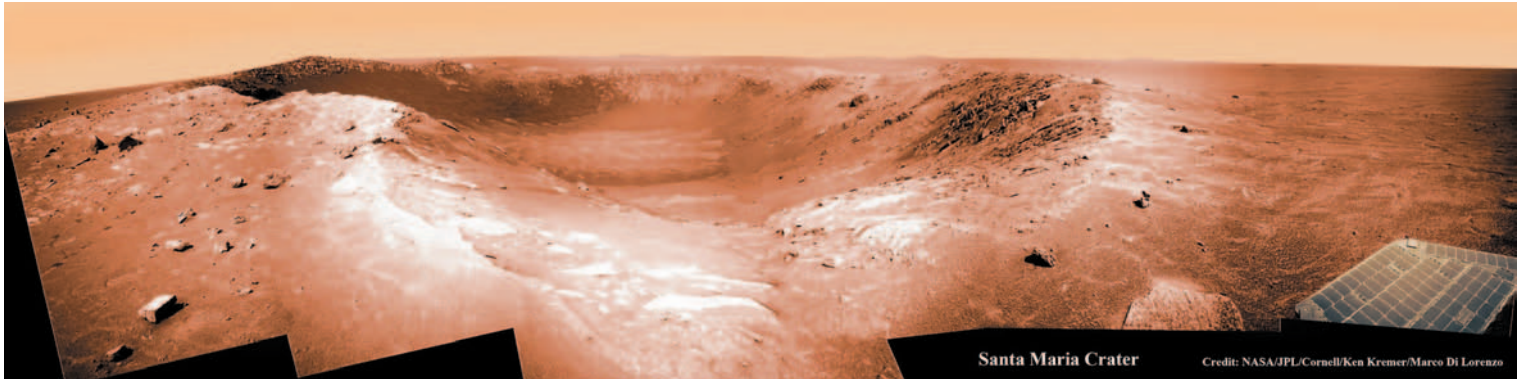


**Visible Planets 02/02/2011**

	Rises	Transit	Sets
Mercury	06:27 am	11:12 am	03:57 pm
Venus	04:13 am	09:02 am	01:51 pm
Mars	07:16 am	12:17 pm	05:18 pm
Jupiter	09:18 am	03:19 pm	09:20 pm
Saturn	10:27 pm	04:14 am	10:02 am

**Upcoming Speakers**

March	Dr. Bill Metz Author: Inquiry By Design
April	Dr. Milton Friedman - RAS President
May	Dave Walker - Franklin Institute, Fels Planetarium
June	Members Night: Members Presentations



*Opportunity's surface view of Santa Maria on New Years Eve Dec 31 while being photographed overhead from Mars Orbit. Opportunity took this panoramic mosaic just meters from the crater rim on Dec. 29, 2010 (Sol 2464). Note rover tracks near rim at left, relatively clean solar panel at right and numerous ejecta rocks. Credit: NASA/JPL/Cornell, Kenneth Kremer, Marco Di Lorenzo*



## Plan Ahead:

### *“Gustav Holst; The Planets ~ Beyond the Score” at Verizon Hall (Kimmel Center)*

Mark and Laura James have suggested an RAS outing. This stunning visual and musical presentation of Holst The Planets, is Friday May 13, 2011 at 7:00 in Verizon Hall. Ticket prices vary from low \$15.00 up to about \$55.00. At this point, seats are still available. [www.ticketphiladelphia.org](http://www.ticketphiladelphia.org), [kimmelcenter.org](http://kimmelcenter.org) or call 215-893-1999.

Buy your tickets in advance at the link above or by phone, register (on this site) when you have purchased the tickets. Under the event titled “Other Planets, Beyond the Score” register as attending (Same solar system icon as pictured here in event section). We will pick a spot to meet either before or after the presentation to share the experience.

## Astronomy Outreach:

*Dr. Ken Kremer*

Please contact me for more info or science outreach presentations by email. My upcoming Astronomy talks include:

- Masonic Lodge Evening Gala:** Pennington, NJ, Mar 13, 6 PM, “7 Years of Mars Rovers and the Search for Life in 3 D”.
- Rittenhouse Astronomical Society (RAS) at the Franklin Institute:** Philadelphia, PA, Apr 13, Wed, 7 PM. “Opportunity Mars Rover Update”, “ NASA Flybys of Comets Hartley 2 & Temple 1” Website: <http://www.rittenhouseastronomicalsociety.org>
- International Astronomy Day at the Franklin Institute:** Philadelphia, PA, May 7, Sat
- Amateur Astronomers Association of Princeton:** Princeton, NJ, May 10, Tue, 8 PM: “Whats Beyond for NASA: Shuttle, Station, Orion, SpaceX & Robots”. Website: <http://www.princetonastronomy.org/>

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