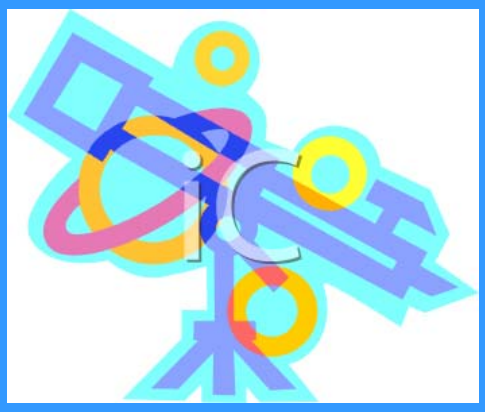
Starscan

Johnson Space Center Astronomical Society

Volume 26, Number 1 January 2010



IT'S A NEW YEAR

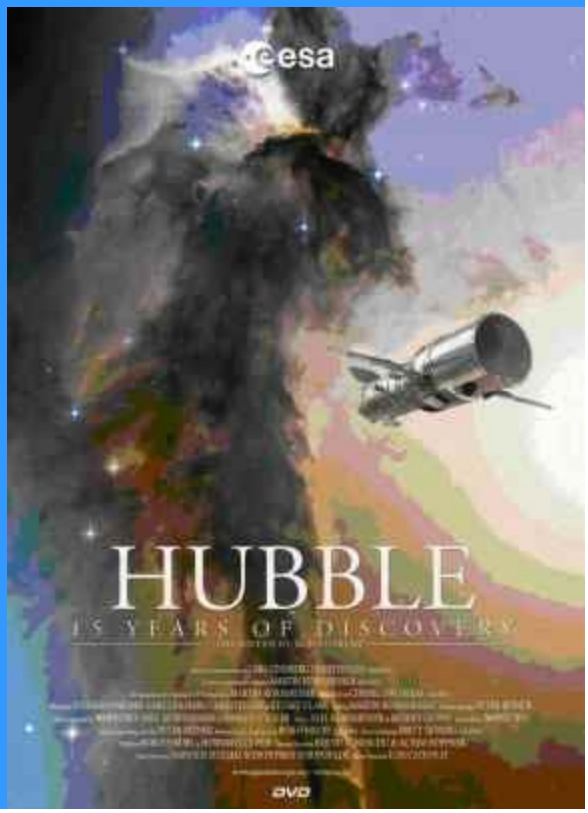


TABLE OF CONTENTS

Un mensaje del Presidente
(A message from the President)

Happy New Year!

We enter the new year with high hopes and clear skies. I for one, hope to do a lot more observing this year. I have more plans for the club in what will be my last year as President. I too am beginning to long for the "cheap seats". The biggest plan this year is employing your help — as this is your club — to get more bodies through the door. I'd like to challenge everyone in this club to try and bring at least one new member through the door this year. As you will see at the next meeting, we already have some events planned and above all, our March trip to the Fort. The speaker for January is Don Pellerin of HAS who is speaking about 'Epsilon Aurigae - Mystery and Opportunity. He gave an abbreviated version of this at ADAY and I found it very interesting and look forward to the "expanded" version. Jim Wessel will also give us an update on our NSN efforts and I still need novice talks… (hint)…

David Haviland

LETTER FROM THE EDITOR
By Connie Haviland

Hi Everyone!!

Sorry for the delay with the Starscan this month. This editor decided to take a well-deserved vacation with her family over the holidays, as I am sure all of you did and put the Starscan on hold until she got back and things were back to normal. But as they say, "Better late than never"

Enjoy…..Connie Haviland

PS..THANK YOU JIM WESSEL FOR ALL THE WONDERFUL ARTICLES YOU SEND ME EVERY MONTH. WITHOUT THEM THIS STARSCAN WOULD BE VERY SMALL AND ONLY BE DIRECTED TOWARD THE CHILDREN OF THE CLUB. I TRULY APPRECIATE YOUR CONTRIBUTION TO THIS CLUB!!

LETTER TO THE EDITOR

As a gentle reminder from last month….. Folks:

Hernan has asked to be relieved of doing the deep sky presentation and the corresponding article for the Starscan. We need someone to step up to the plate and take this on. Any of the imaging group want to toss their hat into the ring?

We are very grateful for Hernan's efforts in doing these over the past year. However, we will continue to be entertained as Hernan will continue with the "oddities".

David

Star Parties for 2010

Bob Taylor

TBA

****

What's Happening at the George!!!

Need volunteers

Cynthia Gustava

NOTHING WAS SENT TO ME…PLEASE CONTACT CYNTHIA GUSTAVA REGARDING THIS MONTH'S SCHEDULE AT THE GEORGE

January 16th, 10 a.m.–1 p.m. – Rockets!

February 20th, 7 p.m.–9 p.m. – Night Viewing of Mars (telescopes provided by JSC Astronomical Society)

March 20th, 10 a.m.–1 p.m. – Sun-Earth Day: Magnetic Storms

April 17th, 10 a.m.–1 p.m. – Earth Day: AtmospheresPlease note: Each child must be accompanied by a responsible parent or adult the entire time they are visiting the LPI.

For more information e-mail Spaceday@lpi.usra.edu or call 281-486-2106.

For more information, go to
http://www.lpi.usra.edu/education/space_days/
Or call Katy at (281) 486-2106

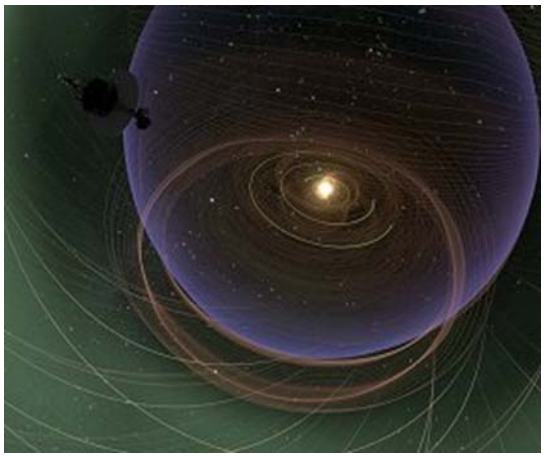
3600 Bay Area Boulevard, Houston, Texas

Voyager Makes an Interstellar Discovery

Submitted by Jim Wessel

December 23, 2009: The solar system is passing through an interstellar cloud that physics says should not exist. In the Dec. 24th issue of Nature, a team of scientists reveal how NASA's Voyager spacecraft have solved the mystery.

see caption"Using data from Voyager, we have discovered a strong magnetic field just outside the solar system," explains lead author Merav Opher, a NASA Heliophysics Guest Investigator from George Mason University. "This magnetic field holds the interstellar cloud together and solves the long-standing puzzle of how it can exist at all."



Right: Voyager flies through the outer bounds of the heliosphere en route to interstellar space. A strong magnetic field reported by Opher et al in the Dec. 24, 2009, issue of Nature is delineated in yellow. Image copyright 2009, The American Museum of Natural History.

The discovery has implications for the future when the solar system will eventually bump into other, similar clouds in our arm of the Milky Way galaxy. Astronomers call the cloud we're running into now the Local Interstellar Cloud or "Local Fluff" for short. It's about 30 light years wide and contains a wispy mixture of hydrogen and helium atoms at a temperature of 6000 C. The existential mystery of the Fluff has to do with its surroundings. About 10 million years ago, a cluster of supernovas exploded nearby, creating a giant bubble of million-degree gas. The Fluff is completely surrounded by this high-pressure supernova exhaust and should be crushed or dispersed by it.

"The observed temperature and density of the local cloud do not provide enough pressure to resist the 'crushing action' of the hot gas around it," says Opher.

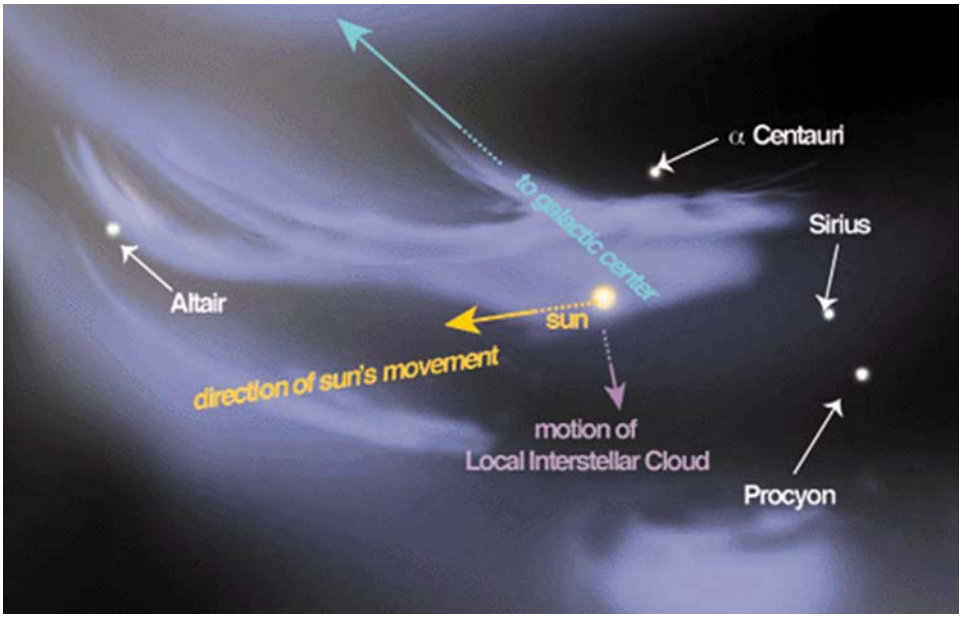
So how does the Fluff survive? The Voyagers have found an answer.

"Voyager data show that the Fluff is much more strongly magnetized than anyone had previously suspected—between 4 and 5 microgauss*," says Opher. "This magnetic field can provide the extra pressure required to resist destruction."

NASA's two Voyager probes have been racing out of the solar system for more than 30 years. They are now beyond the orbit of Pluto and on the verge of entering interstellar space—but they are not there yet.

"The Voyagers are not actually inside the Local Fluff," says Opher. "But they are getting close and can sense what the cloud is like as they approach it."

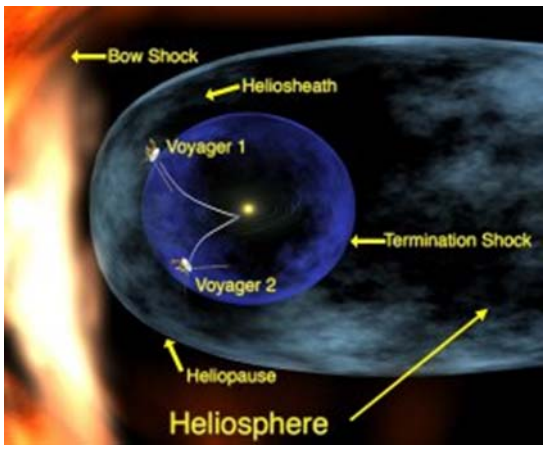
Right: An artist's concept of the Local Interstellar Cloud, also known as the "Local Fluff." Credit: Linda Huff (American Scientist) and Priscilla Frisch (University of Chicago)



The Fluff is held at bay just beyond the edge of the solar system by the sun's magnetic field, which is inflated by solar wind into a magnetic bubble more than 10 billion km wide. Called the "heliosphere," this bubble acts as a shield that helps protect the inner solar system from galactic cosmic rays and interstellar clouds. The two Voyagers are located in the outermost layer of the heliosphere, or "heliosheath," where the solar wind is slowed by the pressure of interstellar gas.

Voyager 1 entered the heliosheath in Dec. 2004; Voyager 2 followed almost 3 years later in Aug. 2007. These crossings were key to Opher et al's discovery.

Right: The anatomy of the heliosphere. Since this illustration was made, Voyager 2 has joined Voyager 1 inside the heliosheath, a thick outer layer where the solar wind is slowed by the pressure of interstellar gas. Credit: NASA/Walt Feimer.



The size of the heliosphere is determined by a balance of forces: Solar wind inflates the bubble from the inside while the Local Fluff compresses it from the outside. Voyager's crossings into the heliosheath revealed the approximate size of the heliosphere and, thus, how much pressure the Local Fluff exerts. A portion of that pressure is magnetic and corresponds to the ~5 micro-gauss Opher's team has reported in Nature.

The fact that the Fluff is strongly magnetized means that other clouds in the galactic neighborhood could be, too. Eventually, the solar system will run into some of them, and their strong magnetic fields could compress the heliosphere even more than it is compressed now.

Additional compression could allow more cosmic rays to reach the inner solar system, possibly affecting terrestrial climate and the ability of astronauts to travel safely through space. On the other hand, astronauts wouldn't have to travel so far because interstellar space would be closer than ever. These events would play out on time scales of tens to hundreds of thousands of years, which is how long it takes for the solar system to move from one cloud to the next.

"There could be interesting times ahead!" says Opher.

To read the original research, look in the Dec. 24, 2009, issue of Nature for Opher et al's article, "A strong, highly-tilted interstellar magnetic field near the Solar System."
Author: Dr. Tony Phillips | Credit: Science@NASA

Additional information: *What is a microgauss? -- A microgauss is one millionth of a gauss, a unit of magnetic field strength popular among astronomers and geophysicists. Earth's magnetic field is about 0.5 gauss or 500,000 microgauss.

Merav Opher –associate Professor, George Mason University

Anatomy of the Heliosphere: The heliosphere is a bubble in space "blown" into the interstellar medium (the hydrogen and helium gas that permeates the galaxy) by the solar wind. Although electrically neutral atoms from interstellar space can penetrate this bubble, virtually all of the material in the heliosphere emanates from the Sun itself.
For the first ten billion kilometres of its radius, the solar wind travels at over a million kilometres per hour.[1][2] As it begins to collide with the interstellar medium, it slows down before finally ceasing altogether. The point where the solar wind slows down is the termination shock; the point where the interstellar medium and solar wind pressures balance is called the heliopause; the point where the interstellar medium, travelling in the opposite

Spirit Faces Uncertain Future as New Year Dawns
Submitted by Jim Wessel

Dec. 31 , 2009: This Sunday[Jan 3, 2010] , NASA's Mars rover Spirit will mark six years of unprecedented exploration of the Red Planet. However, the upcoming Martian winter could end the roving career of the beloved, scrappy robot.

Spirit landed on Mars at 8:35 p.m. PST on Jan. 3, 2004, and its twin Opportunity arrived at 9:05 p.m. Jan. 24, 2004. The rovers began missions intended to last for just three months but which have instead gone on for six Earth years, or 3.2 Mars years. During this time, Spirit has found evidence of a steamy and violent environment on ancient Mars that was quite different from the wet and acidic past documented by Opportunity, which has been operating successfully halfway around the planet.

Right: An artist's concept of Spirit on Mars

A sand trap and balky wheels are challenges to Spirit's mobility that could prevent NASA's rover team from using a key winter-survival strategy. The team might not be able to position the robot's solar panels to tilt toward the sun to collect power for heat to survive the severe Martian winter.
Nine months ago, Spirit was driving across a place called "Troy" when its wheels broke through a crusty surface layer into loose sand. Efforts to escape this sand trap barely have budged the rover. The rover's inability to use all six wheels for driving has worsened the predicament. Spirit's right-front wheel quit working in 2006, and its right-rear wheel stalled a month ago. Surprisingly, the right-front wheel recently resumed working, though intermittently. Drives with four or five operating wheels have produced little progress and the latest attempts have resulted in the rover actually sinking deeper in the soil.

"The highest priority for this mission right now is to stay mobile, if that's possible," says Steve Squyres of Cornell University in Ithaca, N.Y. He is principal investigator for the rovers.

If mobility is not possible, the next priority is to improve the rover's tilt, while Spirit is able to generate enough electricity to turn its wheels. Spirit is in the southern hemisphere of Mars, where it is autumn, and the amount of daily sunshine available for the solar-powered rover is declining. This could result in ceasing extraction activities as early as January, depending on the amount of remaining power. Spirit's tilt, nearly five degrees toward the south, is unfavorable because the winter sun crosses low in the northern sky.

For those who want to read the remainder of this article, go to http://science.nasa.gov/headlines/y2009/31dec_uncertainfuture.htm?list1352372

Kepler Discovers Five New Exoplanets

January 4, 2010: NASA's Kepler space telescope, designed to find Earth-size planets in the habitable zone of sun-like stars, has discovered its first five new exoplanets.

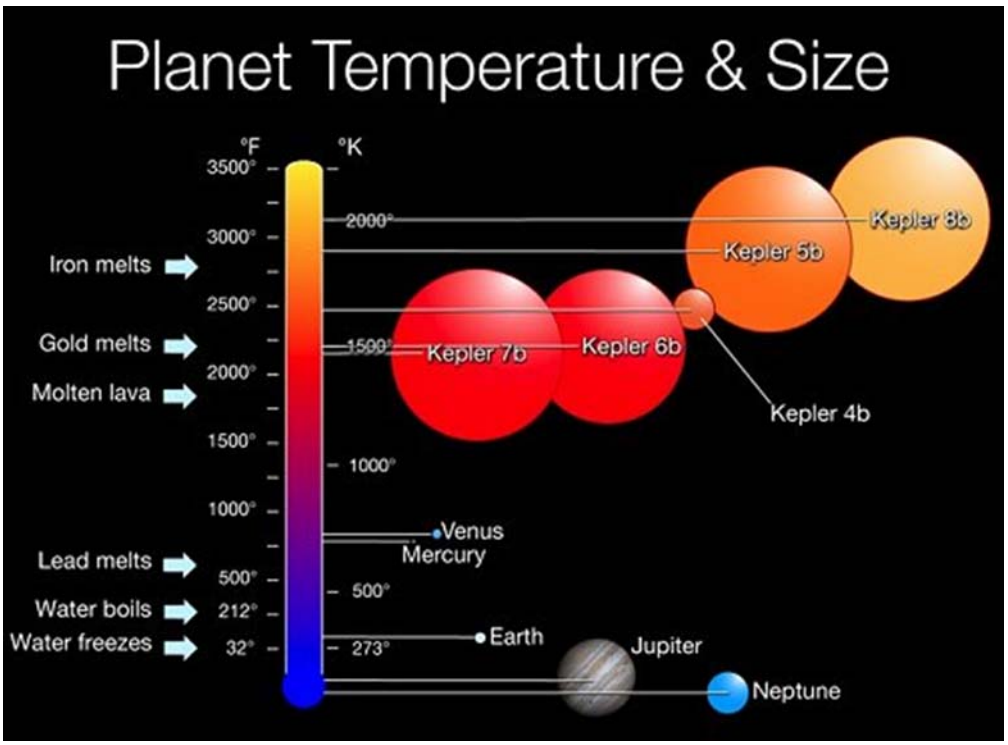
Named Kepler 4b, 5b, 6b, 7b and 8b, the planets were announced Monday, Jan. 4, by the members of the Kepler science team during a news briefing at the American Astronomical Society meeting in Washington.

Right: An artist's concept of the Kepler space telescope on a mission to discover habitable planets outside our own Solar System. [more]

"The discoveries show that our science instrument is working well," says William Borucki of NASA's Ames Research Center in Moffett Field, Calif. Borucki is the mission's science principal investigator. "Indications are that Kepler will meet all its science goals."

The five planets are quite a bit larger than Earth. Known as "hot Jupiters" because of their high masses and extreme temperatures, the new exoplanets range in size from similar to Neptune to larger than Jupiter. They have orbits ranging from 3.3 to 4.9 days. Estimated temperatures of the planets range from 2,200 to 3,000 degrees Fahrenheit, hotter than molten lava and much too hot for life as we know it.

Below: Kepler's first five exoplanets are large and hot. As the mission proceeds and Kepler has time to gather more data, smaller and cooler planets can be found leading, perhaps, to the discovery of planets like Earth.

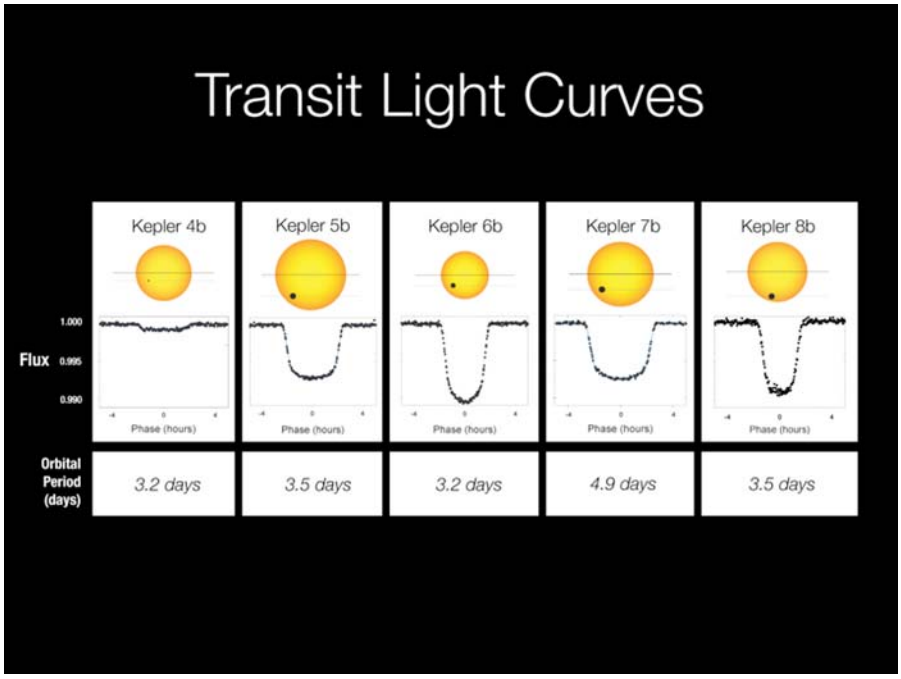


"It's gratifying to see the first Kepler discoveries rolling off the assembly line," says Jon Morse, director of the Astrophysics Division at NASA Headquarters in Washington. "We expected Jupiter-size planets in short orbits to be the first planets Kepler could detect. It's only a matter of time before more Kepler observations lead to smaller planets with longer period orbits, coming closer and closer to the discovery of the first Earth analog."

Launched on March 6, 2009, from Cape Canaveral Air Force Station in Florida, the Kepler mission continuously and simultaneously observes more than 150,000 stars. Kepler's science instrument, or photometer, already has measured hundreds of possible planet signatures that are being analyzed.

Kepler looks for the signatures of planets by measuring dips in the brightness of stars. When planets cross in front of, or transit, their stars as seen from Earth, they periodically block the starlight. The size of the planet can be derived from the size of the dip. The temperature can be estimated from the characteristics of the star it orbits and the planet's orbital period.

While many of the signatures detected so far are likely to be something other than a planet, such as small stars orbiting larger stars, ground-based observatories have confirmed the existence of the five exoplanets. The discoveries are based on approximately six weeks' worth of data collected since science operations began on May 12, 2009.



Right: The five planets were discovered when they passed in front of (or "transited") their parent stars, causing the stars' apparent brightness to dip.

Kepler will continue science operations until at least November 2012. It will search for planets as small as Earth, including those that orbit stars in a warm habitable zone where liquid water could exist on the surface of the planet. Since transits of planets in the habitable zone of solar-like stars occur about once a year and require three transits for verification, it is expected to take at least three years to locate and verify an Earth-size planet.

According to Borucki, Kepler's continuous and long-duration search should greatly improve scientists' ability to determine the distributions of planet size and orbital period in the future.

"Today's discoveries are a significant contribution to that goal," Borucki said. "The Kepler observations will tell us whether there are many stars with planets that could harbor life, or whether we might be alone in our galaxy."

For more information about the Kepler mission, visit the mission home page at http://www.nasa.gov/kepler.
Editor: Dr. Tony Phillips | Credit: Science@NASA

(more information: Kepler is NASA's 10th Discovery mission. Ames is responsible for the ground system development, mission operations and science data analysis. NASA's Jet Propulsion Laboratory in Pasadena, Calif., managed the Kepler mission development. Ball Aerospace & Technologies Corp. of Boulder, Colo., was responsible for developing the Kepler flight system. Ball and the Laboratory for Atmospheric and Space Physics at the University of Colorado in Boulder are supporting mission operations.
Ground observations necessary to confirm the discoveries were conducted with ground-based telescopes the Keck I in Hawaii; Hobby-Ebberly and Harlan J. Smith 2.7m in Texas; Hale and Shane in California; WIYN, MMT and Tillinghast in Arizona; and Nordic Optical in the Canary Islands, Spain.)

Submitted by Jim Wessel

The January Sky

Pegasus, Andromeda, and Cetus sink into the west by January, while the stars of spring begin their rise in the east late in the evening. In between lie the grand constellations of winter: Orion, Taurus, Auriga, Perseus, Cassiopeia, Gemini, and Canis Major. Because these constellations lie along the plane of the Milky Way, they are rich with stars, nebulae, and star clusters.

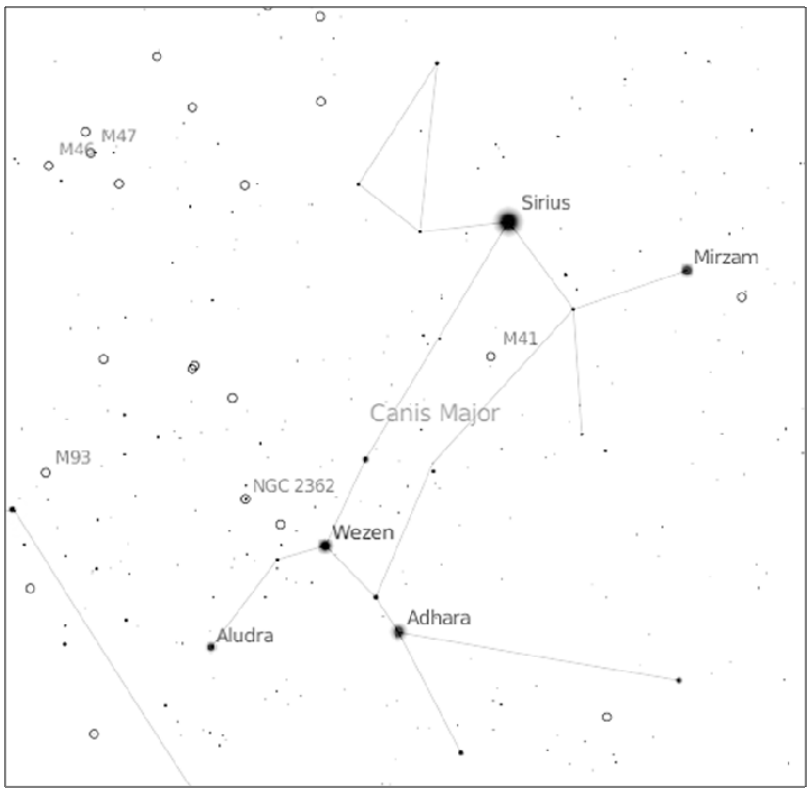
Look overhead to find a grand collection of stars: Capella, Castor and Pollux, Procyon, Sirius, Rigel, Aldebaran, and Betelgeuese. These stars are a spectacular sight on a dark winter night. Orion, the hunter, is the feature constellation of winter in both hemispheres, and makes a good base of operations to find other constellations. South and east of Orion lie his hunting dogs Canis Major and Canis Minor. The former constellation hosts the brightest star in the sky, Sirius, which shines unmistakably in the
southeast.

To the north and west of Orion lies the V-shaped constellation Taurus. The bright star Aldebaran marks the eye of the bull. Northwest of Orion lies Gemini, the twins, with their feet dipped in the rich star fields of the winter Milky Way. And directly above Orion you'll find the constellation Auriga, also set in the Milky Way. Its bright yellow-white star Capella twinkles almost directly overhead.

What Auriga, the Charioteer and one of the 44 ancient constellations mentioned by Ptolemy, lacks in celestial wonders it makes up with an interesting mythological story. There is a dark side to the charioteer, Hephaestus, the lame blacksmith god, who invented the chariot so he could travel easily. In one of the Greek mythologies, Athena visited Hephaestus to request some weapons. The lame smith was so smitten by her beauty he tried to seduce her in his workshop. Athena rebuffed his approach and fled. Despite his lameness, the smith-god caught her and tried to rape her. Athena fought him off, but in the struggle, his semen fell on her thigh and Athena, in disgust, wiped it away with a scrap of wool. She cast the wool on the ground, impregnating Gaia. Gaia gave birth to a son. She brought the infant boy to Athena, who placed him in a small box.

Athena gave the box to the three daughters of the king of Athens and warned them never to open it. While Athena was out fetching a mountain, two of the sisters opened the box. The sisters were terrified by what they saw in the box: either a snake coiled around an infant, or an infant that was half-man and half-serpent. A crow saw them open the box, and flew away to tell Athena, who fell into a rage and dropped the mountain she was carrying. The sisters went insane and jumped off Acropolis.
Deep Sky Sirius, The "Pup," dim companion of the "Dog Star." First spotted in 1862, Shines at magnitude 8.3, but overwhelmed by Sirius A, 8" away. Here's one trick to see Sirius B… look for the Pup using high magnification at twilight before the glare of Sirius A overwhelms its faint companion

NGC 2362	Open cluster in the "hindquarter" of the Great Dog. Most of the stars you see are massive O and B stars, all of which are 1000-1500x brighter in real terms than the sun.



Solar System

Mercury has faded.

Venus is lost in the sunrise. Not until late winter (Northern Hemisphere winter) will it emerge into view again, after sunset.

Mars (a bright magnitude –0.6, in Leo) rises around 8 p.m. local time, far below Castor and Pollux a bit north of east. The north polar cap is in good view.

Jupiter in Capricornus, shines brightly in the south-southwest in twilight, and lower in the southwest after dark. It sets around 8 or 9 p.m.

Saturn in the head of Virgo, rises in the east around midnight and shines highest in the south before and during dawn. Its rings are still narrow, tilted 4.8° from edge-on to us.

Uranus just south of the Circlet of Pisces, is still high in the south-southwest right after dark. **Neptune**, in Capricornus, lurks closely in the background of Jupiter.

Pluto is in conjunction, behind the glare of the Sun.

Events

The annual Quadrantid meteor shower should be active after midnight Jan. 3rd, but the bright moonlight will be a serious hindrance.

SUNRISE AND SUNSET SCHEDULE FOR JANUARY-2010

January 2010

Houston, Texas

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
31 Twi A: 5:50am Twi: 6:47am Sunrise: 7:12am Sunset: 5:57pm Twi: 6:22pm Twi A: 7:19pm Moonrise: 7:59pm Moonset: 8:03am					1 Twi A: 5:51am Twi: 6:50am Sunrise: 7:16am Sunset: 5:32pm Twi: 5:59pm Twi A: 6:57pm Moonrise: 6:52pm Moonset: 8:04am	2 Twi A: 5:52am Twi: 6:51am Sunrise: 7:17am Sunset: 5:33pm Twi: 5:59pm Twi A: 6:58pm Moonrise: 8:04pm Moonset: 8:51am
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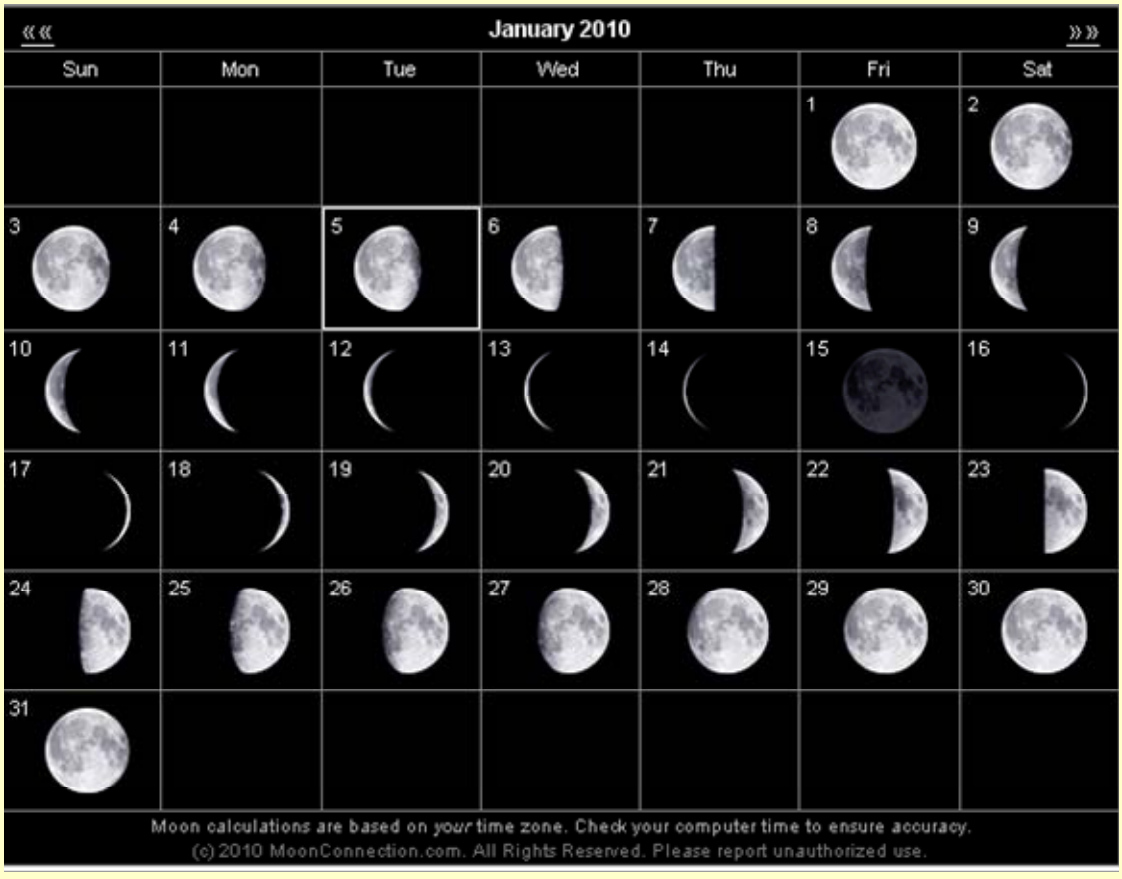
PHASES OF THE MOON FOR THE MONTH OF JANUARY-2010



Folks:
In times past, people that have wanted to take advantage of the club discount have had to write their check, put it in with the renewal slip, and then either mail it to me at my home or chase me down at a meeting. In most cases, within a week, I have sent out the renewal. Sometimes, and I don't really mind, the renewals have gone out at my expense for the postage. Without hesitation, question, or fail, it is not the most efficient means to maintain club subscriptions. So as secretary, I'd like to try something new...

You get all your stuff ready for the subscription, whether it be Astronomy or Sky & Telescope, you keep it - you hang on to it. Email (most reliable) or tell me when you see me that you want to take advantage of the club discount for either or both of these publications and that you need a supporting letter. What I'll do is get the letter together and email the "letter from the treasurer/secretary" back to you as a PDF. You print it off, and enclose it with your renewal. For this to work your computer must have Adobe Reader (which is free) and a means to print it. I would like this procedure to become the "Standard Operating Procedure" for Astronomy/ S&T discounts through JSCAS. For those still not in the computer age, we can process things as we have in the past.

Clear skies,
David Haviland

NEED A NEW CLUB SHIRT?

CONNIE'S CREATIVE DESIGN
FOR YOUR MONOGRAM NEEDS

FOR CLUB CLOTHING, HATS, APRONS, TOTE BAGS OR ANYTHING ELSE

CONTACT CONNIE AT:
conniescreativedesign@gmail.com

Webpage is under construction, but will be up soon and I take PayPal as well.

ACTUAL PICTURES OF WHAT I HAVE DONE BOTH LIGHT AND DARK BACKGROUNDS

Light pollution:

Any adverse effect of artificial light including sky glow, glare, light trespass, light clutter, decreased visibility at night, and energy waste.

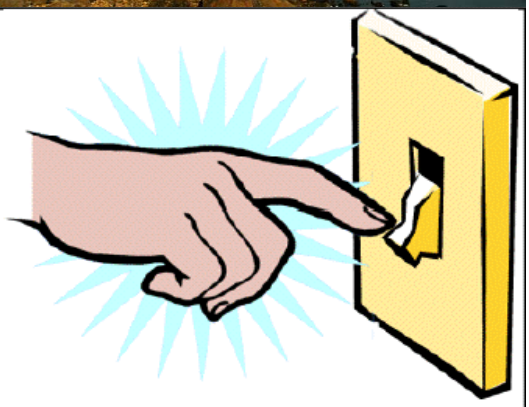
.Do you have a question about light pollution, protecting the night sky, or IDA's resources? **Get Help from IDA** http://www.darksky.org/mc/page.do?sitePageId=56399

Photograph © Phil Hart

IDA
THE LIGHT POLLUTION AUTHORITY

Help turn off the lights...

Join the
International Dark-Sky Association (IDA)
http://www.darksky.org
"To preserve and protect the nighttime environment and our heritage of dark skies through quality outdoor lighting."



Houston Area Astronomy Clubs

Brazosport Astronomy Club
Meets the Third Tuesday of the month, 7:45p.m.
At the Planetarium
400 College Drive
Clute, Texas (For more information, contact Judi James at the Planetarium 979-265-3376)

Fort Bend Astronomy Club http://www.fbac.org
Meets the third Friday of the month, 7:00 p.m.
Houston Community College Southwest Campus—Main Lecture Hall
10141 Cash Rd
Stafford, Texas 77477

Houston Astronomical Society http://spacibm.rice/edu/~has
Meets the first Friday of the month, 8:00 p.m.
University of Houston, University Park
Science and Research Building, Room 117

North Houston Astronomy Club http://www.astronomyclub.org
Meets the fourth Friday of the month, 7:30 p.m.
In the Teaching Theatre at Kingwood College
20000 Kingwood Drive
Kingwood, Texas

Galveston Stargazers
Meets the first Wednesday of the month At Home Cut Donuts, 6807 Stewart Rd, Galveston, TX
From 7PM to 9PM.
Contact: Jim Gilliam at Jim.Gilliam@dars.state.tx.us or
At (409)795-3620, M - F, 8AM to 5PM

Starscan Submission Procedures

Original articles of some relation to astronomy will be accepted up to 6 p. m. (18:00 hrs) on the 25th of each month. THE most convenient way to submit articles or a Calendar of Events is by email and is preferred, but hard copies (CD, disk) are also accepted. All articles must include author's name and phone number. Also include any picture credits. Word, WordPerfect, and text files will be accepted. I have set up a special email account so that I can keep all of the Starscan articles, pictures, information, etc, separate from all of the other email I get. This makes is much easier to edit and set up the Starscan

Please send all submissions to:
conniesstarscanaccount@gmail.com

The author of individual articles bears all responsibility for publishing any e-mail addresses in the article on the World Wide Web

Johnson Space Center Astronomical Society

2008-Club Officers

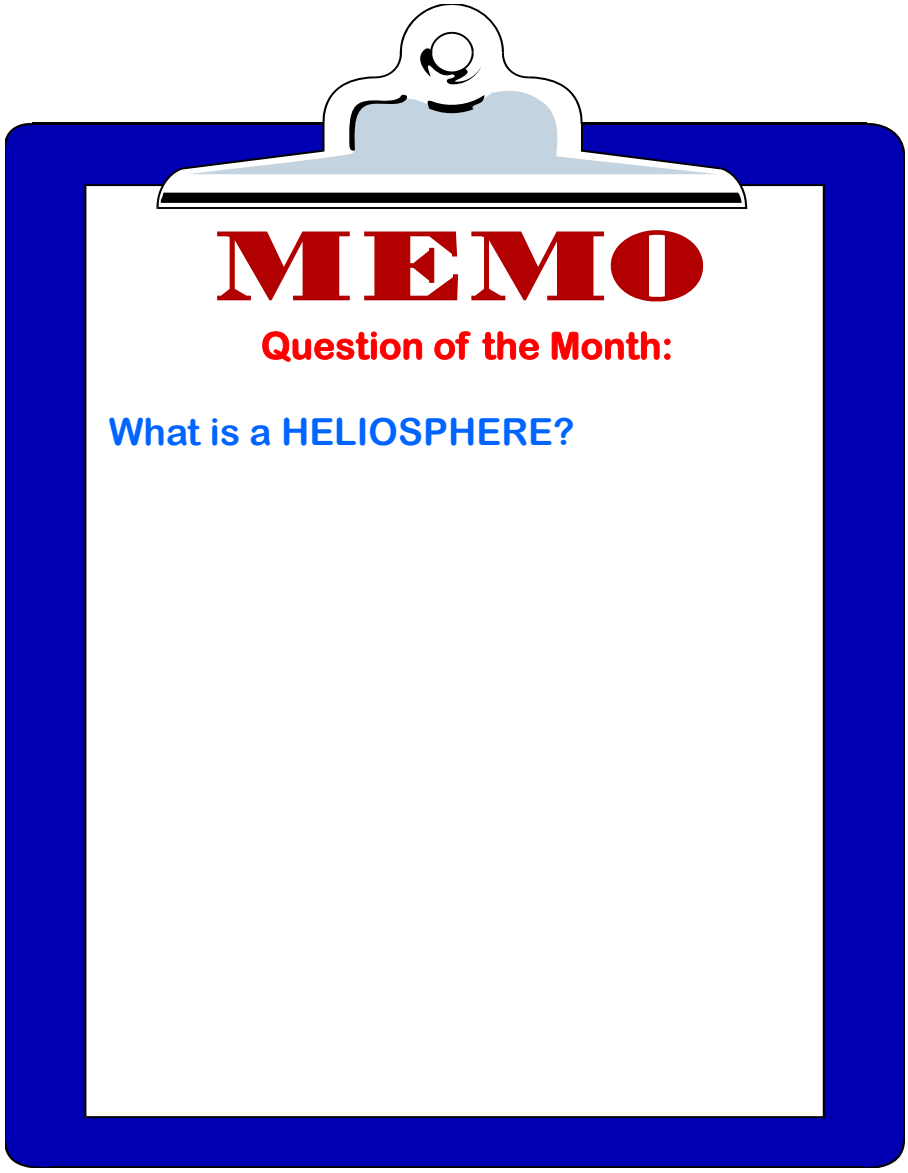
President – David Haviland
Vice President – Chris Randall
Secretary – David Haviland
Starscan Editor – Connie Haviland
Star Party Chairperson –
Librarian – Bob and Karen Taylor
Historian – Chris Randall
Scientific Expeditions – Paul Maley
Web Master—Chris Randall

SIGS

Observing Awards – Triple Nickel
Astronomy 101 — Triple Nickel
CCD Imaging – Al Kelly
Binocular Observing – "OPEN"
Telescope Making – Bob Taylor
Deep Sky Observing – Hernan Contreras

Astronomy and Kids

This is the section strictly for kids (or kids at heart). We will be including information, stories, ideas, puzzles or anything that has to do with astronomy. The only difference here is, it will be directed for children. We don't discourage parents or any other adult to get involved. In fact, we encourage it strongly. So we hope you enjoy this section and if it touches a child's interest in astronomy, our goal has been achieved. Enjoy!!



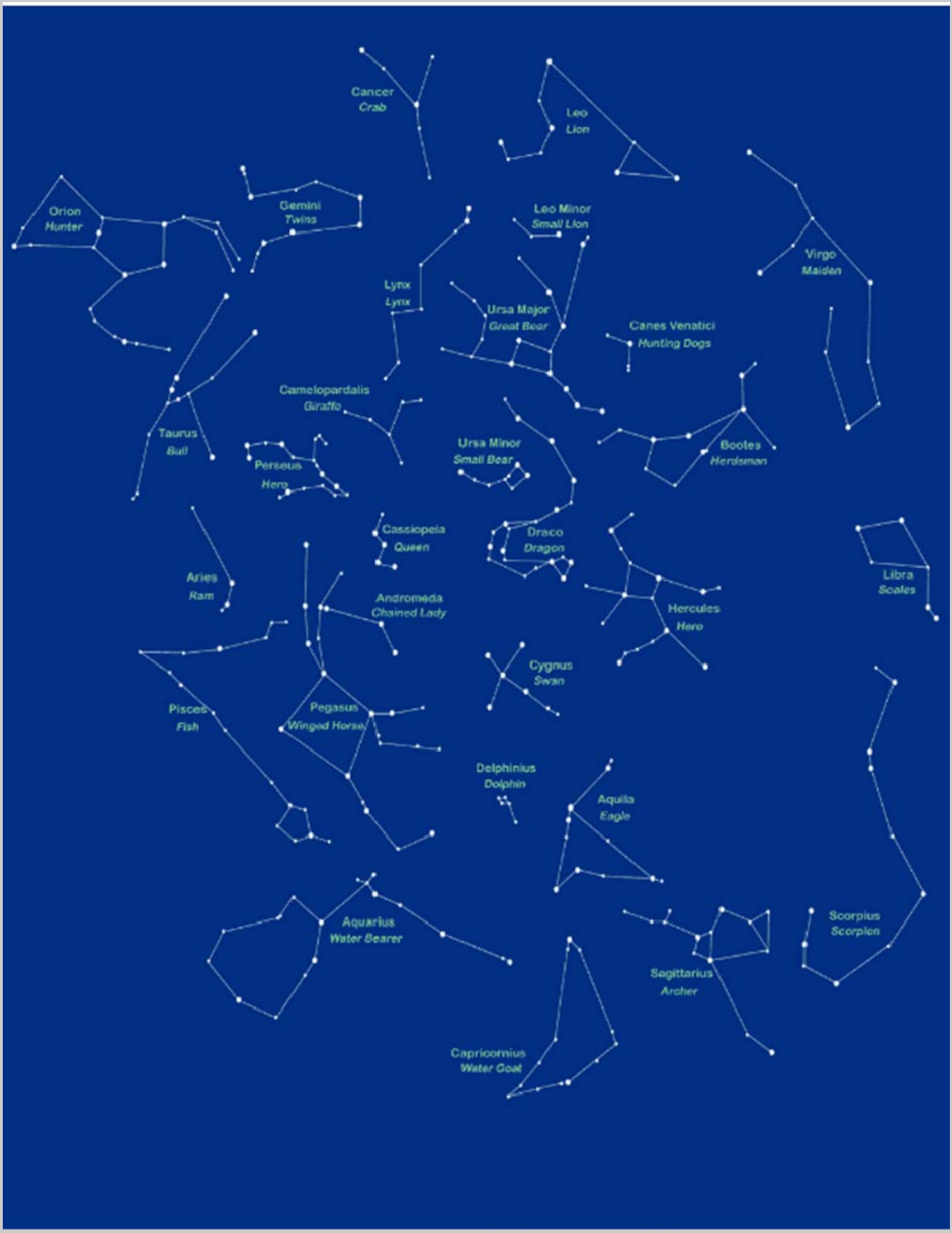
NAME_____

ASTRONOMICAL SCAVANGER HUNT

Let's see if you read the newsletter this month. All of these words can be found here in this month's newsletter

1. SHOLEEIPRHE _____
2. MIULEH _____
3. EGRYDNOH _____
4. ISTIPR _____
5. ESPSINRCOOM _____
6. OIETHLHAHSE _____
7. TOOBR _____
8. STRERIETLANL _____
9. OCMSIC _____
10. SLSIYOHEHIPC _____
11. VGOYERA _____
12. FFULF _____
13. ENYITSD _____
14. RPANEYATL _____
15. CSIUNRCOPAR _____
16. UATADINRDQ _____
17. EPSUGAS _____
18. RNMAOADED _____
19. ESUCT _____
20. GAUIAR _____
21. EESSURP _____
22. ESAAOIPICS _____
23. INIEMG _____
24. CISRNMJAOA _____
25. LINAHADV _____

LEARN YOUR CONSTELLATIONS



Snoopy says, never stop looking up..reach for the stars and may you always have clear skies!!!!