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Star Points for August 2011

“Solar System’s Largest Asteroids Visible in August”

by Curtis Roelle

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Two bright asteroids are easily observable this month and next. Hovering at the naked-eye limit in brightness, all you need is a small pair of binoculars to track these slowly moving star-like objects from night to night.

Long before the first asteroid was discovered, astronomers took notice of a large gap between the orbits of Mars and Jupiter. Finally, on January 1, 1801, an Italian monk discovered Ceres, a 575-mile-diameter rock circling the Sun in the zone between the two planets.

Over time more asteroids or “minor planets” were discovered. Pallas in 1802, followed by Juno in 1804. Astronomers started suspecting that these objects were the remnants of a destroyed or ill-formed planet. The fourth asteroid, Vesta, was discovered in 1807.

The “asteroid belt” had been discovered. To date more than 200 thousand individual asteroids have been discovered around the Sun.

Not all asteroids occupy the primary belt. “Trojan” asteroids are trapped in Jupiter’s orbit in two equally spaced clumps ahead of and trailing the planet. Balanced between the Sun’s and Jupiter’s gravitational attraction, the Trojans maintain a constant distance from the planet.

Other asteroids live closer to the Sun. “Amor” asteroids occupy the space between Mars and Earth. “Aten” asteroids circle the Sun within Earth’s orbit. “Apollo” asteroids include the so-called “Earth crossers.” Apollos are in elliptical orbits carrying them closer and farther from the Sun than Earth gets.

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August Meeting: Wednesday, August 10, 2011, 7:30 p.m., Bear Branch Nature Center

Speaker: Dr. Jennifer Scott of Towson University will discuss “Quasars, Galaxies, and everything in between.” See a description on page 3.

Next WASI Observing Weekend: Friday, August 19, and Saturday, August 20

Star Points *continued*

What about asteroids in the same orbit as Earth? Late last month, in July, NASA announced the discovery of Earth's own Trojan asteroid. This asteroid, currently designated "2010 TK7," orbits the Sun ahead of Earth at a fixed distance of about 50 million miles.

Much farther out in the solar system another asteroid belt was discovered in recent years beyond the orbit of Neptune. This collection of icy bodies, nicknamed the "Kuiper Belt," includes the demoted dwarf planet Pluto as well as at least one object, named Eris, that astronomers believe is even larger than Pluto!

Now, back to the August sky. Asteroids Ceres and Vesta are well placed this month, and the latter hovers at naked-eye visibility. Vesta is around magnitude 6 and Ceres is somewhat fainter, at magnitude 8. The naked-eye limit is typically considered to be magnitude 6 or 7, depending on each individual's visual acuity.

Ceres is in the constellation Cetus, moving into Aquarius in September. Asteroid Vesta spends August in the constellation Capricornus.

Downloadable star charts for each is available online from Sky & Telescope magazine. Information and a link to detailed charts may be found at <http://www.skyandtelescope.com/observing/objects/asteroids/122249184.html>. If you need any assistance locating the asteroids in the sky, then print out the charts and bring them with you to the next Westminster Astronomical Society (WASI) public star party at Bear Branch Nature Center on Friday, September 2. WASI members should be happy to assist you. Don't worry. Both asteroids will still be visible in the night sky in September.

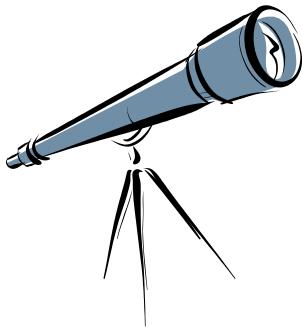
For information about this and other activities, see the WASI calendar at <http://www.westminsterastro.org/>.

Coincidentally, NASA's Dawn spacecraft is currently orbiting asteroid Vesta. Current plans also include a future visit by Dawn at Ceres as well.

"Star Points" by Curtis Roelle appears in the Carroll County Times on the first Sunday of each month. Visit the website at <http://www.starpoints.org> or send email to StarPoints@gmail.com.

There is no president's message for this month.

Upcoming Events



Monthly WASI Meeting August 10, 7:30 p.m., at Bear Branch Nature Center (BBNC)

Soldiers Delight Public Stargazing August 13, 8 p.m., at Soldiers Delight Natural Environment Area in Owings Mills

WASI Member Observing Weekend August 19 & 20 at BBNC

Annual WASI Picnic August 20, 6 p.m. at BBNC; burgers and drinks will be provided; please bring a dish to share

Black Forest Star Party August 26 – August 28, Cherry Springs State Park in Pennsylvania; for more info, visit <http://www.bfsp.org>

Almost Heaven Star Party August 26 – August 30, Spruce Knob, West Virginia; for more info, visit <http://www.ahsp.org>

Planetarium Show September 2, 7:30 p.m., at BBNC

AUGUST PROGRAM

Dr. Jennifer Scott will be discussing quasars and their relationship with their galactic and intergalactic surroundings. Quasars are active galactic nuclei, which are among the most luminous objects in the universe. Dr. Scott will focus on two specific contexts, the nearby environments of quasars and outflows of material from quasars themselves.

Please join her for dinner before the meeting at Harry's Main Street Grill in Westminster at 6 p.m.

Minutes of Meeting on July 13, 2011

The meeting of the Society came to order at about 7:45 PM, chaired by President Jim Reynolds.

There were short, informal discussions of the Green Bank and Mason-Dixon Star Parties.

We were treated to an excellent presentation by Mike Hankey of the American Meteor Society (AMS) on the recording – photography of fireballs and meteors. Some details follow:

Rough Definitions:

Meteor The light

Meteoroid The actual object

Meteorite After – if it has hit the ground

Bolide A meteor that ends in a flare

A boom indicates that the meteoroid got close enough to the ground to create a sonic boom.

A reported observation should include:

Observers Latitude and Longitude

Elevation angle of the beginning of the trail

Elevation angle of the end of the trail

Azimuth of the beginning of the trail

Azimuth of the end of the trail

These data (a point and a line) will determine a plane in 3 space. Two such sets will determine the intersection of two planes as a vector in 3 space from which an impact point can be computed.

There is a camera design called an “all-sky meteor camera.” It covers all of the sky and supports the report data listed above.

AMS is developing a group to operate all-sky cameras to cover the U.S. AMS will provide plans (how to do it). See www.amsmeteors.org.

Among collectors/dealers, various meteor material is priced in terms of dollars/gram. A large collection was on display. Form the samples two were donated to the club by Mr Hankey.

Meeting ended at about 9:38 PM.

Respectfully submitted,

Robert L. Clark



New GOES-R to Give More Tornado Warning Time

By Dauna Coulter and Dr. Tony Phillips

So far this spring, more than 1,400 tornadoes have struck the U.S. Some of them have cut jaw-dropping trails of destruction across the countryside and, tragically, across inhabited communities, too. Hundreds of lives have been lost in the onslaught.

Throughout the season, the National Weather Service has routinely issued tornado alerts. In the case of the Alabama tornadoes of April 27th, forecasters warned of severe weather five full days before the twisters struck. Because they couldn't say precisely *where* the twisters would strike, however, many of their warnings went unheeded.

"If people get a hurricane warning, they often evacuate the area," notes NOAA's Steve Goodman. "But we react differently to tornado warnings."

Perhaps it's because tornadoes are smaller than hurricanes, and the odds of a direct hit seem so remote. Recent pictures from Tuscaloosa, Alabama, and Joplin, Missouri, however, show the perils of playing those odds. Goodman believes that more precise warnings could save lives.

To fine-tune tornado warnings, NOAA will soon launch the first in a series of next-generation weather satellites — GOES-R (Geostationary Operational Environmental Satellites-R series). The spacecraft is brimming with advanced sensors for measuring key ingredients of severe weather including winds, cloud growth, and lightning.

"GOES-R will be the first geostationary spacecraft to carry a lightning sensor," says Goodman, the GOES-R Program Senior Scientist. "Studies show that sudden changes in the total lightning activity correlate with storm intensity — and with tornadoes."

The lightning mapper will detect and map not only cloud-to-ground lightning, but also bolts within and between clouds. The kind of cloud-to-ground lightning we see from our front yards accounts for only 15-20 percent of total lightning. To get a clear idea of a storm's intensity, meteorologists need to know about *all* the lightning — a view GOES-R can provide.

All by itself, the lightning mapper will provide 7 minutes more lead time in tornado warnings, according to Goodman. GOES-R's state-of-the-art instruments will also improve long-range forecasts.

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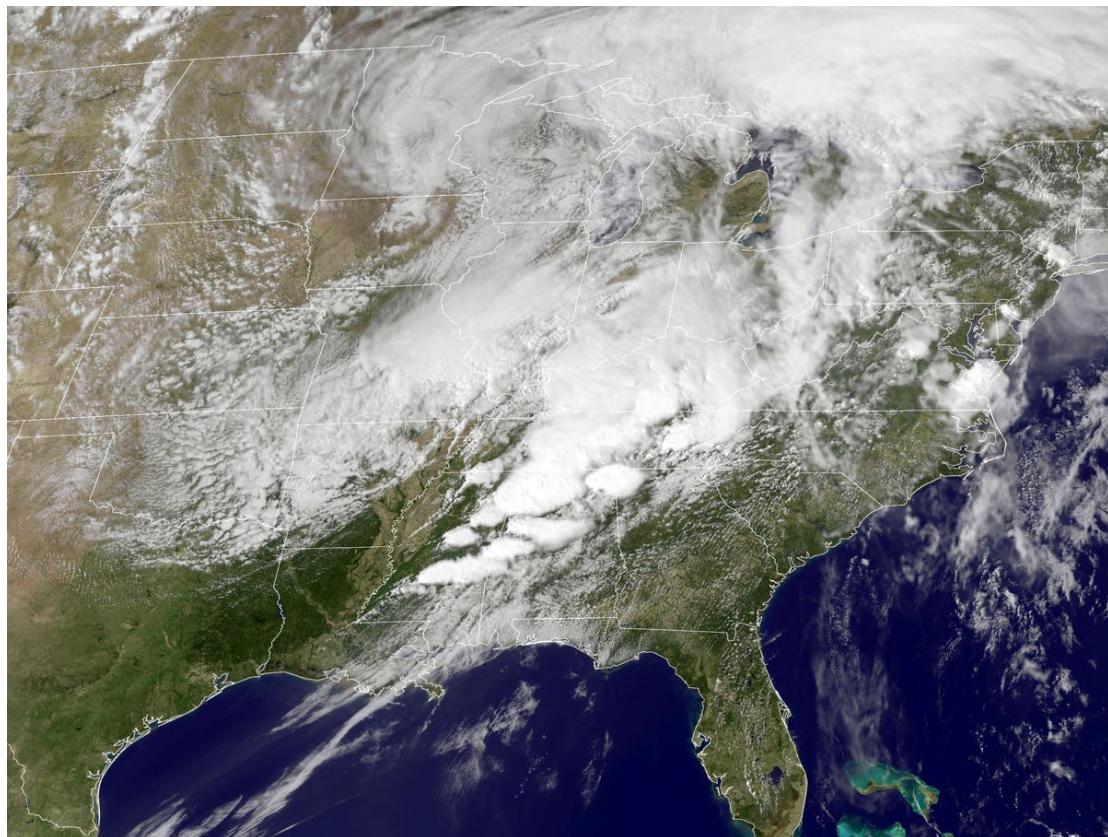
“The satellite’s Advanced Baseline Imager (ABI), for instance, will provide a much clearer picture of clouds,” says NOAA research meteorologist Tim Schmit. Compared to lesser instruments already in orbit, ABI can better detect super-cold “overshooting tops,” evidence of enormous energy and upward velocity that correlate with subsequent severe weather.

“Accurate advanced notice of high-risk tornadic conditions can cue officials to close schools and businesses even before tornadoes are actually detected,” says Schmit.

Forecasters doubt tornadoes can ever be predicted with 100% accuracy. The twisters are just too capricious. GOES-R, however, is a step in the right direction.

Find out more about GOES-R’s unprecedented capabilities at <http://www.goes-r.gov>. Young people can learn more about tornadoes and all kinds of other weather at <http://sci.jpl.nasa.gov>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



This GOES image shows the storms that spurred the intense April 27 tornado outbreak in the southern U.S. An animation showing the development of weather can be seen at <http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=50347>.