

From Thunderstorms to Solar Storms...

by Patrick L. Barry

When severe weather occurs, there's a world of difference for people on the ground between a storm that's overhead and one that's several kilometers away. Yet current geostationary weather satellites can be as much as 3 km off in pinpointing the true locations of storms.

A new generation of weather satellites will boost this accuracy by 2 to 4 times. The first in this new installment of NOAA's Geostationary Operational Environmental Satellites series, called GOES-N, was launched May 24 by NASA and Boeing for NOAA (National Oceanic and Atmospheric Administration). (A new polar-orbiting weather satellite, NOAA-18, was launched May 2005.)

Along with better accuracy at pinpointing storms, GOES-N sports a raft of improvements that will enhance our ability to monitor the weather—both normal, atmospheric weather and “space weather.”

“Satellites eventually wear out or get low on fuel, so we've got to launch new weather satellites every few years if we want to keep up the continuous eye on weather that NOAA has maintained for more than 30 years now,” says Thomas Wrublewski, liaison officer for NOAA at NASA's Goddard Space Flight Center. Currently, GOES-N is in a “parking” orbit at 90° west longitude over the equator. For the next 6 months it will remain there while NASA thoroughly tests all its systems. If all goes well, it will someday replace one of the two active GOES satellites—

NGC #	Other #	Mag	Size	Hr	Min	Sec	Deg	Min
6171	M107	7.8	13	16h	32	32	-13	03.2
6218	M12	6.1	16		47	14	-01	56.8
6235		8.9	5.0		53	25	-22	10.6
6254	M10	6.6	20.0		57	09	-04	06.0
6266	M62	6.4	15.0	17	01	13	-30	06.8
6273	M19	6.8	17.0		02	38	-26	16.1
6284		8.9	5.6		04	29	-24	45.9
6287		9.3	5.1		05	09	-22	42.5
6293		8.3	7.9		10	10	-26	34.9
6304		8.3	6.8		14	32	-29	27.7
6316		8.1	4.9		16	37	-28	08.4
6325		10.2	4.1		17	59	-23	46.0
6333	M9	7.8	12.0		19	12	-18	31.0
6342		9.5	3.0		21	10	-19	35.2
6355		8.6	5.0		23	58	-26	21.2
6356		8.2	10.0		23	35	-17	48.8
	IC1257	13.1	5.0		21	08	-07	05.6
6366		9.5	13.0		27	44	-05	04.6
6401		7.4	5.6		38	37	-23	54.6
6402	M14	7.6	11.0		37	36	-03	14.8
6426		10.9	4.2		44	54	+03	10.2
6517		10.1	4.0	18	01	51	-08	57.5

either the eastern satellite (75°W) or the western one (135°W), depending on the condition of those satellites at the time.

Unlike all previous GOES satellites, GOES-N carries star trackers aboard to precisely determine its orientation in space. Also for the first time, the storm-tracking instruments have been mounted to an “optical bench,” which is a very stable platform that resists thermal warping. These two improvements will let scientists say with 2 to 4 times greater accuracy exactly where storms are located.

Also, X-ray images of the Sun taken by GOES-N will be about twice as sharp as before. The new Solar X-ray Imager (SXI) will also automatically identify solar flares as they happen, instead of waiting for a scientist on the ground to analyze the images. Flares affect space weather, triggering geomagnetic storms that can damage communications satellites and even knock out city power grids. The improved imaging and detection of solar flares by GOES-N will allow for earlier warnings.

So for thunderstorms and solar storms alike, GOES-N will be an even sharper eye in the sky. (COURTESY NASA SPACE PLACE)

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June was a bust for all scheduled outdoor events, except the Full Moon Telescope Workshop, which was sparsely attended; the Public and Member Star Parties were both clouded out so we're looking forward to the July schedule of events and hoping for better weather, at least on the s.p. dates!

July's Star Party schedule

Saturday, July 8th:

Full moon Telescope Workshop at Keith and Teresa Mullen's, featuring downloading current software into Celestron and Meade hand controllers, this is for you newer members with Celestron or Meade scopes, and, you must bring the scopes to receive the download. Rich Swanson will be there to assist Keith. We will also be building a kit form 80mm refractor donated by Stellarvue Telescopes. We need youngsters for this, as the Manufacturer wants pictures.

Saturday, July 22nd:

Members Star Party will find us back at Gary and Jean Myers Desert Coyote Observatory for another shot at Gary's 30", let's pray for some clear weather for this one.

Saturday, July 29th:

Public/Members Star Party at JBO- lets help Dave show the public some of the wonders of our Arizona skies. Bring your scopes!

HAVE FUN WHILE SHARPENING YOUR OBSERVING SKILLS!—II

In the March issue of NIGHTFALL I introduced you to the Astronomical League's Observing Clubs. Each of the 28 clubs offers a structured observing program, upon completion of which The League recognizes you by publishing your name in its quarterly, The Reflector, and awarding you a personalized certificate of membership in the Club. The programs range from falling-off-a-log easy to almost impossible. In future issues of NIGHTFALL, I'll describe more of the clubs I find most interesting. For full information about the Clubs, visit www.astroleague.org and select Observing Clubs.

The Messier Club

The Messier Club, which date back to the 1970's, was the first, and for years the only AL Club. Earning a Messier Certificate originally required observation of all 110 Messier Object (including the two fake ones!). The Messier Objects (galaxies, nebulae and star clusters) are scattered all over the Northern sky, so completing the 110 observations will require several months at least, unless your insomnia allows you to scan the dawn skies frequently.

The Messier Club should not be confused with that prime example of astronomical wretched excess, the Messier Marathon. Marathon addicts sacrifice chickens and perform occult dances in order to assure clear, moonless skies during that narrow window of a few days in late March when it is theoretically possible to observe all 110 objects in one (really long) night. Messier Marathoning requires the observer to be suffering from a severe case of Astromitis. What's more, there's no AL Certificate, only bogus International-Star-Registry type thingies, printed on cheap paper by a few local clubs.

Messier Club observations can be done at leisure. While the list can theoretically be completed using telescopes with apertures of 6 inches or even smaller, this would require travel to dark skies. Recognizing this difficulty for many observers, the League has created two Messier Club levels. The first level is awarded for observing any 70 objects (this can be accomplished from many suburban locations) and the second, the Honorary Messier Club, is awarded those observing all 110.

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Deepsky-AstroCards Software

Bob Kepple demonstrated his new software at the last meeting. He would like to let those who missed the last meeting know about his offer for the following software to all club members at reduced prices.

Deepsky-AstroCards CD - Regularly \$37.95 Club Member Price: \$25.00

with 10,000 images a 10,000 object database and 213 AstroCards finder charts.

All programs also prints any area of the sky with stars to mag. 15.5 and deepsky to 16th mag.

Deepsky DVD Version - Regularly \$69.95 Club Member Price: \$50.00

with 410,000 images and a 708,000 object database

Deepsky DVD-AstroCards Version - Regularly \$84.95 Club Member Price: \$60.00

Contact Bob at astrocards@aol.com or by phone (520) 366-0490

OPHIUCHUS—THE CONSTELLATION (Reprinted courtesy of Wikipedia)

Ophiuchus is one of the 88 constellations, and was also one of the 48 listed by Ptolemy. Of the 13 zodiacal constellations (constellations that contain the Sun during the course of the year), Ophiuchus is the only one which is not counted as an astrological sign. Ophiuchus is depicted as a man supporting a serpent; the interposition of his body divides the snake into two parts, Serpens Caput and Serpens Cauda, which are nonetheless counted as one constellation.

Notable features

The brightest stars in Ophiuchus include α Ophiuchi, called Rasalhague, at the figure's head; and λ Ophiuchi, a triple star, at his elbow.

RS Ophiuchi is part of a strange class called recurrent novae, whose brightness increases at irregular intervals by hundreds of times in a period of just a few days.

Barnard's Star, one of the nearest stars to the Solar System (the only stars closer are the Alpha Centauri binary system and Proxima Centauri), lies in Ophiuchus. (It is located to the left of β and straight up from ν in the chart.)

Notable deep-sky objects

Ophiuchus contains several star clusters, such as IC 4665, NGC 6633, M9, M10, M12, M14, M19, M62, and M107, as well as the nebula IC 4603-4604. The unusual double galaxy known as the Starfish Galaxy (NGC 6240) is also in Ophiuchus.

Mythology

There are several mythological possibilities for whom the figure represents.

The most recent interpretation is that the figure represents the legendary physician Asclepius, who learned the secrets of life and death from one serpent bringing another some herbs which healed it (Asclepius had previously tried to kill it). In order to avoid the human race becoming immortal under Asclepius' care, Zeus eventually killed him with a bolt of lightning, but placed him in the heavens to honour his good works. The involvement in the myth of Chiron may be connected to the nearby presence of the constellation Sagittarius, which was in later times occasionally considered to represent Chiron (who was more usually identified as the constellation Centaurus).

Another possibility is that the figure represents the demise during the Trojan War of the Trojan priest Laocoön, who was strangled by a snake or a sea serpent after warning the Trojans against accepting the Trojan Horse. A suggestive statue in the Vatican Museums depicts the tragedy.

A third possibility is Apollo wrestling with the Python to take control of the oracle at Delphi.

There is also the story of Phorbas, a Thessalonikan who rescued the people of the island of Rhodes from a plague of serpents and was granted a place in the sky in honor of this deed.

History

This constellation, known from antiquity, is one of the 48 constellations described by Ptolemy. It has also been known as Serpentarius, a Latin form of its name.

The most important historical event in Ophiuchus was the Supernova of 1604, also named Kepler's Supernova, whose explosion was first observed on October 9, 1604, near θ Ophiuchi. Johannes Kepler saw it first on October 16, but studied it so extensively that the supernova was subsequently named after him. He published his findings in a book entitled *De stella nova in pede Serpentarii* (On the New Star in Ophiuchus's Foot). Galileo used its brief appearance to counter the Aristotelian dogma that the heavens are changeless.

It occurred only 32 years after another supernova in Cassiopeia that had been observed by Tycho Brahe; the last supernova before then had occurred in 1054 (see Crab Nebula), and after Kepler's no further naked-eye supernovae were observed until 1987.