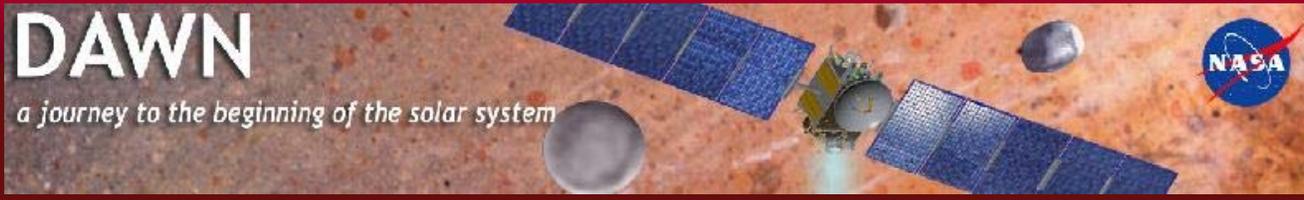


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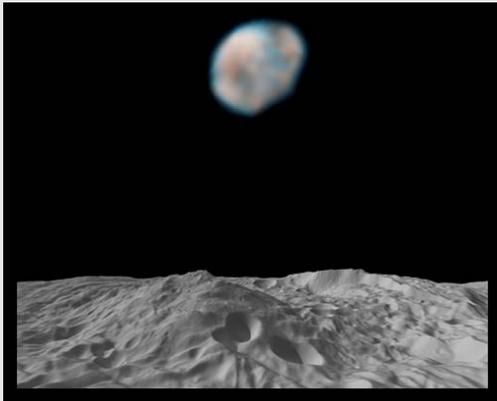


**DAWN**  
a journey to the beginning of the solar system

Dawn Mission Outreach E-Bulletin      36th Edition      December 2011

**THE LATEST NEWS FROM DAWN'S SCIENCE TEAM . . .  
YOWZA!!**

Before last July, Vesta was only a series of modest images brought to us by the Hubble Space telescope, enough to tantalize and inspire the Dawn mission, but essentially an unexplored new world in our solar system.



Combination of Hubble Space Telescope image of Vesta (top) and a cool composite image of Vesta's landscape from framing camera images (below). Image credit: NASA/JPL/Caltech/UCLA/MPS/DLR/IDA

Five months and thousands of images and other data downloads later, Dawn's science team is rising from intense work analyzing all the new information gathered during the survey and high altitude mapping orbits.

At the American Geophysical Union Meeting this month, Principal Investigator Chris Russell led a series of presentations from members of the Dawn science team and from the science community at large. Each told a different part of Vesta's story, taking data from Dawn's payload of instruments and interpreting from his or her unique perspective and expertise. The international science community pondered science team findings relating to the early results about the mineral composition, topography, and geomorphology of Vesta.

What next? The team takes all those distinctive stories about aspects of Vesta and digs deeper into the details until it can weave them into one large story of this newly explored world. The Dawn team's exciting work has just begun!

How can you stay tuned?

- ✓ Listen to [Dawn's sessions](#) at the American Geophysical Union meeting on December 6, 2011.
- ✓ Keep up with Dawn's [Image of the Day](#).
- ✓ Read the rest of e-News for more ideas!

### DAWN IN THE COMMUNITY FOR KIDS--YOUNG AND OLD

#### **Make a Vesta Greeting Card!**

Inspired by Vesta's series of craters affectionately nicknamed "the snowman," the Dawn E/PO team invites you to get creative and make a Vesta greeting card. Choose from several intriguing images of Vesta. We have developed templates to get you started. Take a photo of your card and send it to us; select cards will be highlighted in our [Vesta Greeting Card Gallery!](#)



Check out our [Greeting Card](#) webpage for further details and to view and download images.

### Rainsville, Alabama: NASA Week

November 29 - December 2, 2011

Dawn was a star in the Rainsville School District as NASA Discovery Program E/PO members worked in

4th-12th grade classrooms for several days. It was a collaborative outreach effort to bring a rich STEAM (science, technology, engineering, arts, math) experiences to support the community, impacted last spring when a tornado significantly damaged the school complex.



A fifth grader's interpretation of a Vesta image from Dawn. Image credit: McREL

Among other activities, kids were entranced by Dawn imagery, creating their own renditions of asteroid images, explored the scale of space with "Where Are You?", and interacted with Dawn's Ion Propulsion activities.

- ✓ Explore Dawn's [Ion Propulsion Module](#) and [Where Are You?](#) for yourself!
- ✓ For more on our fun events, go to [Dawn's Community](#) pages.

## EXTRA, EXTRA, READ ALL ABOUT IT! NEW NASA DAWN VISUALS SHOW VESTA'S 'COLOR PALETTE'

Vesta appears in a splendid rainbow-colored palette in new images obtained by NASA's Dawn spacecraft. The colors, assigned by scientists to show different rock or mineral types, reveal Vesta to be a world of many varied, well-separated layers and ingredients. Vesta is unique among asteroids visited by spacecraft to date in having such wide variation, supporting the notion that its interior evolution places Vesta at the transition between the terrestrial planets -- like Earth, Mercury, Mars and Venus -- and its asteroid siblings.

Read Dawn's full December 5, 2011 [press release](#) from NASA Jet Propulsion Laboratory.

Dawn scientists presented new images and shared findings during the American Geophysical Union Meeting in San Francisco on December 6, 2011.

### Highlights?

- ✓ Vesta looks to be among the most rugged bodies in the solar system relative to its size - more varied in its topography than the Moon and Mercury!
- ✓ Vesta's distinctive south pole topography was actually created by two vast impacts!
- ✓ At 20 km, the mountain at the center of the largest south pole crater, Rheasilvia, is close to four times larger than Earth's largest mountain, the island of Hawaii (measured from the ocean floor)!

To get a clearer picture of Vesta, check out Dawn's [videos and animations](#).

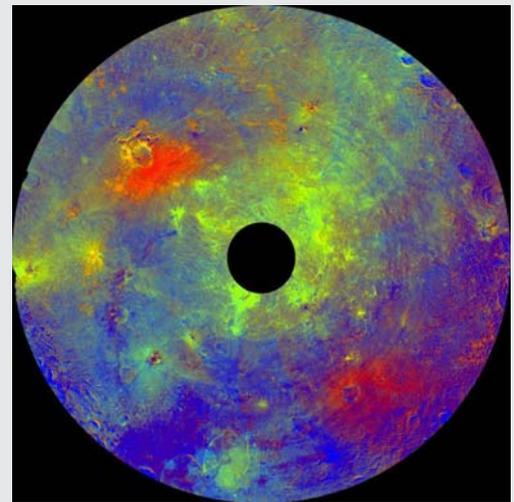


Image from Dawn's framing camera showing Vesta's southern hemisphere in color, centered on the Rheasilvia formation. Image credit: NASA/JPL/Caltech/UCLA/MPS/DLR/IDA

## EDUCATION SPOTLIGHT

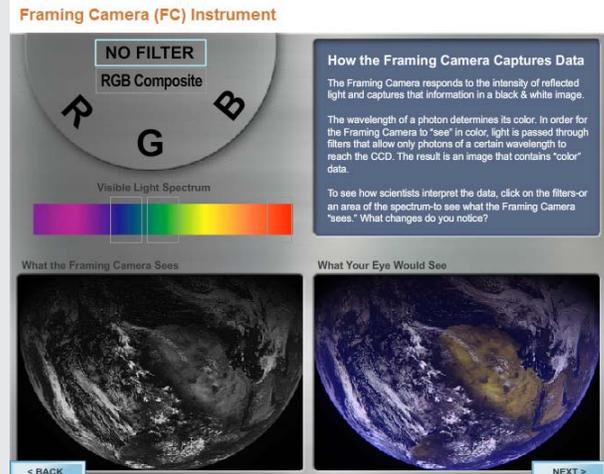
### Dawn's New Framing Camera Interactive

Did you know that the framing camera only takes images in black and white? Yet the images are interpreted with color filters to help scientists (and us!) make sense of images from Vesta.

Huh? How does that work?

Just in time, as gorgeous images from Dawn's framing camera arrive from Vesta, we have a new interactive that will help you and your students understand exactly how information about Vesta is transferred from Dawn to Earth, and how the Dawn team makes sense of it. Be sure to toggle between the images to develop your understanding of one of Dawn's payload instruments.

✓ Explore Dawn's [Framing Camera Interactive!](#)



### NASA's YEAR OF THE SOLAR SYSTEM: EVOLVING WORLDS

This month, the Year of the Solar System explores evolving worlds. Naturally, the associated featured mission of the month is Dawn and its investigation of Vesta!

- ✓ Explore the [Year of the Solar System: Evolving Worlds](#)
- ✓ Take a peek at YSS's [featured mission of the month: Dawn!](#)

## DAWNWARD SPIRALS

*From Dawn's Chief Engineer, Dr. Marc Rayman:*

*November 29, 2011*



Continuing its ambitious campaign of exploration deep in the asteroid belt, Dawn has spent most of the past month [spiraling](#) ever closer to Vesta. Fresh from the phenomenal success of [mapping the alien world in detail in October](#), the spacecraft and its human team members are engaged in one of the most complicated parts of the mission. The reward will be the capability to scrutinize this fascinating protoplanet further.

*-Excerpted from Dawn Journal, October 29, 2011*

- ✓ Conceptualize Dawn's classy maneuvers to move into LAMO in this month's complete [Dawn Journal](#).
- ✓ Explore more mission concepts in the [Dawn Journal archives](#).

## MISSION STATUS UPDATE

### DAWN SPIRALS CLOSER TO VESTA FOR NEXT DATA SET

#### Dawn Begins New Science Phase at Lowest Altitude

*December 13, 2011*

Dawn began a new set of science observations on schedule on Dec. 12 in its low altitude mapping orbit (LAMO) at an average altitude of 210 kilometers (130 miles). This phase will be the longest of the science campaigns at Vesta, lasting at least 10 weeks.

Dawn's investigations in this orbit will focus on measuring the elemental composition of the surface and subsurface material with the gamma ray and neutron detector and on



mapping the interior structure by measuring Vesta's gravity field. In addition, the science camera and the visible and infrared mapping spectrometer will be used for some bonus observations. [An overview of the plan for LAMO is in the Dawn Journal from Dec. 30, 2010, and further details will be in upcoming Dawn Journals.](#)

- ✓ The Dawn [Image of the Day](#) will take a break until Jan. 9. When it returns, there will be more spectacular views of this exotic world.
- ✓ View all of Dawn's journey to - and around - Vesta in [mission updates](#).
- ✓ [Where is Dawn now?](#) Check out the simulated view of Vesta from Dawn.

## FOLLOW DAWN!

Get on-the-minute mission and science updates during this exciting year as Dawn zips along in its trajectory to Vesta in the main asteroid belt! Follow the Dawn Mission on [Facebook](#), [Twitter](#), and our [RSS Feed](#).



## TELL US WHAT YOU THINK, FORWARD OUR NEWS, SUBSCRIBE!

The Dawn Education and Public Outreach team is continually seeking ways to improve the mission website and is eager to receive your feedback. Please share your thoughts by completing [a brief survey](#).

Please feel free to forward this e-mail to others interested in NASA missions. We welcome new subscribers! Visit the [Dawn News and Events](#) page to sign up for the [Dawn E-News RSS feed](#) or to join the Dawn mission E-News mailing list.

\*\*\*\*\*  
 Dawn Mission Outreach E-News features information about the mission, its outreach website, and products, services, and materials available from the Dawn Education and Public Outreach (E/PO) team. Dawn is the ninth Discovery mission in NASA's Science Mission Directorate and is a collaborative partnership made up of the University of California, Los Angeles; Jet Propulsion Laboratory; Orbital Sciences Corporation; Los Alamos National Laboratory; German Aerospace Center; Max Planck Institute for Solar System Research; Italian Space Agency; and Italian National Institute of Astrophysics. Dawn outreach materials are developed under contract by Mid-continent Research for Education and Learning (McREL), Denver, CO.

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McREL | 4601 DTC Blvd., Suite 500 | Denver | CO | 80237