

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

14th May 2007

Annual General Meeting

Tonight is our annual general meeting – your chance to have a say in the running of the meeting. If you would like to comment on the society in any way, then please feel free to do so.

THE NIGHT SKY THIS MONTH

by Bob Dryden

The highlights of this coming session involve the evening pairing of Venus and Mercury, plus a tricky lunar occultation of Saturn.

Mercury: Mercury is nicely on view in the western sky after the sun goes down. Although greatest elongation is on 2nd June (at 23 degrees), the best period to see the planet will be around 26th May. It will then shine at a nice bright -0.2 mag which means you will see it with the naked eye quite easily. Mercury fades rapidly after the 26th, reaching magnitude +1.8 by 11th June as it heads back towards the Sun.

This is a good apparition to turn your telescope on the planet as often as you can because the visible phase changes quickly. On 14th May the phase is 0.8% (i.e.: a fat gibbous shape), reaching 0.5 (half phase) by 26th, and just 0.2 (a nice thin crescent) by 11th June.

Venus: Making up a very nice pairing with Mercury is superb Venus. Still at a dazzling bright -4.1 mag, Venus is starting its slow drop back towards the horizon. Greatest elongation from the Sun is 45 degrees on the 9th June when dichotomy is reached. This means that the phase should be 0.5, or half phase if you prefer. However, Venus always appears to reach dichotomy either early or late by a few days depending on various circumstances. So, what date do you see the Venusian phase as half?

One project you can try is to see how early each clear night you can find Venus. Actually, it is visible in daylight if you know exactly where to look, but most people cannot find it until after the Sun has set.

On the evening of 19th May there will be a lovely pairing of a crescent Moon and Venus in the twilight western sky.

Saturn: This is probably your last chance to have a look at Saturn in the evening sky for a few months as the planet is slowly sinking towards the Sun. It is still in Leo, low in the south west. The rings are gradually closing but are still easily visible at the moment.

On the evening of 22nd May the Moon occults Saturn. It disappears at 19.10UT (20.10BST) but unfortunately the Sun is still 5 degrees above the western horizon at this time. You should be able to find the Moon in a telescope though, and Saturn may be visible right next to it. The view will be very washed out though so do not expect a stunning sight.

Saturn reappears from behind the Moon at 20.17UT (21.17BST) and by this time the Sun will have set so conditions will be a bit darker and, hopefully, Saturn will be more easy to see.

Jupiter: In Ophiuchus, Jupiter reaches opposition on 5th June. This means it will rise as the Sun sets and so become an evening object. However, it will never get very high above the horizon so the telescopic views may not be too good. It will not be hard to find though as it is a bright -2.5 magnitude, about as bright as it ever gets.

Mars: Mars is still struggling to get away from the Sun in the morning sky. It remains a fairly dim +0.9 mag but its visible size is beginning to increase, albeit slowly. At just under 6 arc seconds across, the disc is still small but now regarded as a reasonable target for decent telescopes.

If you do point your telescope at it, you will notice that the planet has a distinct gibbous shape now because of the angle between the Earth, Mars and the Sun.

Comets: The only comet worth mentioning is C/2007 E2 Lovejoy which is past its best but still visible in Draco. It is actually circumpolar now as it never drops below the horizon all night. It is a reasonably bright +8.5 mag in the middle of May but rapidly fades until it is about 12th magnitude by the middle of June.

Asteroids: 4 Vesta reaches its peak this session. It reaches opposition on 30th May when it will be in southern Ophiuchus. It will be at magnitude +5.4, easily visible in any binoculars – in fact it will not be this bright again until 2018. May will be the best time to look for Vesta as the Moon reaches full phase on 1st June and will drown out the asteroid.

Occultations: Beside the occultation of Saturn on the 22nd May (see above), there is a nice occultation of Kappa Gemini on 20th May. Kappa is mag. 3.7 and disappears behind the dark limb of the Moon so the event will be easy to see. The occultation occurs at 21.06UT (22.06BST) when the Moon will be about 35 degrees high in the west.

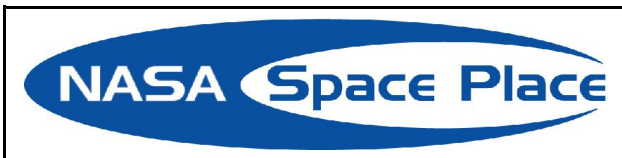
MOON PHASES:

Full: 2nd May; Last Qtr: 10th May; New: 16th May;
First Qtr: 23rd May; Full: 1st June; Last Qtr: 8th June

LAST MONTH'S TALK

by Andrew Ramsey

Last month Darren Baskill of Leicester University came to talk about Cataclysmic Variables. These are double stars containing one very dense star and one rather less dense companion. The cataclysmic outbursts which give the objects their name come from the periodic infalling of matter from the less dense partner on to the denser star, and the conversion from gravitational potential energy to electromagnetic energy, including light. Darren explained how amateur astronomers can play a big part here and can alter the sights of many large professionals' telescopes around, and indeed above, the world if they spot one of these rare outbursts.



CLOUDS FROM TOP TO BOTTOM

by Patrick L Barry

During the summer and fall of 2006, U.S. Coast Guard planes flew over the North Pacific in search of illegal, unlicensed, and unregulated fishing boats. It was a tricky operation—in part because low clouds often block the pilots' view of anything floating on the ocean surface below.

To assist in these efforts, they got a little help from the stars.

Actually, it was a satellite—CloudSat, an experimental NASA mission to study Earth's clouds in an entirely new way. While ordinary weather satellites see only the tops of clouds, CloudSat's radar penetrates clouds from top to bottom, measuring their vertical structure and extent. By tapping into CloudSat data processed at the Naval Research Laboratory (NRL) in Monterey, CA, Coast Guard pilots were better able to contend with low-lying clouds that might have otherwise hindered their search for illegal fishing activity.

In the past, Coast Guard pilots would fly out over the ocean not knowing what visibility to expect. Now they can find out quickly. Data from research satellites usually takes days to weeks to process into a usable form, but NASA makes CloudSat's data publicly available on its QuickLook website and to users such as NRL in only a matter of hours—making the data useful for practical applications.

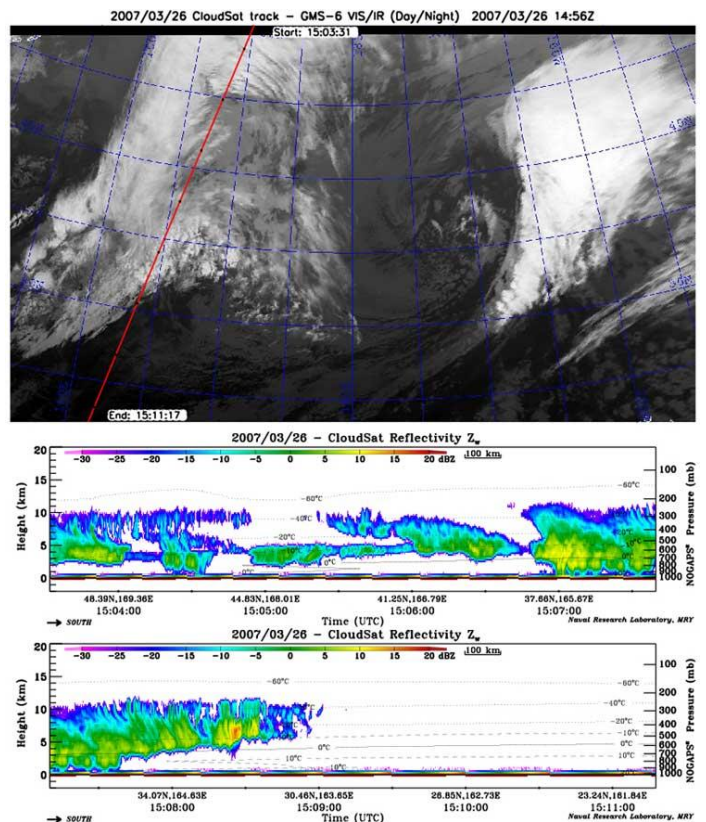
"Before CloudSat, there was no way to measure cloud base from space worldwide," says Deborah Vane, project

manager for CloudSat at NASA's Jet Propulsion Laboratory.

CloudSat's primary purpose is to better understand the critical role that clouds play in Earth's climate. But knowledge about the structure of clouds is useful not only for scientific research, but also to operational users such as Coast Guard patrol aircraft and Navy and commercial ships at sea.

"Especially when it's dark, there's limited information about storms at sea," says Vane. "With CloudSat, we can sort out towering thunderclouds from blankets of calmer clouds. And we have the ability to distinguish between light rain and rain that is falling from severe storms." CloudSat's radar is much more sensitive to cloud structure than are radar systems operating at airports, and from its vantage point in space, Cloudsat builds up a view of almost the entire planet, not just one local area. "That gives you weather information that you don't have in any other way."

There is an archive of all data collected since the start of the mission in May 2006 on the CloudSat QuickLook website at cloudsat.atmos.colostate.edu. And to introduce kids to the fun of observing the clouds, go to spaceplace.nasa.gov/en/kids/cloudsat_puz.shtml.



A CloudSat ground track appears as a red line overlaid upon a GMS-6 (a Japanese weather satellite) infrared image. CloudSat is crossing the north-central Pacific Ocean on a descending orbit (from upper-right to lower-left) near a storm front. The radar data corresponding to this ground track (beginning in the center panel and continuing into the lower panel) shows a vertical cloud profile far more complex than the two-dimensional GMS-6 imagery would suggest. Thicker clouds and larger

droplets are shown in yellow/red tones, while thinner clouds are shown in blue.

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

11th June 8pm. Talk by Dr Ignacio Ferreras (Kings College London) “Assembling the Cosmological Puzzle: Galaxy Formation”.

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

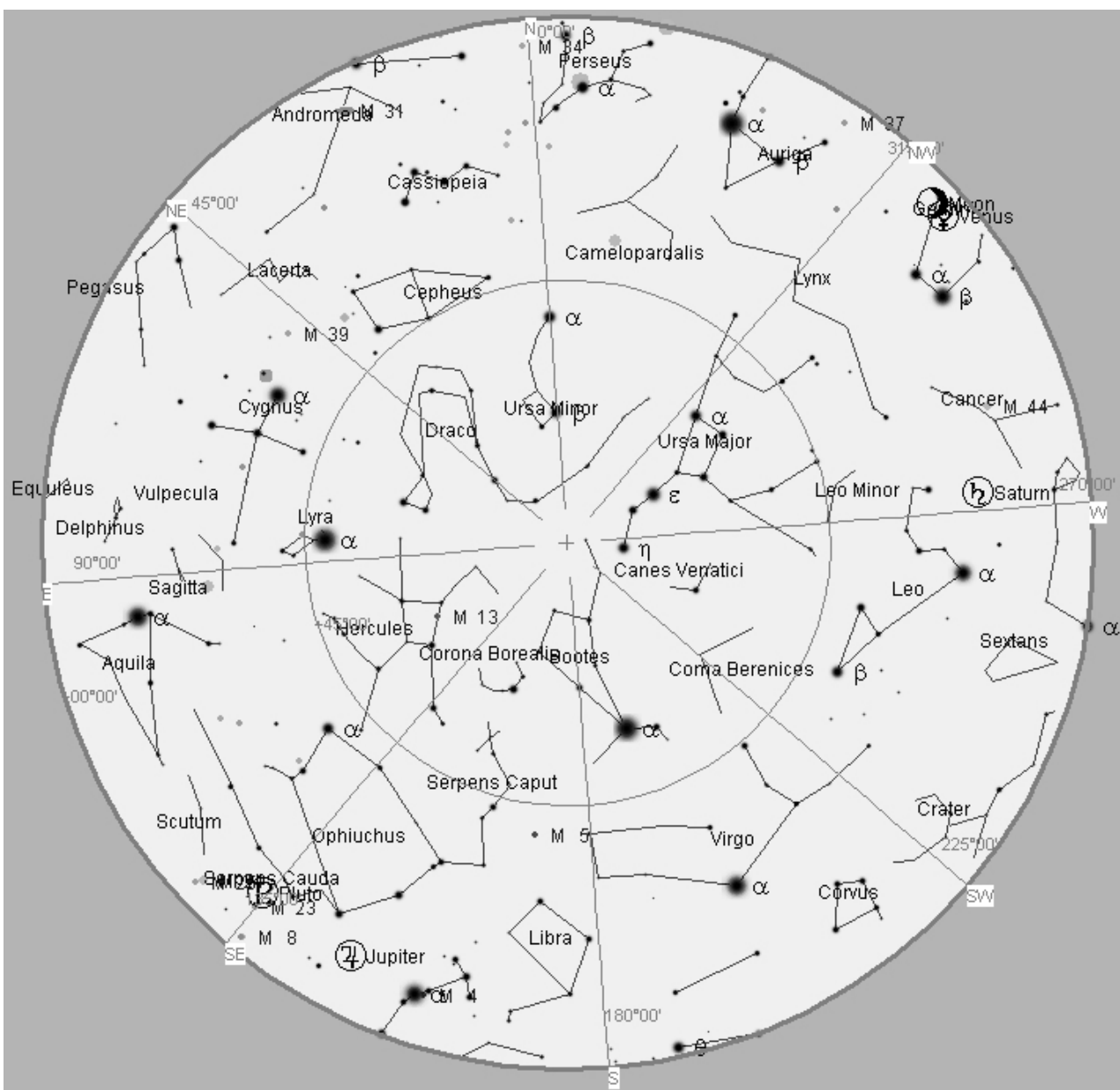
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DATES FOR YOUR DIARY

21st May 8pm. Beginners’ Meeting in the Perry Room.

STAR CHART



The Night Sky at 11pm next Saturday (19th May)

You will have to stay up late to see stars at this time of year. By 11pm Jupiter will have risen and will be bright low in the south-west. Saturn will be low in the south-east. Venus will be very close to the crescent Moon very low in the south-east, though of course both will be visible well before the sky gets really dark. The “summer triangle” of

Deneb, Vega and Altair dominates the sky, in the west during May but rises higher until it is almost overhead in mid-summer. Sweep your binoculars from Cassiopeia through Cygnus and beyond.