

# SPACEWATCH

the newsletter of the Abingdon Astronomical Society

January 2010

This is a shortened Spacewatch this month since we cancelled the main meeting this month due to the snow. Still, it did give us the opportunity to observe under those icy clear skies – that is if you could stand the cold.

## THE NIGHT SKY THIS MONTH

by Bob Dryden

**Moon:** The first Full Moon of 2010 occurs on 30<sup>th</sup> January in Leo. At that time, the Moon will be 357,592 kilometres from Earth, and appear as a disc 33' 21" in size. Why am I mentioning this? Well, that will be the closest the Moon gets to us all year.

**Mercury:** In the morning sky, Mercury goes through a rather poor apparition, spending most of this session crossing Sagittarius. Greatest western elongation is on 27<sup>th</sup> January at 25°. Mercury will always remain quite low, at best barely reaching 10° above the horizon at sunrise in the 3<sup>rd</sup> week of January. However, if you have a clear south eastern horizon, then the planet should be visible quite easily in binoculars, although it will be increasingly difficult to find once we reach February.

**Venus:** 11<sup>th</sup> January sees Venus reach superior conjunction with the Sun which means the planet is not observable at the present.

**Mars:** This is the planet of the moment as it reaches opposition on 29<sup>th</sup> January in Cancer. Although it will be a very bright magnitude -1.2, the disc will only have an apparent size of 14.1". What this means of course is that you will have no trouble at all finding Mars with the naked eye, but the telescopic views might not be as good as you would hope for. Take your time viewing Mars with your telescope. Just a quick look will usually reveal very little. You need to watch and wait for moments of steady seeing, at which times the disc detail will pop into view. Let the planet gain height before trying any detailed observations. A low altitude means the light has to pass through a lot more of Earth's atmosphere, causing poor seeing. In mid January, Mars rises about 18.00 UT, and by mid February it is already 15° at sunset. Make the most of this observing opportunity as the next opposition is not until 2012. Incidentally, if you are using binoculars, just below Mars is the rather nice open cluster, M44, the Beehive.

**Jupiter:** Jupiter is moving towards solar conjunction (28<sup>th</sup> February) which means it is getting quite low in the sky now. However, at magnitude -2.0 it is not hard to see, low in the south west after sunset. On the evenings of 17<sup>th</sup> & 18<sup>th</sup> January there will be a crescent Moon nearby which might be worth an image or two.

**Saturn:** Slowly moving among the stars of Virgo, Saturn shines at magnitude +0.8 making it an easy naked eye object in the late night sky. It rises about 23.00 UT in mid-January and about 21.00 UT by mid-February. The rings are presently tilted towards us at 4.9° so are quite easy to see in a small telescope.

**Uranus + Neptune:** This is probably your last chance to have a look at Uranus this season as it will soon be deep in the evening twilight. Presently in Pisces, shining at magnitude +5.7, binoculars will show you the planet quite easily as long as you have a finder chart.

Neptune is rather fainter at magnitude +7.8, and being in Capricornus, is already much closer to the twilight zone. So if you want to have a look at Neptune, you need to be out as early as possible after sunset armed with a finder chart and at least some binoculars.

**Occultations:** There is a nice bright lunar occultation on the evening of 28<sup>th</sup> January at 18.45 UT. The magnitude +3.5 star, delta Gemini, is occulted by a bright gibbous Moon which will be about 35° high in the east at the time. We do not get occultations of stars this bright very often so if it is clear, try and make the effort to watch this one.

**Comets:** We continue to have the same two comets on view this session as we've had for the past couple of months. However, one is fading, while the second is brightening.

Comet 81P/Wild is probably the better of the two as it brightens from mag. +9.6 to mag. +9.0 in February (it will continue to brighten until the end of March). As the comet is crossing Virgo, it is a morning object.

The second comet, 2007 Q3 Siding Spring is also a morning object being in the constellation of Bootes. This one fades from mag. +8.7 to + 9.0 by February so you will need at least a small telescope to see this one.

**Asteroids:** 4 Vesta continues to be on view, gaining brightness as the session passes. Presently mag. +7.0, it reaches mag. +6.2 by February, making a very easy binocular object as it crosses Leo. A finder chart will be needed because Vesta will look like any other star in binoculars (or telescope) despite being so bright.

**Algol:** Riding high in the sky on winter nights, the variable star Algol is easy to find and an easy star to watch for a change in brightness. The star system has eclipses as one star orbits another and passes in front of it, causing the whole system to appear dimmer, before returning to its original brightness as the eclipse ends. If you would like to watch an eclipse in the star system, the minimum is reached on the following dates: Jan 16<sup>th</sup> at 4.2UT, 19th at 01.00UT, 21<sup>st</sup> at 21.8UT, Feb 5<sup>th</sup> at 5.9UT, and Feb 8<sup>th</sup> at 2.7UT.

The eclipse starts and ends about 5 hours either side of those times.

## MOON PHASES:

New: 15<sup>th</sup> Jan.; First Qtr: 23<sup>rd</sup> Jan.; Full: 30<sup>st</sup> Jan.; Last Qtr: 5<sup>th</sup> Feb.

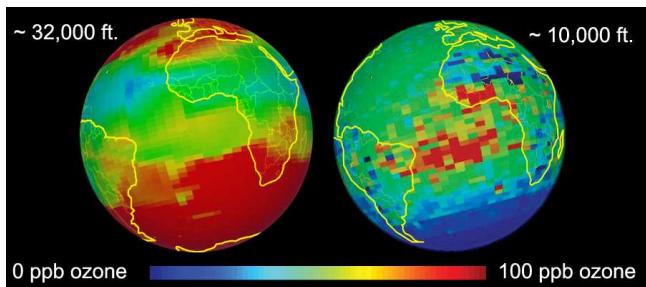


## BUILDING A CASE AGAINST OZONE

by Patrick Barry

When it comes to notorious greenhouse gases, carbon dioxide is like Al Capone—always in the headlines. Meanwhile, ozone is more like Carlo Gambino—not as famous or as powerful, but still a big player.

After tracking this lesser-known climate culprit for years, NASA's Tropospheric Emission Spectrometer (TES) has found that ozone is indeed a shifty character. Data from TES show that the amount of ozone—and thus its contribution to the greenhouse effect—varies greatly from place to place and over time.



*These images are TES ozone plots viewed with Google Earth. Colors map to tropospheric ozone concentrations. The image on the left shows ozone concentrations at an altitude of approximately 32,000 feet, while the one on the right shows ozone at approximately 10,000 feet. The measurements are monthly averages over each grid segment for December 2004.*

"Ozone tends to be localized near cities where ozone precursors, such as car exhaust and power plant exhaust, are emitted," says Kevin Bowman, a senior member of the TES technical staff at the Jet Propulsion Laboratory. But the ozone doesn't necessarily stay in one place. Winds can stretch the ozone into long plumes. "Looking out over the ocean we can see ozone being transported long distances over open water."

Unlike CO<sub>2</sub>, ozone is highly reactive. It survives in the atmosphere for only a few hours or a few days before it degrades and effectively disappears. So ozone doesn't have time to spread out evenly in the atmosphere the way that CO<sub>2</sub> does. The amount of ozone in one place depends on where ozone-creating chemicals, such as the nitrogen oxides in car exhaust, are being released and which way the wind blows.

This short lifespan also means that ozone could be easier than CO<sub>2</sub> to knock off.

"If you reduce emissions of things that generate ozone, then you can have a quicker climate effect than you would with CO<sub>2</sub>," Bowman says. "From a policy standpoint, there's been a lot of conversation lately about regulating short-lived species like ozone."

To be clear, Bowman isn't talking about the famous "ozone layer." Ozone in this high-altitude layer shields us from harmful ultraviolet light, so protecting that layer is crucial. Bowman is talking about ozone closer to the ground, so-called tropospheric ozone. This "other" ozone at lower altitudes poses health risks for people and acts as a potent greenhouse gas.

TES is helping scientists track the creation and movement of low-altitude ozone over the whole planet each day. "We can see it clearly in our data," Bowman says. Countries will need this kind of data if they decide to go after the heat-trapping gas.

Ozone has been caught red-handed, and TES is giving authorities the hard evidence they need to prosecute the case.

Learn more about TES and its atmospheric science mission at [tes.jpl.nasa.gov](http://tes.jpl.nasa.gov). The Space Place has a fun "Gummy Greenhouse Gases" activity for kids that will introduce them to the idea of atoms and molecules. Check it out at [spaceplace.nasa.gov/en/kids/tes/gumdrops](http://spaceplace.nasa.gov/en/kids/tes/gumdrops).

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

## FURTHER DISCUSSION

If you are not already on our internet mailing list, then why not log on to YahooGroups. The list is called 'abingdonas'. Members use the list to alert each other about celestial events and to chat about amateur astronomy. The list is quite active, with several messages most weeks. To read through previous messages click on:

<http://groups.yahoo.com/group/abingdonas/>.

To join the abastro list, please go to <http://www.yahoogroups.com>. You can also unsubscribe from the list here.

To post messages to the list, please send them to [abingdonas@yahoogroups.com](mailto:abingdonas@yahoogroups.com). Please note that you will need to sign up with a YahooID if you do not already have one. You can do this on the above page.

Further information about the mailing list can be found on the abingdonas webpage at :  
<http://groups.yahoo.com/group/abingdonas/>.

Further discussion on astronomy and many other topics takes place at the Spread Eagle pub in Northcourt Road after the meeting. You are most welcome to join us.

## DATES FOR YOUR DIARY

**25-27<sup>th</sup> Jan.** 8pm Lunar observing evening at Abbey Meadow, Abingdon.

**8<sup>th</sup> Feb.** 8pm Speaker meeting: Dr Fraser Clarke (Univ. Oxford), 'Extremely Large Telescopes'

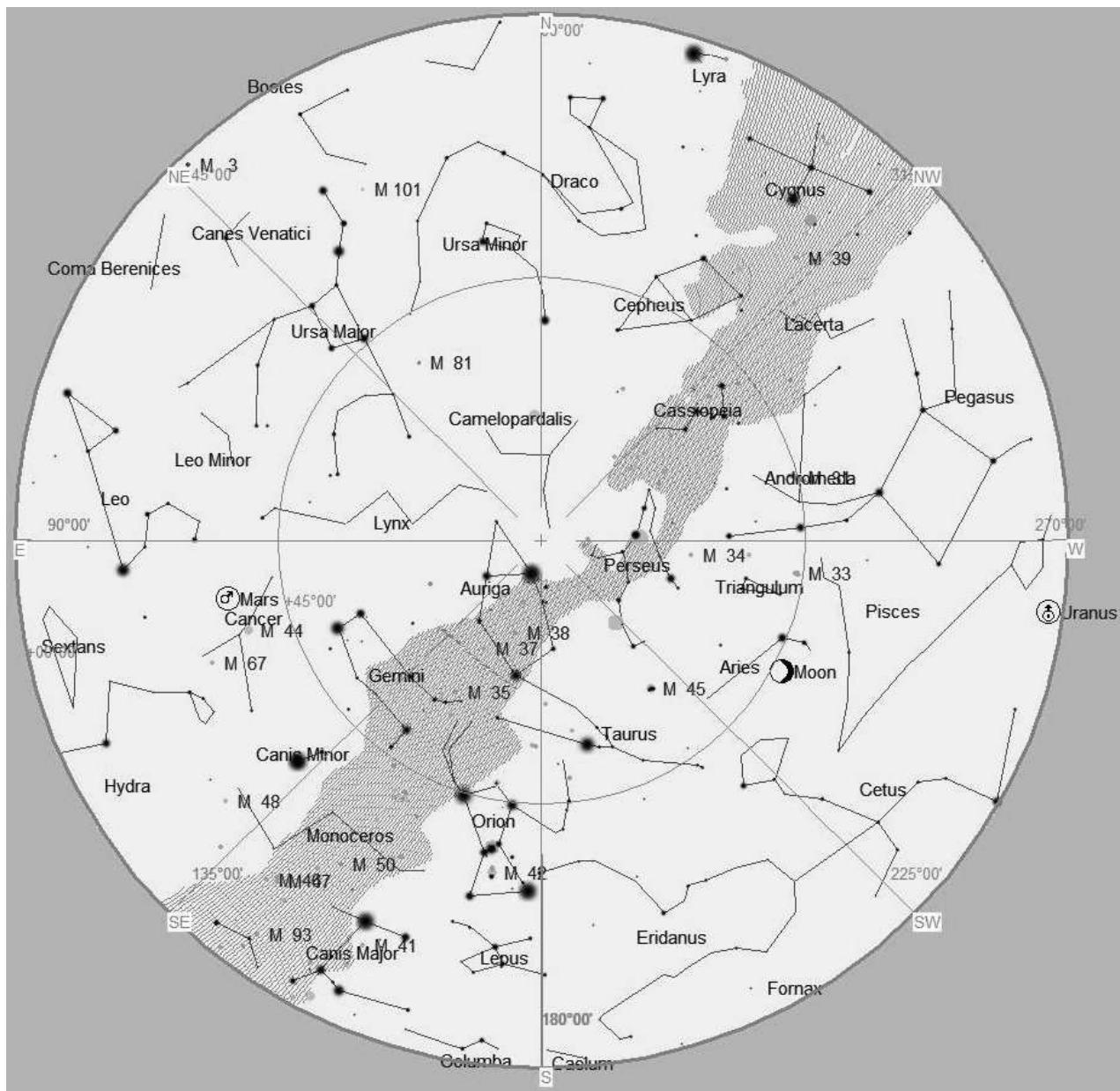
The editor of "SpaceWatch" is Andrew Ramsey, who would very much appreciate your stories & contributions. Please send any news, observations, photos, etc. to:

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## STAR CHART



**The Night Sky at 21:00pm (GMT) next Saturday (23<sup>rd</sup> January)**

Orion now dominates the southern sky (unless you live in Faringdon of course!) and you can use it as a pointer to many other constellations. Follow the belt up and to the right and you will reach Aldebaran, the red eye of Taurus, the Bull, followed by the Pleiades, or Seven Sisters. Follow it down and to the left and you will reach the brightest star in the sky, Sirius in Canis Major, the Large Dog. To the left is Procyon, in Canis Minor, the Little Dog. Above and overhead blazes the Milky Way (again, not of course, if you live in Faringdon!).

## MEMBERS' PHOTOS

Congratulations to Julian for getting this photograph of a Sun pillar on to the home page of Spaceweather.com :



And here is his photo of M31 in Andromeda:



ISO 1600, 180sec exposure, f 6.3

More at [http://s299.photobucket.com/albums/mm300/Julian\\_Mole/](http://s299.photobucket.com/albums/mm300/Julian_Mole/) .

Finally, here is one of Paul McGale's – a lovely photograph of the Horsehead Nebula:



taken using a Vixen VMC260 f11.5 with an AP 0.67x reducer using an SBIG ST10 CCD and Astronomik narrow-band RGB filters.