

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

8th January 2007

Dr Stephen Lewis
(Open University) –
'Weather, Climate and Climate Change
on Mars'

A Happy New Year to you all. I hope you all had a lovely Christmas and got all those eyepieces and webcams you had asked Santa for.

THE NIGHT SKY THIS MONTH

by Bob Dryden

Mercury: Mercury is now moving into the evening sky and greatest eastern elongation occurs on 7th February when the planet will be 18 degrees from the Sun. This will be your best chance of seeing Mercury in the evening sky for 2007 so it is well worth making the effort to find it. By the 7th February it will not set until about 90 minutes after the Sun so look towards the south-west shortly after sunset for the bright 'star' a few degrees above the horizon. This will be Mercury.

Venus: Also now on view in the evening sky is Venus. While still fairly low, the planet is getting easier to see as the weeks pass. At a very bright -3.8 mag, it will soon be very obvious after sunset in the south-west. As winter becomes spring, Venus will be very prominent in the darkening evening sky. Venus is setting about 90 minutes after the Sun now, and by the middle of February that will have increased to about 2 hours. In a telescope the view will not be great due to the low altitude of the planet but you should be able to see that the planets phase is nearly full. There should be just a bit 'missing' on one side.

Venus and Mercury will be in the same part of the sky for a short time around the end of January which might help you find the dimmer Mercury. On 20th January a nice crescent Moon will be next to Venus but Mercury will be lower and to the right on that date.

Jupiter: The king of planets is a morning object at the moment, rising about 04.00 UT by the middle of February. Low in Scorpius, you will find it shining brightly low in the south-east just before dawn.

Saturn: The only other planet easily on view through this period is Saturn, which is currently in Leo, just to the right of Regulus. To start with it is best viewed late in the night once it has risen higher above the horizon. However, it reaches opposition on 10th February which means it starts to become an evening target shortly after that. The rings are still closing, now at angle of about 13 degrees, but a small telescope will still reveal them easily.

Uranus + Neptune: In Aquarius, it is still possible to see Uranus but it is becoming increasingly difficult to find in the evening twilight. Neptune is now too close to the Sun.

Occultations: There are two occultations of brighter stars this session, one conveniently in the evening and one inconveniently in the early hours. The first is on 26th January at 21.58 UT when the 4.6 mag star, Epsilon Aries is covered by the first quarter Moon. The star will disappear behind the dark portion of the Moon so the event will be easy to see in any small telescope. It is quite interesting to watch the Moon approach a star, so if you have never watched an occultation before, this would be a good one to start with. The Moon will be high in the west at that time so easy to see. The second event is more difficult in that it happens at 03.55 UT on the morning of 4th February. Again, the Moon will be high in the west but this time the star involved will be magnitude 3.9 Rho Leonis. This time however, the star will not be disappearing, but reappearing from behind a bright, nearly Full Moon so the observation will be more difficult. So if you like challenging observing projects, this one is for you.

Asteroids: The asteroid 4 Vesta is approaching opposition and it is visible in binoculars in Libra. At a faintish magnitude 7.9, it is not at its brightest yet, but worth a look if you want to plot its position over the next couple of months – another possible observing project for the beginners amongst you.

Comets: There are no bright comets predicted this session but there is one new comet that is moving into the northern sky.

Comet P/2006HR30 (Siding Spring) is crossing Lacerta, Andromeda, and Perseus over the next month or so but at a faint 11 to 11.5 magnitude you will need a telescope to find it. By its name, you might have guessed it was discovered from Australia

some time ago, and is only now moving into our view. As it is the only (brightish!) comet on view at the moment, the enthusiasts amongst you might like to hunt it down.

There is also a new comet in the evening sky, **Comet McNaught (C/2006 P1)**. It will not get very high or be around for very long, but if there is a clear evening this week it may be worth a look. For more information and a good finder chart go to <http://skytonight.com/observing/home/5089276.html>.

LAST MONTH'S TALK

by Gwyneth Hueter

December's talk was on 'Guest Stars', by that stalwart of the BAA, Guy Hurst. It was about supernovae and novae observations from historical times to the present day.

Our most memorable one is the supernova which caused the Crab Nebula in July of 1054, but the supernova seen in Lupus in 1006 is believed to be the brightest one on record (around mag. -9 – compare that to the Crab's, which was 'only' about -4). Brightness observations were usually made with Venus as a guide.

The earliest definite observations come from China, 185AD (Centaurus) and 386AD (Sagittarius, and has left a pulsar).

Other points of interest from Guy's lecture are that the supernova of 1572, observed by Tycho Brahe on Nov 11th, triggered his lifelong interest in astronomy. It got to the brightness of Venus and showed no position change in 18 months, which enabled Brahe to contradict Aristotle, who had said that these events are local. (Ancient Greek theories about the universe still held a lot of clout in those days, in spite of the work of Copernicus in the previous century.)

Brahe's student, Johannes Kepler, observed the supernova in Ophiuchus of September 1604, which has left the radio source 3C 58.

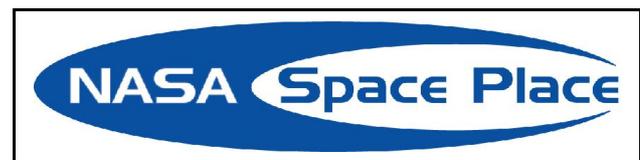
In recent centuries guest star observations have been restricted to supernovae outside our galaxy and to novae outbursts which do not destroy the parent star.

The last notable supernovae have been the one in M31 of 1885, and more recently the 1987 one in the Tarantula Nebula, Large Magellanic Cloud.

Guy finished off by promoting supernova patrolling for amateurs, using photographic equipment and a medium-sized telescope. The best Brit at this game is Mark Armstrong (73 supernovae in ten years), but you can contact Guy at guy@tahq.demon.co.uk if you are interested in joining the hunt.

MOON PHASES:

Full: 3rd Jan.; Last Qtr: 11th Jan.; New: 19th Jan.; First Qtr: 25th Nov.; Full: 2nd Feb.; Last Qtr: 10th Feb.



SPACE WEATHER FOR AIR TRAVELLERS

by Dr Tony Phillips

At a time when much of the airline industry is struggling, one type of air travel is doing remarkably well: polar flights. In 1999, United Airlines made just twelve trips over the Arctic. By 2005, the number of flights had grown to 1,402. Other airlines report similar growth.

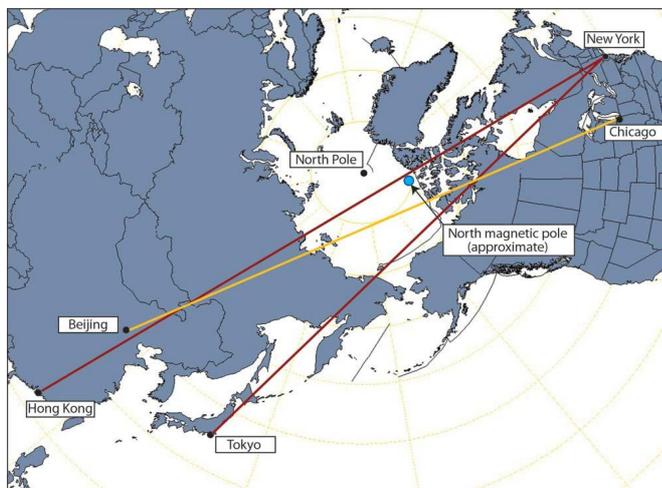
The reason for the increase is commerce. Business is booming along Asia's Pacific Rim, and business travel is booming with it. On our spherical Earth, the shortest distance from Chicago to Beijing or New York to Tokyo is over the North Pole. Suddenly, business travelers are spending a lot of time in the Arctic.

With these new routes, however, comes a new concern: space weather.

"Solar storms have a big effect on polar regions of our planet," explains Steve Hill of NOAA's Space Weather Prediction Center in Boulder, Colorado. Everyone knows about the Northern Lights, but there's more to it than that: "When airplanes fly over the poles during solar storms, they can experience radio blackouts, navigation errors and computer reboots—all caused by space radiation."

In 2005, United Airlines reported dozens of flights diverted from polar routes by nasty space weather. Delays ranged from 8 minutes to nearly 4 hours, and each unplanned detour burned expensive fuel. Money isn't the only concern: Pilots and flight attendants who fly too often over the poles could absorb more radiation than is healthy. "This is an

area of active research—figuring out how much exposure is safe for flight crews,” says Hill. “Clearly, less is better.”



The shortest airline routes from the Eastern U.S. to popular destinations in Asia go very near the magnetic North Pole, where space weather is of greatest concern.

To help airlines avoid bad space weather, NOAA has begun equipping its GOES weather satellites with improved instruments to monitor the Sun. Recent additions to the fleet, GOES 12 and 13, carry X-ray telescopes that take spectacular pictures of sunspots, solar flares, and coronal holes spewing streams of solar wind in our direction. Other GOES sensors detect solar protons swarming around our planet, raising alarms when radiation levels become dangerous.

“Our next-generation satellite will be even better,” says Hill. Slated for launch in 2014, GOES-R will be able to photograph the Sun through several different X-ray and ultra-violet filters. Each filter reveals a somewhat different layer of the Sun’s explosive atmosphere—a boon to forecasters. Also, advanced sensors will alert ground controllers to a variety of dangerous particles near Earth, including solar protons, heavy ions and galactic cosmic rays.

“GOES-R should substantially improve our space weather forecasts,” says Hill. That means friendlier skies on your future trips to Tokyo.

For the latest space weather report, visit the website of the Space Weather Prediction Center at <http://www.sec.noaa.gov/> . For more about the GOES-R series spacecraft, see http://goespoes.gsfc.nasa.gov/goes/spacecraft/r_spacecraft.html . For help in explaining geostationary orbits to kids—or anyone else—visit The Space Place at http://spaceplace.nasa.gov/en/kids/goes/goes_poes_orbits.shtml .

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

DATES FOR YOUR DIARY

15th – 17th Jan 8pm. Observing evening at Britwell Salome.

Saturday 20th Jan. 2pm. Talk at the Oxford Museum, St. Aldates by Paul McGale and Ian Smith: “The Universe from an Oxford Garden”.

22nd Jan 8pm. Beginners’ Meeting in the Perry Room.

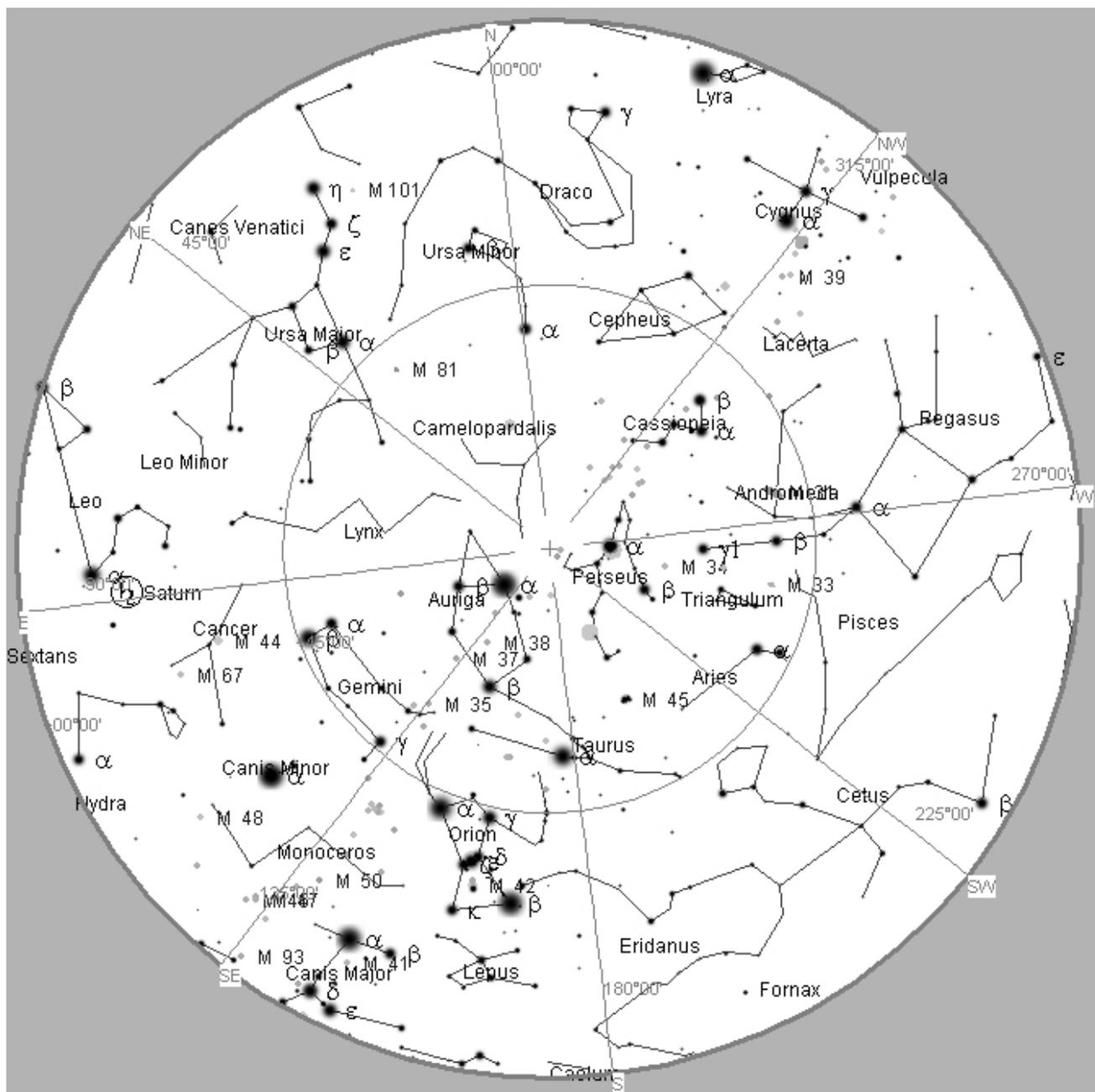
12th Feb. 8pm. Speaker Meeting: Dr Jochen Weller (University College, London): “Dark Energy”.

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

Mail: A.T.Ramsey, 35 Cope Close, OXFORD, OX2 9AJ.

E-mail: AbAstro@ATRamsey.com Phone: 01865 245339

STAR CHART



The Night Sky at 9pm next Saturday (13th Jan.)

Orion still dominates the southern sky and is a great pointer to other constellations. Follow Orion's belt left and down to the brightest star in the night sky, Sirius, only 8 light-years away from us. Follow the belt right and upwards to reach the Eye of the Bull, the red star Aldebaran, in Taurus, the bull. Surrounding Aldebaran is the open cluster the Hyades, best seen in binoculars, and continuing right and up to the Pleiades, or "Seven Sisters", which is a great sight in a telescope.