



# News-Scope

*The Newsletter of the Birmingham Astronomical Society*  
*Volume 30, Issue 5*

## 2010 Star Parties

BAS monthly Star Parties are open to the public. For more information, go to our website: [www.bas-astro.com](http://www.bas-astro.com).

### Chandler Mountain

January 16

February 13

March 13

April 10

May 15

June 12

July 10

August 07

September 11

October 09

November 06

December 04

### Oak Mountain

January 09

February 06

March 06

April 17

May 08

June 05

July 03

August 14

September 04

October 02

November 13

December 11

## January Meeting: Astronomy and Social Media

**Speaker: Ed Knight**

**Topic: *Astronomy and Social Media***

**Tuesday, January 19 at 7:00 p.m.**

**Christenberry Planetarium, Samford University**

BAS meets at 7:00 p.m. on the third Tuesday of each month at Samford University's Christenberry Planetarium. The Planetarium is located in the ScienCenter on Montague Drive. On entering the Samford campus, turn right onto Montague. Follow it around the curve to the left until you see the ScienCenter on the right.

### Upcoming Meetings:

#### February 16

*LCROSS Mission Update*

James Moore, JPL/NASA Solar System Ambassador

#### March 16

*Stars: Shedding Some Light*

Scott Pellet, BAS President

## Star Parties

BAS monthly Star Parties are open to members and the general public. The Parties are free but there is a \$3.00 entrance fee to Oak Mountain State Park. The Oak Mountain parties are at the park's Wild Life Refuge Center.



**The BAS is a proud participant in NASA's Night Sky Network. Learn more about what it is and how we're involved on page 5.**

## New Year, New Content?

### Inside this issue:

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Welcome to the first quarter 2010 edition of the News-Scope! As you will see, we're doing some tweaking (still) and are trying a few new things with the newsletter.

My goals are to: Make sure that you have the "important" information (meeting dates, star party dates, etc.) at hand, and

provide content that will (hopefully) encourage you to "go deeper" in your astronomical pursuits.

One thing that you will notice is that a lot of the content provides opportunities to be interactive. By that, I mean that there will either be references that refer you to websites or

blogs where you can "dig deeper" or leave a comment on a related blog.

What kind of information are you seeking in a club newsletter? Do you have an article to submit or a subject that you'd like to cover? Let me know!

Clear skies! -- James

## New technique to find Earth-like exoplanets

by Nancy Atkinson, *Universe Today*

Another technique has been added to the exo-planet hunters' toolkit, and it doesn't require huge ground-based telescopes or space-based observatories. A group of astronomers developed the new technique by using a relatively small Earth-based infrared telescope to identify an organic molecule in the atmosphere of a Jupiter-sized planet nearly 63 light-years away. This new ground-based technique will enable the study of atmospheres of planets outside our Solar System, accelerating our search for Earth-like planets with life-related molecules. to be caused by narrow, lighthouse-like beams emanating from the star's magnetic poles.

On Aug. 11, 2007, Mark Swain from JPL and his team turned the NASA Infrared Telescope Facility – a 3-meter telescope

on the summit of [Mauna Kea](#), Hawaii, – to the hot, Jupiter-size planet HD 189733b in the constellation [Vulpecula](#). Every 2.2 days, the planet orbits a K-type main sequence star slightly cooler and smaller than our Sun. HD189733b had already yielded breakthrough advances in exoplanet science, including detections of water vapor, methane and carbon dioxide using space telescopes.

Using a novel calibration method to remove systematic observation errors caused by instability of Earth's atmosphere, they obtained a measurement revealing details of the HD189733b's atmospheric composition and conditions, an unprecedented achievement from an Earth-based observatory.

They detected carbon dioxide and methane in the exo-planet's atmosphere of HD 189733b with the SpeX spectrograph,

which splits light into its components to reveal the distinctive spectral signatures of different chemicals. Their key work was development of the novel calibration method to remove systematic observation errors caused by the variability of Earth's atmosphere and instability due to the movement of the telescope system as it tracks its target.

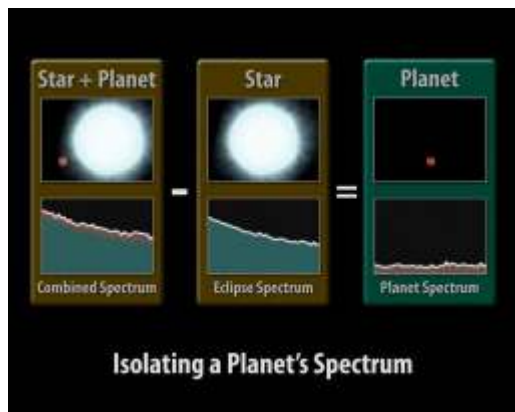
It took the researchers more than two years to develop their method so that it could be applied to spectroscopic observations with the 3 meter telescope, enabling the identification of specific molecules such as methane and carbon dioxide.

"As a consequence of this work, we now have the exciting prospect that other suitably equipped yet relatively small ground-based telescopes should be capable of characterizing exoplanets," said John Rayner, the NASA Infrared Tele-

scope Facility support scientist who built the SpeX spectrograph. "On some days we can't even see the Sun with the telescope, and the fact that on other days we can now obtain a spectrum of an exoplanet 63 light-years away is astonishing."

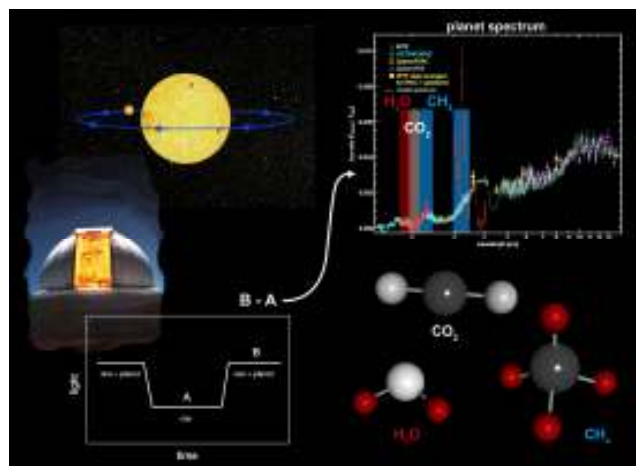
During their observations, the team found unexpected bright infrared emission from methane that stands out on the day side of HD189733b. This could indicate some kind of activity in the planet's atmosphere which could be related to the effect of ultraviolet radiation from the planet's parent star hitting the planet's upper atmosphere, but more detailed study is needed.

"An immediate goal for using this technique is to more fully characterize the atmosphere of this and other exoplanets, including detection of organic and possibly prebiotic molecules" like those that preceded the evolution of life on Earth, said Swain. "We're ready to undertake that task." Some early targets will be the super-Earths. Used in synergy with observations from NASA's Hubble, Spitzer and the future James Webb Space Telescope, the new technique "will give us an absolutely brilliant way to characterize super-Earths," Swain said.



This scheme explains how the spectrum of the planet is isolated. First the spectrum of both, the planet and its central star is registered; then, when the planet is hidden behind the star, one obtains the spectrum of the star alone. If one subtracts the second from the first, one obtains the spectrum of the planet alone.

On right: Artist's impression of HD 189733b, graph and image of the telescope Credit: NASA



## In Russia, Apophis impacts you!

By Phil Plait, *Bad Astronomy*

I don't spend a lot of time worrying about actual asteroid impacts — I think about them, but the odds of a big impact are too low to panic about. We should be concerned, and absolutely we should take steps in case we find The Big One headed our way. But I sometimes wonder if I should worry more about our *reactions* to potential impacts. Or, more specifically, Russia's reaction.

Apophis is an asteroid, a chunk of rock over 200 meters across orbiting the Sun. The problem is, the orbit of Apophis crosses that of the Earth. If the two are in the same place at the same time, well, bang! It's big enough to blow up with the force of several of hundred megaton bombs. That's not enough to wipe out life on Earth, but it's certainly enough to do a whole lot of damage, and if it happens over a city... well.

In April 2029 Apophis will pass within a few thousand kilometers of the Earth's surface. It won't hit, but Earth's gravity will change the orbit of the asteroid. If the asteroid passes us at just the right distance — in a region of space a few hundred meters across called the keyhole — it'll swing back in seven years and hit us.

We don't know the exact orbit of Apophis well enough to know for sure how close

it'll pass in 2029; we can only assign probabilities. The odds of it hitting the keyhole are pretty low, though: about one in 250,000 ([downgraded from 1:45,000 recently](#) as better orbital determinations were made).

Enter the Russian space agency. [Anatoly Perminov](#), the head of the agency, [was recently quoted in an AP news article](#) that he wants to consider putting together a mission to move it out of the way, making sure it doesn't hit. I'm all for that! What worries me is this quotation:

*Without mentioning NASA findings [of downgraded odds of an impact], Perminov said that he heard from a scientist that Apophis is getting closer and may hit the planet. "I don't remember exactly, but it seems to me it could hit the Earth by 2032," Perminov said.*

Now, I know he's not an astronomer, but he does run a national space agency. I'd feel a whole lot better about his organizing a meeting to deflect this rock if a) he had the date right (it cannot hit before 2036, and the odds

then are very low), and 2) he could actually, y'know, *name his source*.

Yikes.

Now, maybe he was misquoted by the AP. Or maybe it was out of context. And again, I don't expect the head of the space agency to be on top of every detail; it could simply be an honest mistake with the date. But I am not particularly happy when someone in that position bases a decision at least partly because he heard it from some guy he knows but can't remember who or when.

Did I say yikes before? Yeah.

I do think governments should take this seriously. I also know that as of right now, NASA is *not* taking this seriously enough. Perhaps if Russia gets this ball rolling, and other countries (like India, China, and Japan) join in, then NASA will be forced to take a better look at this situation. I know I was being a little snarky above (this *is* a blog, after all), but in the end some good may come of this. We just don't know enough about asteroids and how to push them out of the way. We need to set up and fly missions to a few near-Earth asteroids to understand them better and add to our knowledge of their composition, structure, and behavior.

Theory is all well and good, but nothing beats some good practical experience. And while I dread the day when an announcement of a statistically significant likelihood of impact for a rock is announced, I'd be a whole lot happier and more comfortable if we had a dozen missions to asteroids already under our belt when that happens. Even if they got their start with this sketchy quote from the head of the Russian space agency.

*Read more about this on [Discover Magazine's 80 Beats](#) blog.*

NOTE: This content distributed by the AAVSO Writer's Bureau

## Bizarre asteroid collision is one for The X-Files

By Ray Villard, *Discovery Space*

NOTE: This content distributed by the AAVSO Writer's Bureau

I've seen thousands of astronomical images over my career, but this is one of the few absolute jaw-droppers: A flying X-pattern with trailing streamers.

At first glance it looks like a four-pointed Kohga Ninja throwing star blade.

It's so weird-looking that you want to call the UFO hotline. Maybe it's a [Romulan "Bird of Prey" starship](#) decloaking as it enters our solar system.

The mystery object, located 100 million miles from Earth, may really be the aftermath of a [hypervelocity collision](#) between two asteroids – like a bullet hitting another bullet. Whatever it is, nothing quite like it has ever before been seen in the heavens.

The comet-like object, called P/2010 A2, was first discovered by the LINEAR (Lincoln Near-Earth Asteroid Research program) sky survey on January 6. Telescopes around the world turned their attention to it.

Comet expert David Jewitt of UCLA quickly applied for special discretionary time on the Hubble Space Telescope to get a close-up look at the object. Hubble pictures take on January 25 and 29 left everyone speechless. It's fun watching the expression on the faces of astronomers when they first see it, like "What!?"

I [reported on the strange space visitor](#) in January, and some readers dismissed it as just another one of a handful of hybrid asteroid-comets that was outgassing. But the Hubble view removes any lingering doubt that this is something new in astronomical observations.

The scenario being pondered is that two uncharted asteroids

ran into each other at speeds of over 11,000 miles per hour (or five times faster than a rifle bullet). The center of the "X" might be the original collision point where the trajectories of the object intersected. The whole structure has a definite ballistic look to it, like plummeting smoke trails from an exploded aerial firework.

(Government conspiracy buffs might imagine it's the result of an "anti-asteroid" interceptor being dispatched in a secret military experiment.)

This smashup created a shower of debris that is being swept back into a tail from the collision site by the pressure of sunlight. The main nucleus of P/2010 A2, which mysteriously lies outside of its own halo of dust, is the surviving remnant. It looks like the other body presumably disintegrated. There are two predominant streamers of dust in the Hubble image that are telltale evidence for two objects trailing dust.

The asteroid belt contains abundant evidence for ancient collisions that have shattered precursor bodies into fragments. The orbit of P/2010 A2 is itself consistent with membership in the [Flora asteroid family](#), produced by collisional shattering of a pair of wayward asteroids over 100 million years ago. One fragment of that smashup may have struck Earth 65 million years ago, triggering a mass extinction that wiped out the dinosaurs.

With [2012 doomsday hysteria](#) building, this might get attention on the Internet as yet another omen of the "End of Times." Those who've overdosed on Nostradamus might see a flying Star of David, or a pentagram.

But asteroid collisions have been ongoing for over 4 billion years. Thanks to our modern telescopes we've finally "caught one in the act."



Is this mystery object a comet or the result of an asteroid collision?  
Image courtesy of NASA, ESA, D. Jewitt (UCLA)

## Guide Stars

By James Moore, Editor

Twitter is an integral part of social media. Astronomers (both professional and amateurs), NASA employees and missions and space enthusiasts have embraced Twitter as a means of quickly disseminating information and as a means of finding others who share a common interest.

One of the most interesting things to come from Twitter is the Space Tweep Society. The STwS was founded by Jen Scheer, who works at KSC for a NASA contractor. Her posts of incredible pictures and interaction with space enthusiasts on Twitter led her to form a “society” that would allow participants to make postings and interact in an environment that would allow them to express themselves in more than 140 characters. You can find the Space Tweep Society here: <http://www.spacetweepsociety.com/>

Another development has been the recognition by NASA of the importance of Tweetups. A Tweetup is a gathering of Twitter users at a given time and place. NASA has held Tweetups at JPL, KSC, JSC, Ames and HQ. There are talks underway to hold one soon at MSFC.

Astronauts have gotten into Twitter as well. There are usually one (or more) astronauts aboard the ISS at any given time who use Twitter (and now have real-time access to the internet). At least one astronaut per Shuttle mission is a Twitter user as well.

Here is a partial list of Twitter users:

@Astro_Soichi	Astronaut Soichi Noguchi (currently on the ISS)
@Astro_TJ	Astronaut TJ Creamer (currently aboard the ISS)
@Astro_Mike	Astronaut Mike Massimino (first “Twitteronaut”)
@flyingjenny	Jen Scheer (founder, Space Tweep Society)
@barbylon	Barbara Cohen (planetary scientist, MSFC)
@marsroverdriver	Scott Maxwell (Mars rover driver, JPL)
@neiltyson	Neil deGrasse Tyson (astronomer)
@plutokiller	Mike Brown (astronomer)
@dmasten	Dave Masten (Masten Systems – NGLLC winner)

As you can see, it doesn’t take long to build a list (and there are lots more). There is a list on the Space Tweep Society webpage of space enthusiasts (but no descriptions).

## NASA’s Night Sky Network

The Night Sky Network is a nationwide coalition of amateur astronomy clubs throughout the U.S. bringing the science, technology and inspiration of NASA’s missions to the general public. NSN participants share their time and telescopes to provide the public with unique astronomy experiences at science museums, observatories, classrooms and under the night sky.

The Birmingham Astronomical Society (BAS) is a participant in the Night Sky Network (NSN). In doing so, we agree to hold a minimum number of public outreach events each year and report them back to the NSN. In return, the NSN provides the BAS with teaching materials

(including some really cool toolkits), access to additional resources both in and outside of NASA, and the ability to promote NSN-related activities on their website.

The NSN provides training for using the kits and teleconferences concerning upcoming astronomical events or missions. The website also allows the BAS to exchange information with other NSN member clubs.

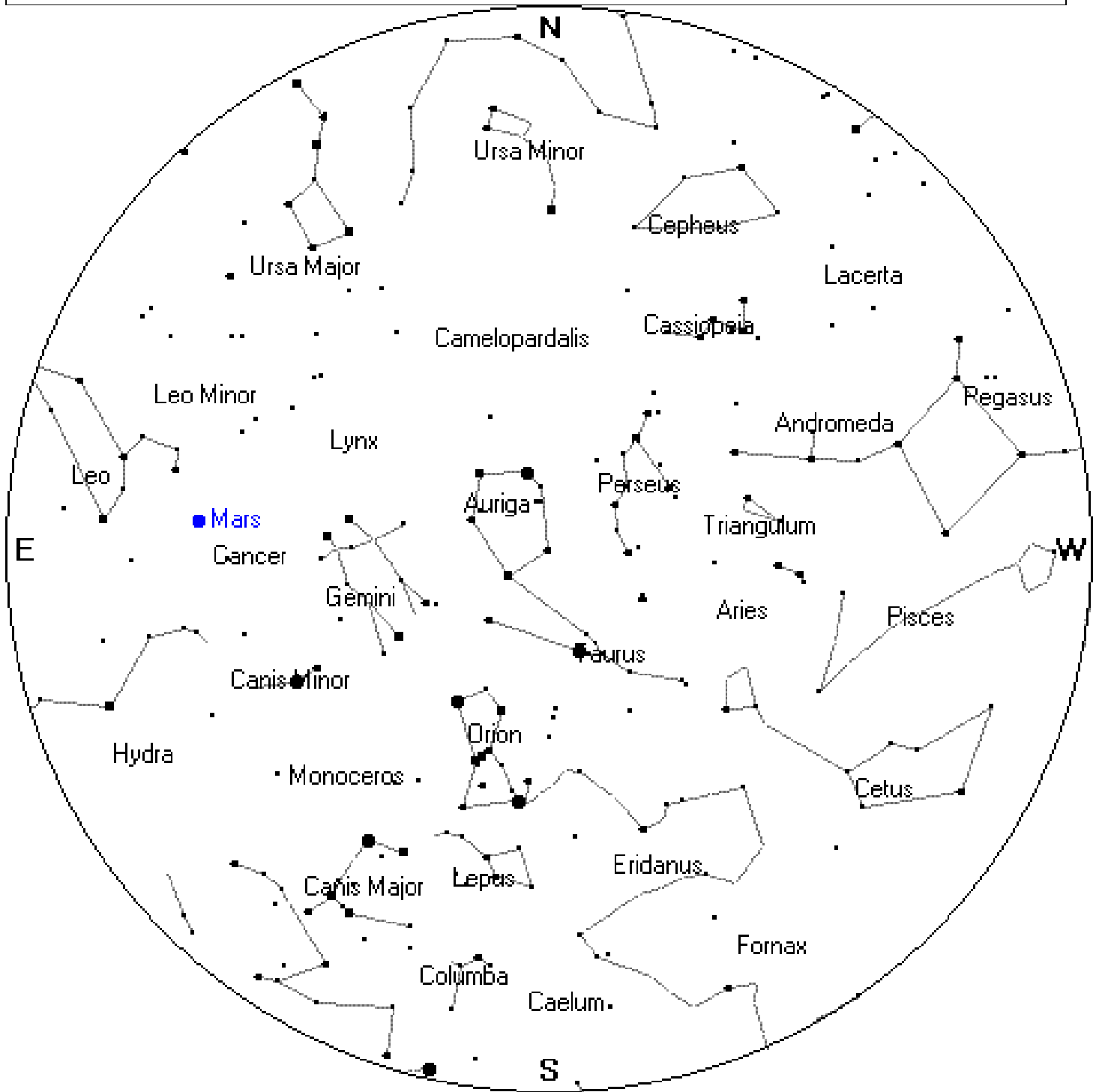
If you are interested in helping with NSN events, including training on the toolkits, contact Scott Pellet or Ed Knight.



Enceladus and the E Ring of Saturn.

Image courtesy of NASA/JPL/Space Science Institute

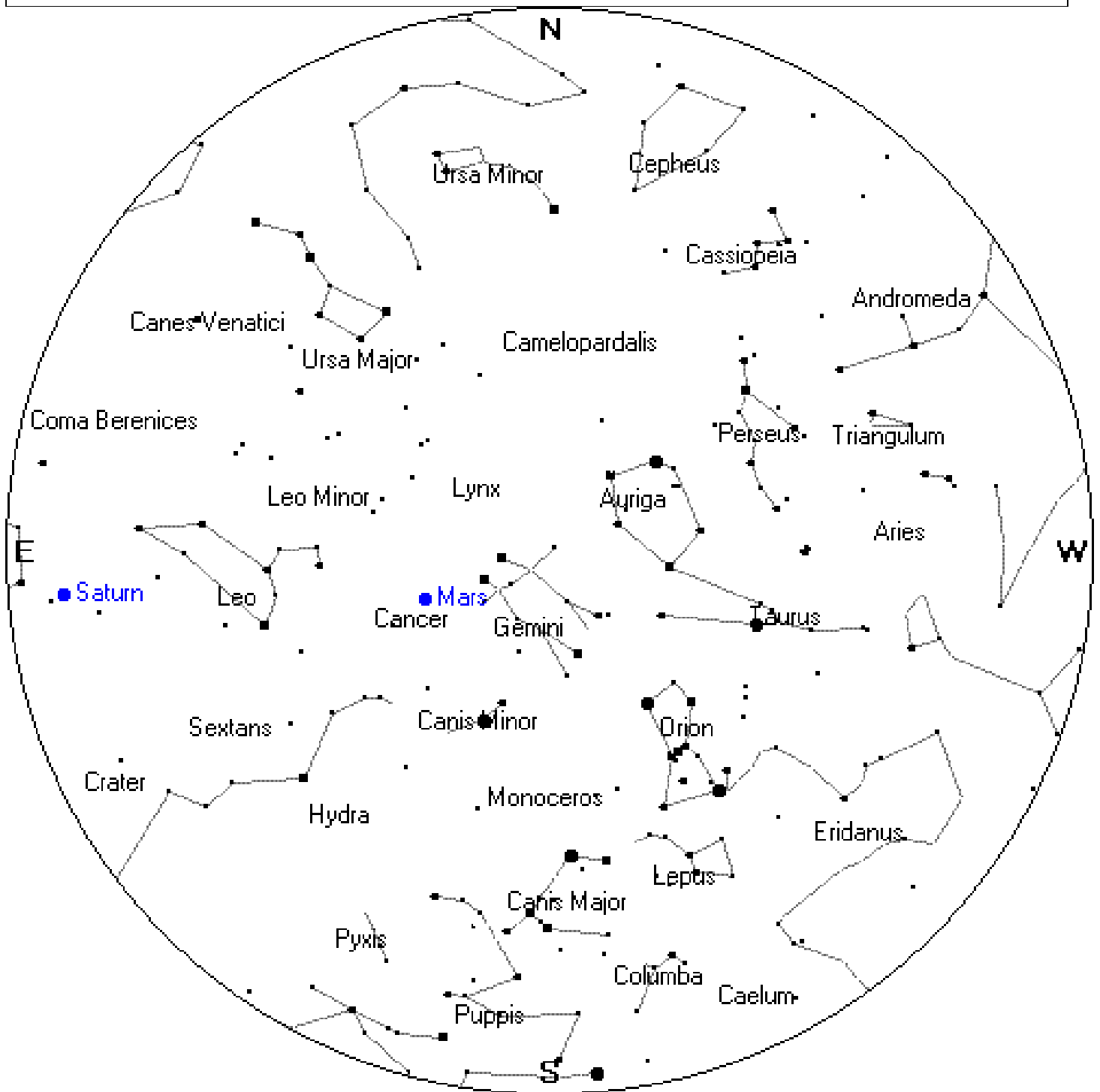
# January 2010 Star Chart



This chart is produced for the middle of the month at 9:00pm.

**Acknowledgement:** This chart was generated at the Heavens-Above astronomy site for Chandler Mountain at <http://heavens-above.com/main.asp?Session=kebgccdoioolefjmcbbfbog>. Their web page at <http://www.heavens-above.com/skychart.asp> can be used to generate sky

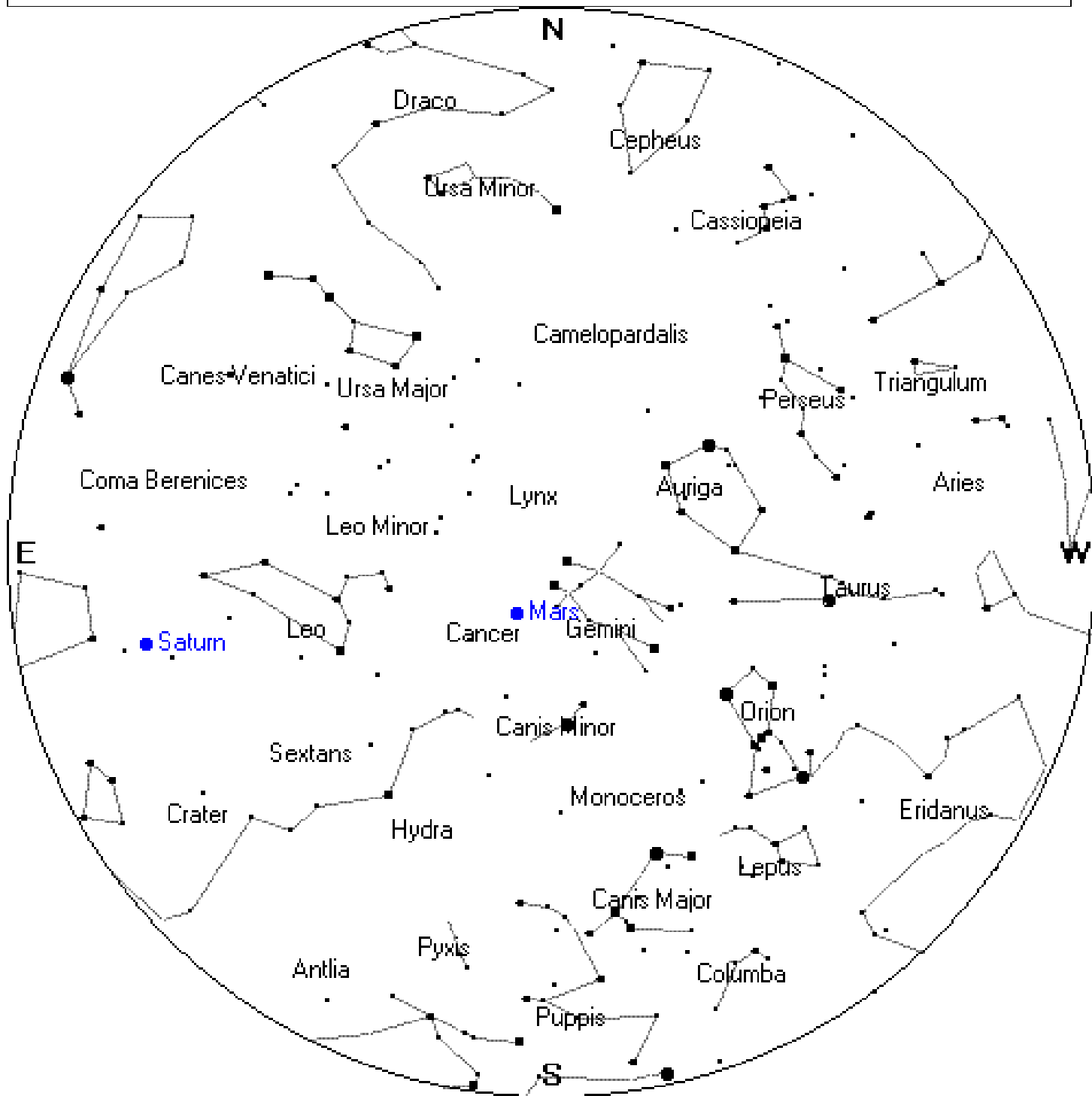
## February 2010 Star Chart



This chart is produced for the middle of the month at 9:00pm.

**Acknowledgement:** This chart was generated at the Heavens-Above astronomy site for Chandler Mountain at <http://heavens-above.com/main.asp?Session=kebgcdoioolefjmcbbfbog>. Their web page at <http://www.heavens-above.com/skychart.asp> can be used to generate sky

### March 2010 Star Chart



This chart is produced for the middle of the month at 9:00pm.

**Acknowledgement:** This chart was generated at the Heavens-Above astronomy site for Chandler Mountain at <http://heavens-above.com/main.asp?Session=kebgccdoioolefjmcbbfobg>. Their web page at <http://www.heavens-above.com/skychart.asp> can be used to generate sky



News-Scope is the quarterly newsletter of the Birmingham Astronomical Society.

Article Submission: Article(s) or photo(s) for publication in the BAS News-Scope or for the BAS website must be submitted by the 15th of each month to Webmaster Ed Knight at [ejknight@ejknight.com](mailto:ejknight@ejknight.com) or News-Scope Editor James Moore at [jasbmoore@aol.com](mailto:jasbmoore@aol.com).

We are on the web @  
[Bas-Astro.com](http://Bas-Astro.com)

## Dues Reminder

Our annual dues are due to be paid in January. Please contact BAS Treasurer Steve Pickens if you have any questions.

Dues:

Family Membership—\$25 annually

Individual Membership—\$20 annually

Student Membership—\$12.50 annually

Dues may be paid in person at the January or February meeting or may be mailed to the club treasurer at:

**Birmingham Astronomical Society**

**115 Merrimont Road**

**Hueytown, AL 35023**

The membership year runs January 1 — December 31. Annual dues are due by January 31. Members not paying by March 31 are dropped from the rolls as inactive. Dues will be prorated for members joining after the annual renewal period.

Please feel free to contact any BAS officer with questions regarding membership or dues.



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