



November 2003  
Volume 2, Issue 11

# Stars and Scopes

Newsletter of the Rocky Mountain Astronomy Club  
[www.rmastronomy.org](http://www.rmastronomy.org)

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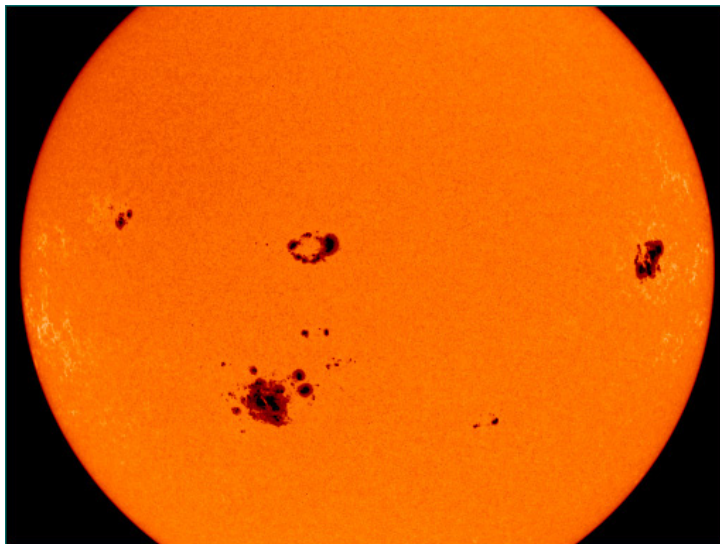
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One big sunspot and another on the way.  
Photo courtesy of the Solar Data Analysis Center.



## Upcoming Events

Nov 8 – **Lunar Eclipse Watch**,  
7pm, at Raptor Center,  
Pueblo, CO

Nov 10 – **Board Meeting**, 6pm  
**Club Meeting** and Program,  
7pm at Colorado State  
University, Pueblo

Nov 15 – **Public Leonid Wat**  
7pm, at the Raptor Center,  
Pueblo, CO

Nov 22 – **Club Star Watch**,  
7pm, at South Fishing Area,  
Pueblo Reservoir, Pueblo, CO

Dec 8 – **Board Meeting**, 6pm,  
**Club Meeting** and Program,  
7pm at Colorado State  
University, Pueblo

Dec 13 – **Public Star Watch**,  
7pm, at the Raptor Center,  
Pueblo, CO

## Solar storm buffets Earth

By Dr David Whitehouse, BBC News Website

The Earth has been buffeted by a cloud of superhot gas thrown off the Sun a few days ago. Scientists report it caused a moderate "**geomagnetic storm**".

Charged particles affected electric utilities, airline communications and satellite navigation systems.

"We predicted it would be a mid-level storm, and that's where it is," said Joe Kunches, chief of space weather operations at the National Oceanic and Atmospheric Administration's Space Environment Center in Boulder, Colorado.

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## Earth monitoring satellite goes silent

By Justin Ray, Spaceflight Now Website

A \$587 million environmental research satellite launched 10 months ago stopped communicating Saturday and is feared dead in space. The Advanced Earth Observing Satellite 2, nicknamed **Midori 2**, is a joint mission between the Japanese and U.S. space programs to monitor our planet's health from orbit. Mission controllers did not receive Earth observation data from the satellite at 7:28 a.m. Japan Standard Time on Saturday when the craft flew over a ground station, officials with the Japan Aerospace Exploration Agency said.

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## SCO Open House

The **CSU Observatory** will continue holding their Tuesday night Open House through November 2003.

## Celestial Events

November 8, 2003

**Lunar eclipse;** moon will rise close to totality, lasting about 24 minutes.

November 17, 2003

**Comet Encke;** closest approach to the Earth since November 1838.

November 18, 2003

**Leonid Meteor Shower;** hourly rate of 10 meteors.

December 2003

**Saturn;** will be at its highest point in the sky in 30 years around midnight.

December 14, 2003

**Geminid Meteor Shower;** hourly rate of 75 meteors.

## Regional SPs

November 15, 2003

**North Texas Skywatch Star Party,** Lake Mineral Wells State Park. For more information, go to: <http://www.tarleton.edu/~platarium>.

February 16-21, 2004

**Winter Star Party,** near Key West, FL. For more information, go to: <http://www.scas.org/wsp2004.html>.

## Solar Storm buffets Earth, continued from page 1

**Power grid operators** and **satellite users** were notified about the storm and no serious problems have been reported. "We've heard from the power grid operators. They're doing OK, but they're seeing the effects of the storm in their data," Kunches said. **Communications systems** in northern Canada are reported to have also seen some effects of the storm. Disruptions to electrical systems are caused by wild fluctuations in the Earth's magnetic field. "The Earth's magnetic field pulls it in... and is now trying to balance it," Kunches said.

The **Global Positioning System**—a satellite navigation facility—was affected, losing its high precision service for a while. High frequency **airline communications** were also degraded in some cases. Climbers on Mount Everest also reported interference on their **radio equipment**. Two major expeditions on the mountain have reported trouble sending data via satellite. As the storm continues, predicted to be followed by others for the next two weeks or so, further disruption is predicted for **satellites, power systems** and even **mobile phones**. It comes from one of the largest groups of sunspots seen for years.

## Satellite goes silent, continued from page 1

At 8:49 a.m., engineers checked the operational status of Midori 2 and found it was switched into a **safe mode** - a condition in which all observation equipment is automatically turned off to minimize power consumption. This switch into the safing mode occurred due to an unknown anomaly.

Around 8:55 a.m., communications between the satellite and the ground stations became unstable and telemetry was not received, officials said. A tracking station also failed to establish contact with the satellite during later passes at 9:23 and 11:05 a.m. JST. "**JAXA** is currently analyzing already acquired telemetry data. The analysis result of power generation data by the solar array paddle revealed that generated power has decreased from 6kW to 1kW," the Japanese space agency said in a statement.

"JAXA makes our best efforts to have Midori 2 back to its normal operation by continuing to analyze the telemetry data and working on to understand the current condition of the satellite at our domestic and overseas tracking stations. "For anomaly cause investigation, JAXA formed the 'Midori 2 anomaly investigation team' led by the president of JAXA."

The satellite was launched aboard an **H-2A rocket** on December 14, 2002. Its mission was to replace the Midori 1 satellite lost in 1997 by a solar array malfunction that left the spacecraft with no power supply. Midori 2 was expected to last at least three years, using its suite of five scientific payloads for global environmental research. Studies included the distribution of water vapor in the atmosphere, along with ocean winds, sea surface temperatures, and sea ice, monitoring plant life and vegetation in marine areas and keeping tabs on the Earth's ozone layer.

## A Call for Newsletter Submissions

If you would like to contribute an **article, observing report** or **astrophoto** to be published in *Stars and Scopes*, please send them to Debbie Schermerhorn at [astrogirl@astrogirl.org](mailto:astrogirl@astrogirl.org) or PO Box 25396, Colorado Springs, CO 80936-5396. When sending photos, please send them in **JPG format** and as large as possible.

## NASA AQUA Imagery of Fires in Southern California

By the Goddard Space Flight Center

Several massive **wildfires** were raging across southern California over the weekend of October 25, 2003. Whipped by the hot, dry **Santa Ana** winds that blow toward the coast from interior deserts, at least one fire grew 10,000 acres in just 6 hours. The **Moderate Resolution Imaging Spectroradiometer (MODIS)** on the Terra satellite captured this image of the fires and clouds of smoke spread over the region on October 26, 2003.

Moving northwest to southeast along the coast, the first cluster of red dots is a combination of the **Piru, Verdale, and Simi Incident Fires**; the next cluster—to the east of Los Angeles—is the **Grand Prix** (west) and **Old** (east) **Fires**; to their south is the **Roblar 2 Fire**; next is the **Paradise Fire**; then the massive **Cedar Fire**, whose thick smoke is completely overshadowing the coastal city of San Diego; finally, at the California-Mexico border is the **Otay Fire**. At least 13 people have lost their lives because of these fires, which officials are reporting were caused by carelessness and arson. Thousands have been evacuated across the region and hundreds of homes have been lost.

The high-resolution image provided right is 500 meters per pixel. The MODIS Rapid Response System provides this image at MODIS' maximum spatial resolution of 250 meters.



## Mystery Spot on Jupiter Baffles Astronomers

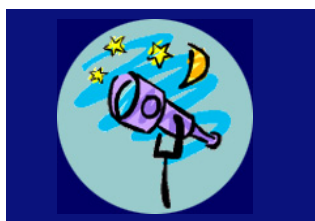
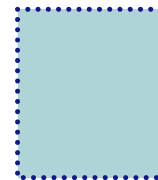
By Robert Roy Britt, Senior Science Writer, SPACE.com

Astronomers have spotted a strange, obvious and inexplicable **black spot** near the equator of Jupiter. Jupiter's complex atmosphere is known to generate **ephemeral spots**, whirls and cloud formations of various sorts. Many are colorful; often they are bright, sometimes they are dark.

This one is particularly dark and larger than many seen in the past. The black spot, accompanied by at least one plume, can be seen not far away from the **Great Red Spot**. Jupiter's Great Red Spot is a colossal cloud structure, much like an oversized hurricane, that has been raging for at least three centuries. The new spot is an obvious dark circular object below and to the right of the Great Red Spot.

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## **Black Spot on Jupiter,** continued from page 3

"Spots of various shades depending on the chemical composition of the gases involved in the process are observed from time to time," according to Jean-Luc Dighaye. "Plumes indicate gas exchanges with the adjacent atmospheric streams which are always fast in the equatorial zones." It is not known if the spot is purely an atmospheric phenomenon or if it might have been generated by some foreign object, though the latter possibility is doubted. In 1994, impacts of the fragments of Comet **Shoemaker-Levy 9** created huge black scars in the Jovian atmosphere.

Jupiter shines by reflected sunlight. Shadows from the four largest **Jovian moons** can also create spots on the planet's cloudtops. But the astronomers have checked the schedules of the moons' passages and, in three independent investigations, ruled them out as the cause of the spot in Meeckers' image. Meanwhile, observers are working with a narrow window of time each day to learn more about the unexplained spot. Jupiter rises in the East at around 3:30 a.m. local time and is high in the sky at daybreak. But since it rotates, the **hemisphere with the new spot** is not always facing Earth. "It would be exciting to follow the evolution of this new black spot—probably still visible in modest astronomical instruments—from many locations of various longitudes on Earth, so that some observers are always favorably positioned when the Jovian hemisphere of interest comes into sight," Dighaye said.

Jupiter is visible to the naked eye. It appears as a very bright star in the predawn eastern sky. In fact it is brighter than all stars and cannot be mistaken. Binoculars or small telescopes can reveal up to four points of light near the giant planet. These are the **Galilean moons**. A modest telescope—about 4-inches—will reveal the major cloud bands of Jupiter. In general, larger amateur telescopes are needed to show smaller features like the newfound, unexplained black spot.