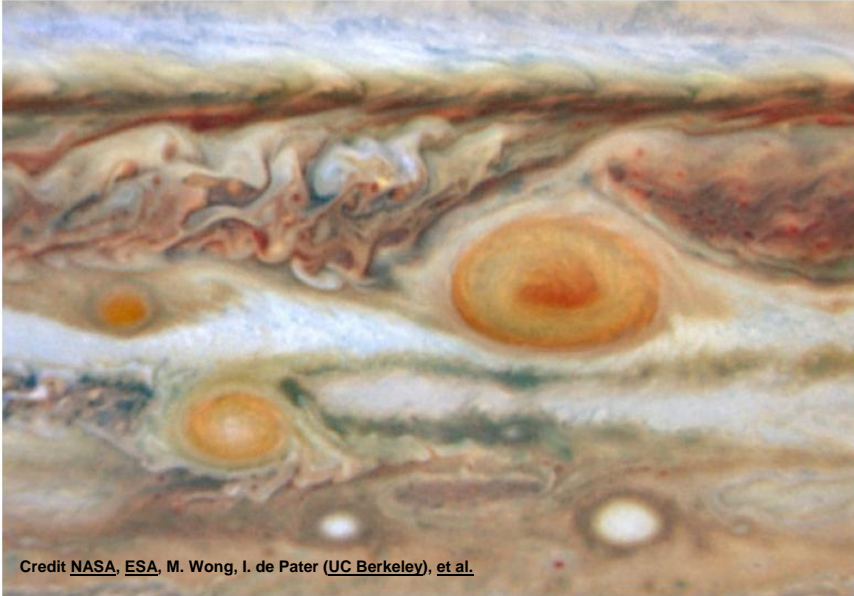


# Sky **WAA** tch

The Monthly Publication of the Westchester Amateur Astronomers

June 2008



## ← Spots Before Your Eyes

For about 300 years Jupiter's banded atmosphere has shown a remarkable feature to telescopic viewers, a large swirling storm system known as The Great Red Spot. In 2006, another red storm system appeared, actually seen to form as smaller whitish oval-shaped storms merged and then developed the curious reddish hue. Now, Jupiter has a third red spot, again produced from a smaller whitish storm. All three are seen in this image made from data recorded on May 9 and 10 with the Hubble Space Telescope's Wide Field and Planetary Camera 2. For more info, see:

<http://antwrp.gsfc.nasa.gov/apod/ap080523.html>

**WAA ANNUAL BBQ**

saturday, june 7, 2pm

solar viewing!! \* no raindate

BEHIND THE TRAILSIDE MUSEUM IN THE WARD POUND RIDGE RESERVATION

WWW.WESTCHESTERASTRONOMERS.ORG

Serving the Amateur Community Since 1983

# Events for June 2008

## ➤ Monthly Meetings

### "Planetarium Night"

Friday, June 6th, 8:00PM

Andrus Planetarium

Hudson River Museum, Yonkers

Marc Taylor of the Andrus Planetarium will give the presentation. He'll select the topic and it's sure to be entertaining and informative. Free and open to the public.

## ➤ Starway to Heaven

Saturday, June 21st, 8:30-11:00PM

Meadow Picnic Area, Ward Pound Ridge Reservation, Cross River

This is our scheduled observing date for June, weather permitting. Free and open to the public. The scheduled rain/cloud date is June 28<sup>th</sup>.

## New Members. . .

Frank Pavlik, Irvington, NY

Javier Rosenzwaig, Bronx, NY

Benjamin Sim, New York, NY

## Renewing Members. . .

Eva Andersen, Croton, NY

Robie Burke, Katonah, NY

David Klaus, Yorktown Heights, NY

Charles Schulster, Crompond, NY

Dante Torrese, Ardsley,

## ANNUAL WAA Bar-B-Que

JUNE 7<sup>TH</sup>, 2pm

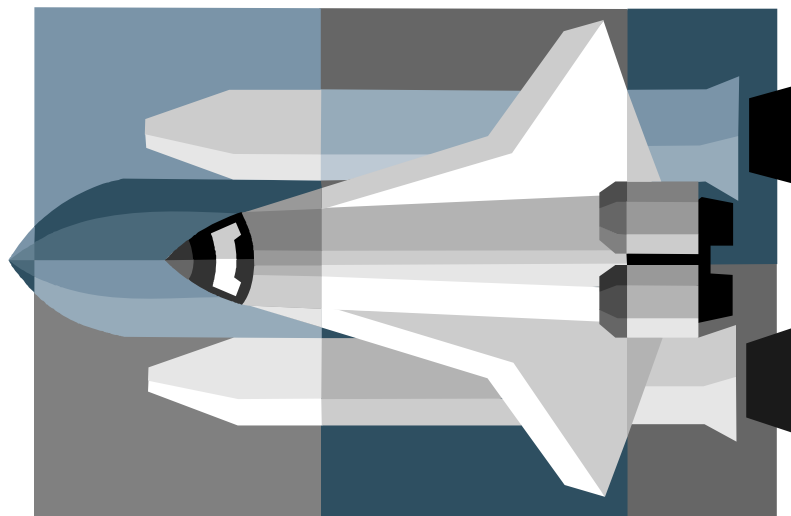
Trailside Museum

Ward Pound Ridge Reservation

This event is for WAA members and their guests only. Club members are encouraged to bring side dishes, salads, dips and desserts. Let us know what you are bringing. Also tell us if you will attend (along with the number of guests) so we can purchase the right amount of hamburgers and hot dogs. R.S.V.P: Charlie Gibson at:

[waa-president@westcheстераstronomers.org](mailto:waa-president@westcheстераstronomers.org),  
or 1-877-456-5778.

Tell the guard at the front gate that you are going to the "WAA Bar-b-que".



Westchester Amateur Astronomers, Inc., a 501(c)(3) organization, is open to people of all ages with the desire to learn more about astronomy. The Mailing address is: P.O. Box 44, Valhalla, New York 10595. Phone: 1-877-456-5778. Meetings: Andrus Planetarium, Hudson River Museum of Westchester, 511 Warburton Ave., Yonkers. Observing at Ward Pound Ridge Reservation, Routes 35 and 121 South, Cross River. Annual membership is \$25 per family, and includes discounts on *Sky & Telescope* and *Astronomy* magazine subscriptions. Officers: President: Charlie Gibson; Vice President: Michael Virsinger Vice President Programs (lectures): Pat Mahon; Treasurer: Doug Baum; Vice President Membership: Karen Seiter; Vice President Field Events: David Butler; Newsletter: Tom Boustead; Webmaster: Robert Davidson.

# Articles and Photos Gallery

## Ozone, the Greenhouse Gas

We all know that ozone in the stratosphere blocks harmful ultraviolet sunlight, and perhaps some people know that ozone at the Earth's surface is itself harmful, damaging people's lungs and contributing to smog.

But did you know that ozone also acts as a potent greenhouse gas? At middle altitudes between the ground and the stratosphere, ozone captures heat much as carbon dioxide does.

In fact, pound for pound, ozone is about 3000 times stronger as a greenhouse gas than CO<sub>2</sub>. So even though there's much less ozone at middle altitudes than CO<sub>2</sub>, it still packs a considerable punch. Ozone traps up to one-third as much heat as the better known culprit in climate change.

Scientists now have an unprecedented view of this mid-altitude ozone thanks to an instrument aboard NASA's Aura satellite called the Tropospheric Emission Spectrometer—"TES" for short.

Most satellites can measure only the total amount of ozone in a vertical column of air. They can't distinguish between helpful ozone in the stratosphere, harmful ozone at the ground, and heat-trapping ozone in between. By looking sideways toward Earth's horizon, a few satellites have managed to probe the vertical distribution of ozone, but only to the bottom of the stratosphere.

Unlike the others, TES can measure the distribution of ozone all the way down to the heat-trapping middle altitudes. "We see vertical information in ozone that nobody else has measured before from space," says Anmarie Eldering, Deputy Principal Investigator for TES.

The global perspective offered by an orbiting satellite is especially important for ozone. Ozone is highly reactive. It is constantly being created and destroyed by photochemical reactions in the atmosphere and by lightning—so its concentration varies from region to region, from season to season, and as the wind blows.

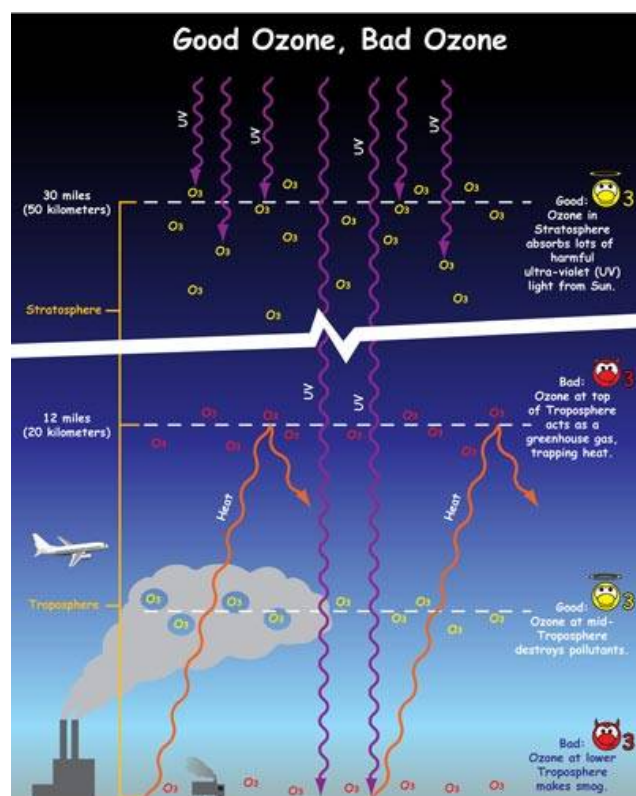
Data from TES show that ozone's heat-trapping effect is greatest in the spring, when intensifying sunlight and warming temperatures fuel the reactions that generate ozone. Most of ozone's

contribution to the greenhouse effect occurs within 45 degrees latitude from the equator.

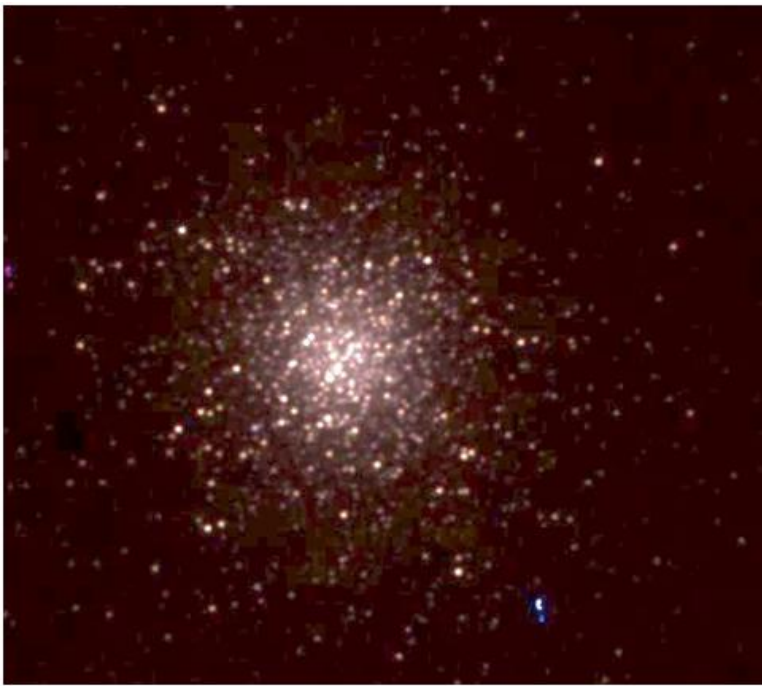
Increasing industrialization, particularly in the developing world, could lead to an increase in mid-altitude ozone, Eldering says. Cars and coal-fired power plants release air pollutants that later react to produce more ozone.

"There's concern that overall background levels are slowly increasing over time," Eldering says. TES will continue to monitor these trends, she says, keeping a careful eye on ozone, the greenhouse gas.

*The Jet Propulsion Laboratory, California Institute of Technology, provided this article under a contract with the National Aeronautics and Space Administration.*



Ozone behaves differently at different altitudes in the atmosphere. High in the stratosphere and at mid-troposphere it has positive effects on life at the surface. At the top of the troposphere ozone is a greenhouse gas and at the surface it makes smog.



### ← Hercules Cluster

Dave Butler took this stacked image of M13, the great globular cluster in Hercules. North is down.



### ← Moon and Mercury

Bob Kelly imaged Mercury and the Moon with a 3x zoom Canon A40, a 15 seconds exposure. Bob captured these objects at Ardsley High School on May 6<sup>th</sup> at 9:15pm EDT.



### ← ISS

Bob also imaged the International Space Station. He notes the ISS is much brighter than zero magnitude Vega (lower right) in this 15 second exposure with the Canon A40 ISO 100. This is cropped from a larger photo that included me blocking a streetlight.

# Constellation Corner:

by Matt Ganis

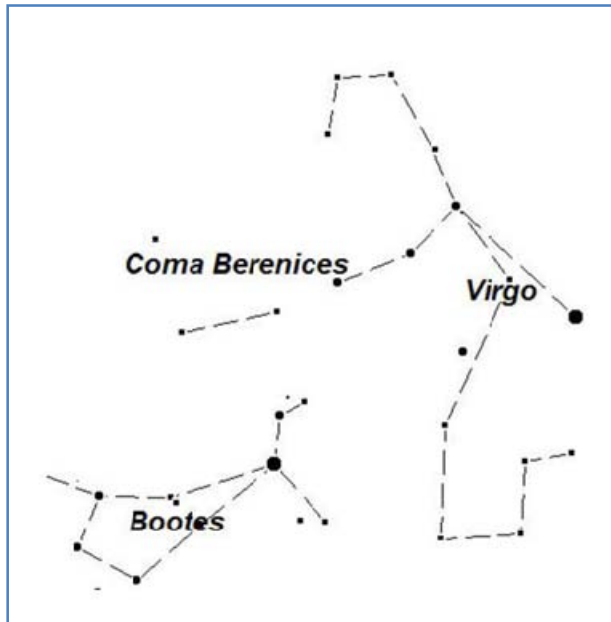
This month I'd like to have a look at one of the largest constellations in our sky, yet probably one of the least observed. The constellation of Virgo, or "The Maiden" is the second largest constellation in the sky (with the largest being Hydra). Virgo is basically a summer time constellation, visible from November through August (since the Sun passes through this constellation from late September to the end of October).

Virgo is named for the Greek goddess Demeter, also known as the Earth-goddess or bringer of the growing season, and is often associated with the arrival of spring. As the story goes, Hades (God of the Underground) fell in love with Demeter's daughter, Persephone, and declared that he would make her his queen. One day Hades, arrived in a black chariot drawn by four great black horses in golden harness and rode up to Persephone, sweeping her into the chariot carrying her off with him back to the Underworld. Demeter became worried when her daughter didn't return home so she began to search unceasingly for her. When Zeus pleaded with her to return to Olympus and accept Persephone's marriage to Hades, she refused and continued her search. As a result, Zeus sent

Hermes, Messenger of the gods, to visit Hades and tell him that Persephone must return back to her mother. Hades, knowing that the gods of heaven were stronger than he, agreed to let Persephone go. While the reunion of mother and daughter was a happy one, Persephone told her mother that she did indeed love her new husband, and wanted to return to him. To appease both woman, Zeus declared that Persephone would spend half of her time in the Underworld with Hades and the other half on Olympus with her mother. Because of this, winter comes when Persephone goes down to the Underworld to be with Hades and when she returns to Olympus, the winter cloak of death melts and there is a rebirth of life over the land and the crops begin to grow. This is why Virgo is usually shown carrying two sheaves of wheat, one of which is

marked by the bright star—Spica—which means ear of wheat, or corn in Latin. Spica, the "alpha" star of the constellation is a blue-white star with a magnitude of +1.0. However, since space is relatively empty near the star it actually appears a bit brighter.

The star system is located about 275 light years from us, and has a luminosity of 2300 times that of our Sun (remember, luminosity is the amount of energy a body radiates per unit time). As I said, Spica is actually a binary star composed of a blue giant star of 10.9 solar masses and a blue main sequence star of 6.8 solar masses separated by about 11,000,000 miles. The pair revolve around their common center of mass about once every four days. Interestingly, the stars are tidally locked which means they permanently show the same face to each other, like the moon does to the earth.



Spica can easily be found by continuing the gradually curving line formed by the Big Dipper's handle — first to Arcturus in the constellation of Boötes then "spiking" by a straight line directly to Spica another 30 degrees away. It appears to be an equal distance from Arcturus as Arcturus is from the Dipper handle.

The Virgo Cluster of galaxies lies at a distance of about 40 million light years and is the nearest rich aggregation of galaxies in the sky. The clusters are located near the intersection of the constellations Virgo and Coma Berenices and contains approximately 250 large galaxies and 2000 small galaxies that covers approximately a 10-deg x 10-deg patch of our sky.

So go out and have a look at this interesting constellation. One other interesting piece of information: To the Babylonians, Virgo was the goddess Istar who was actually the Queen of the stars, and the lover of the god of corn. So as Astronomers, we should pay some respect to our "Queen" and spend time in observation!

# Almanac

For June 2008 by Matt Ganis

As I'm sure many of you know, when I write these articles they are typically done about 1-2 weeks ahead of their published date. I'm writing this one on Memorial Day morning, listening to the birds chirp while I take a break from getting my pool filter to operate "just right". It's hard on these summer days to think of observing since by the time it's dark enough, I'm ready for bed after a long day of "playing in the Sun". However, I think you (or I) may find a few things to help "Drag" us out of the house on these June nights.

Now, one of my favorite movies is Moonstruck (with Cher playing one of the leading roles). In the movie, Cher's uncle describes an enormous and magical moon that appeared one night during his sister's courtship. Drawn to the window, he found Cosmo (his now brother-in-law) in the yard gazing up at her window, and for years he believed that Cosmo's great love called up that amazing moon that woke him from his blissful slumber such a long time ago. This month, the moon is again, up to its old tricks.

Starting early in the month, the Moon begins to make it "rounds" visiting close to most of Solar System neighbors. You can check out an early sliver of the moon on the evening of June 7th when the moon and Mars are less than 2 degrees apart in your western skies. Mars isn't the brightest object in our skies this month, only appearing as a magnitude +1.5, but its close proximity to the Moon on the 7th should help you pick it out. The little red planet is just leaving the constellation of Cancer on its way into Leo and a conjunction with Saturn in July!

Of course, being "fickle" the moon will continue its journey along the ecliptic and come within 5 degrees (to the southwest) of Saturn as well. The ringed planet is still fairly bright, located near the front paws of the giant Lion. The planet shines at a magnitude +0.6 and won't dim appreciably throughout the summer.

Like I said, the moon seems to enjoy visiting whatever planets happen to be in our skies this Month. The full moon occurs on June 18th of this month, and coincidentally, on that night it's beginning its approach on the planet Jupiter in our eastern skies. On the night of the 19th, the two will be their closest, separated by a mere 5 degrees. Jupiter pales in comparison to the Moon, shining at a meager -2.7 magnitude compared to moon's magnitude of -12.0! Of course, after a few days,



Jun 4



Jun 11

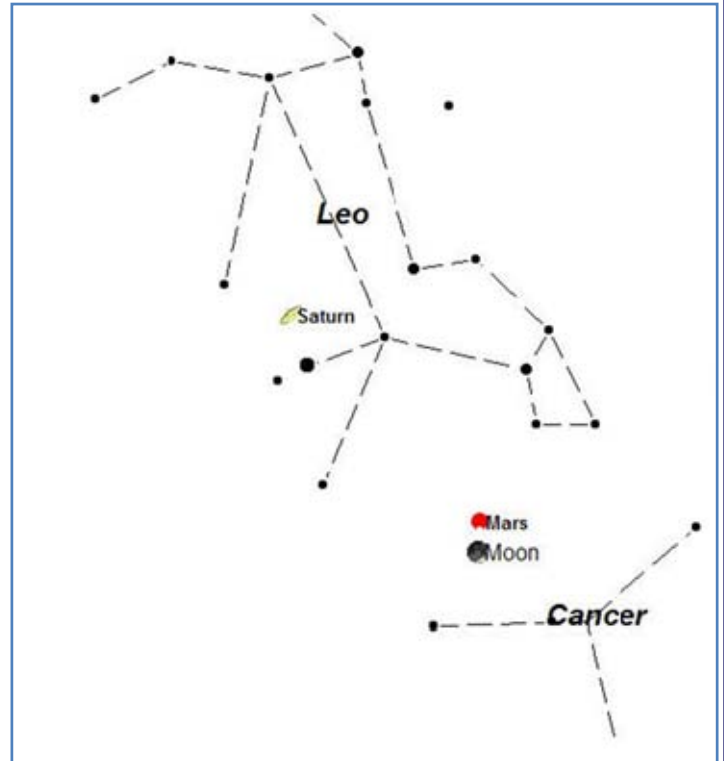


Jun 18



Jun 26

the moon will "move on" letting Jupiter again rule the skies!



Here in the Northern Hemisphere the Summer solstice will occur on June 20th at approximately 8PM EDT (actually 7:59 to be exact). The word Solstice (Sol + stice) derives from a combination of Latin words meaning "Sun" (Sol) + "to stand still." (Stice) As the days lengthen, the sun rises higher and higher until it seems to stand still in the sky. As a major celestial event, the Summer Solstice results in the longest day and the shortest night of the year. The Northern Hemisphere celebrates in June, but the people on the Southern half of the earth have their longest summer day in December. Finally, to end the month, if you can stay up until about 2 or 3am (technically July 1st), you'll be able to see the crescent moon rising and passing through the open star cluster, the Pleiades.

So I hope you had a wonderful Memorial Day weekend. I'm off to go get the grill cleaned and turn the pool heater on. I hope you get to enjoy the Moon's celestial wandering this month!