

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

8th September 2008

Owen Brazell
(Abingdon Astronomical Society) –
'Supernova Remnants'

Welcome to the new season of meetings. As usual this year we have a varied programme of invited speaker talks, beginners' meetings led by members, and observing evenings at dark sites.

THE NIGHT SKY THIS MONTH

by Bob Dryden

Sun: September 22nd at 15.44 UT sees the Sun in Virgo, crossing the celestial equator as it heads south. This, of course, is the equinox, and it means the nights will be longer than the days.

Mercury: Still in the evening sky, Mercury is very difficult to see as it remains only just above the horizon throughout this apparition. Inferior conjunction occurs on 6th October, after which the planet rapidly reappears in the morning sky. You may just see it low in the east in Virgo just before the Sun rises by mid October. This is the beginning of Mercury's best morning apparition of the year.

Venus: While a very bright -3.8 magnitude, you may struggle to see Venus during September as it is close to the Sun. By mid October though the planet is starting to move into the evening sky, setting about an hour after the Sun by mid October. Things will slowly improve during the rest of 2008, resulting in a grand show into 2009. Venus and Mars are just 18 arc minutes apart on 13th September, but will be too low to see.

Mars: Mars is too close to the Sun to see now.

Jupiter: Bright Jupiter (-2.3 mag) is in Sagittarius, low in the south as the Sun sets. Being in such a southerly constellation means Jupiter will quickly move towards the horizon as the evening progresses so get observing as soon as you can. The low altitude also means telescopic views will probably be average at best, and often poor.

Saturn: After conjunction with the Sun in early September, Saturn is slowly moving into the morning sky. It will probably be early/mid October though before it gets high enough for decent telescopic views. Saturn is still in Leo, but further away from Regulus now. The other thing you will notice is that the rings appear to have disappeared. The Earth is now almost level with plane of Saturn's rings which means we are looking at them edge

on. As they are only very thin, we cannot see them in amateur telescopes during this period. So take a look at a very strange looking Saturn.

Uranus + Neptune: Jupiter is not the only planet on view in the evening sky. Both Uranus and Neptune are now very well placed for observation at a sociable time of night. Neptune is the furthest west of the two, residing in Capricornus at +7.8 mag. Uranus is a brighter +5.8 mag in Aquarius. Both are visible in binoculars although you will need a chart to find them as they look just like 'stars'. A telescope improves the view in that you might be able to resolve Uranus into a disc, depending on the quality and size of your scope. It's nice to be able to say you have seen them, so make the effort to find them at this convenient time of year.

Occultations: There is yet another lunar occultation of the Pleiades cluster on the morning of 20th September. Unfortunately the action occurs between about 02.40 and 03.40 UT which means you will have to stay up late (or get up early). The Moon will be high in the south during this period which is helpful, but what is not helpful is that it will be at a bright gibbous phase. This means the lunar glare will make it hard to observe the disappearance of the stars behind the Moon, so the better option will be to watch for their reappearance from behind the dark, trailing limb.

Asteroids: If you do not mind staying up late, then three asteroids are on view after midnight.

1 Ceres is crossing Cancer and Leo and while it is only +8.8 mag, binoculars should bring it into view. Ceres will brighten for the rest of the year.

2 Pallas crosses Eridanus and Lepus. Starting at a lowly +9 mag, it brightens slowly to +8.5 by mid October and will also continue brightening for the rest of 2008.

4 Vesta is the brightest of the three, rising from +7.3 to a nice +6.7 by mid October as it crosses Cetus. Vesta will be at its brightest (+6.4) by the end of October.

All three will look like a 'star' in both binoculars and a telescope.

Comets: **Comet 19P/Borelly** remains on view in the morning sky as it crosses Cancer and Leo. It is fading now, going from +10.6 to +11.3 this session so a good telescope and a detailed finder chart will be needed if you are to see this one.

Comet 85P/Boethin is in the evening sky and is brightening, going from a faint +11 mag to a nicer +9.8 mag by October. Unfortunately, the comet is in Sagittarius so its low altitude will make it a difficult target.

MOON PHASES:

1st Qtr: 7th Sept.; Full: 15th Sept.; Last Qtr: 22nd Sept.;
New: 29th Sept.; 1st Qtr: 7th Oct.

NASA Space Place

A GOOGLE FOR SATELLITES – SENSOR WEB 2.0

If you could see every satellite passing overhead each day, it would look like a chaotic meteor shower in slow motion.

Hundreds of satellites now swarm over the Earth in a spherical shell of high technology. Many of these satellites gaze at the planet's surface, gathering torrents of scientific data using a dizzying array of advanced sensors — an extraordinary record of our dynamic planet.

To help people tap into this resource, NASA researchers such as Daniel Mandl are developing a “Google for satellites,” a web portal that would make requesting data

from Earth-observing satellites almost as easy as typing a search into Google.

“You just click on it and it takes care of all the details for you across many sensors,” Mandl explains.

Currently, most satellites are each controlled separately from the others, each one dauntingly complex to use. But starting with NASA's Earth Observing-1 (EO-1) satellite, part of the agency's New Millennium Program, Mandl and his team are building a prototype that stitches these satellites together into a seamless, easy-to-use network called “Sensor Web 2.0.”

The vision is to simply enter a location anywhere on Earth into the website's search field along with the desired information types — wildfire maps, vegetation types, floodwater salinity, oil spill extent — and software written by the team goes to work.

“Not only will it find the best sensor, but with proper access rights, you could actually trigger a satellite to take an image in the area of interest,” Mandl says. Within hours, the software will send messages to satellites instructing them to gather the needed data, and then download and crunch that raw data to produce easy-to-read maps.

For example, during the recent crisis in Myanmar (Burma) caused by Cyclone Nargis, an experimental gathering of

data was triggered through Sensor Web 2.0 using a variety of NASA satellites including EO-1. “One thing we might wish to map is the salinity of flood waters in order to help rescue workers plan their relief efforts,” Mandl says. If the floodwater in an area was salty, aid workers would need to bring in bottled water, but if flood water was fresh, water purifiers would suffice. An early and correct decision could save lives.

Thus far, Mandl and his team have expanded Sensor Web 2.0 beyond EO-1 to include three other satellites and an unmanned aircraft. He hopes to double the number of satellites in the network every 18 months, eventually weaving the jumble of satellites circling overhead into a web of sensors with unprecedented power to observe and understand our ever-changing planet.

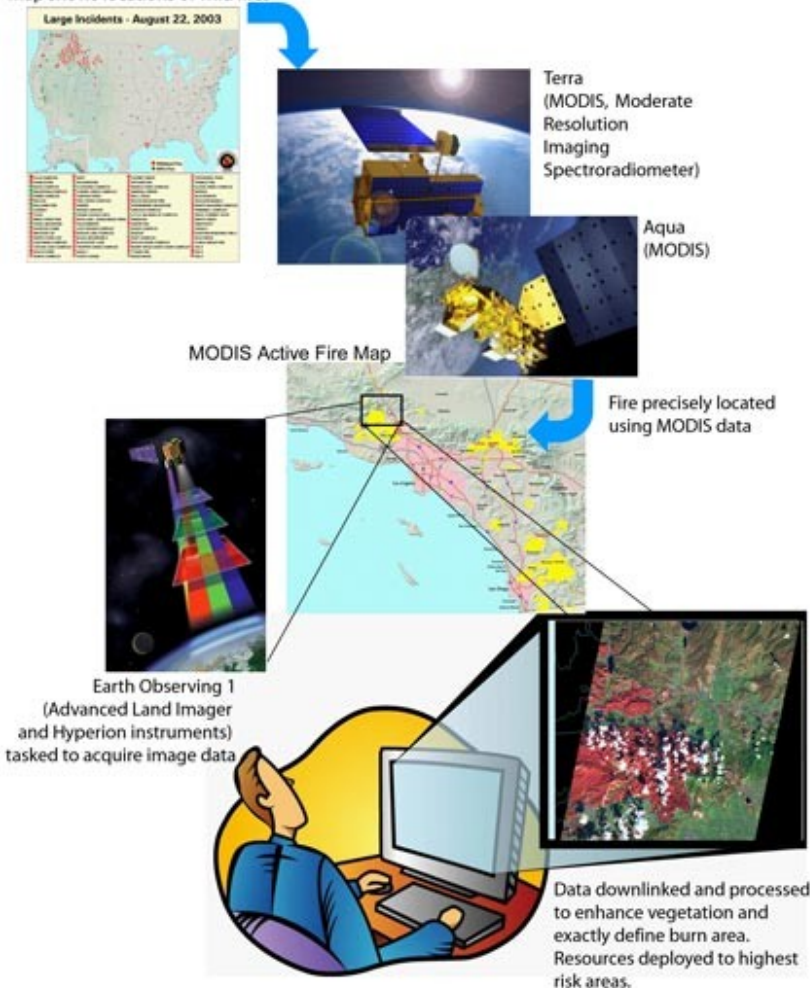
To learn more about the EO-1 sensor web initiatives, go to:

<http://eo1.gsfc.nasa.gov/new/extended/sensorWeb/sensorWeb.html>. Kids (and grown-ups) can get an idea of the resolution of EO-1's Hyperion Imager and how it can distinguish among species of trees—from space at:

http://spaceplace.nasa.gov/en/kids/eo1_1.shtml

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

Map shows locations of wild fires



Above: A "Google for satellites" type of web portal will allow users to request real-time data from Earth observing satellites.

LAST MEETING'S TALK

The last talk of last season was on an almost unbelievable subject by Samuel George of Birmingham University. Many astronomers are trying to infer the presence of planets around other stars from the variation in the star's proper motion that the planet's gravity causes; some more ambitious astronomers are actually trying to image these extra-solar planets, but Samuel George and his team are trying to listen to the radio emissions of aurorae on these planets! Aurorae are caused by charged particles from the star smashing into the magnetic field of a planet. The well-known northern and southern lights are but one consequence of this – radio emissions are another. The radio signals can travel vast distances to our solar system where Samuel and his team are trying to listen to them with the Giant Metrewave Radio Telescope (GMRT) in Maharashtra State, India.

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.yahogroups.com>. You can also unsubscribe from the list here. To post messages to the list, please send them to

abingdonas@yahogroups.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

15th Sept. 8pm. Beginners' Meeting in the Perry Room.

29th Sept. – 1st Oct. (First clear night) - 8pm. Observing evening at Abbey Meadow.

13th Oct. 8pm Speaker meeting: Mike Frost (Coventry and Warwickshire AS), 'Isaac Newton and the Surrey Pumas'.

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

BIG BANG DAY – RADIO 4



cosmology and particle physics. If you can listen to the radio that day, then do so, if not, then you can listen again at the Radio 4 website www.bbc.co.uk/radio4.

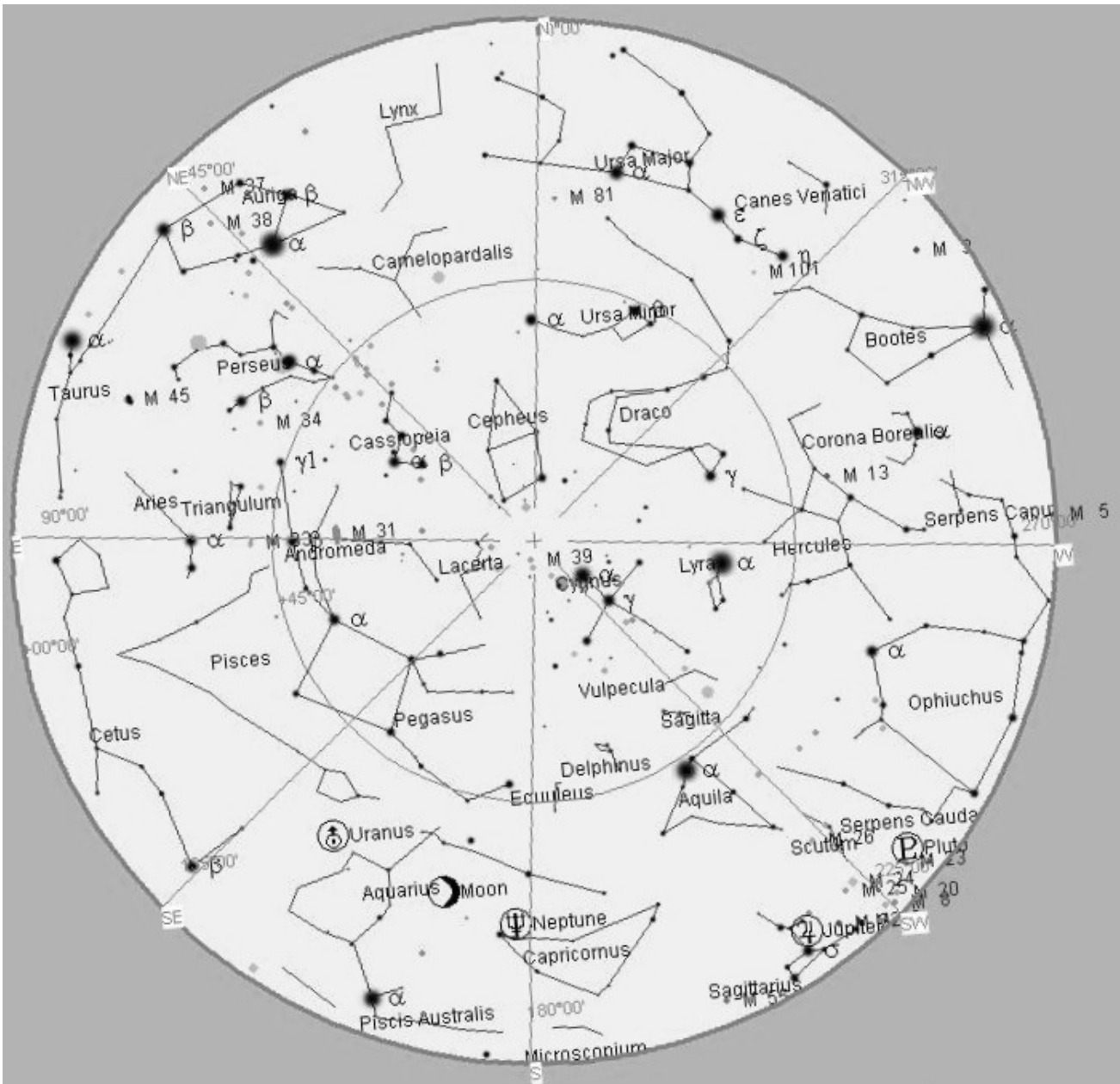
On Wednesday 10th September, the Large Hadron Collider (LHC) at CERN, the Centre Européenne pour la Recherche Nucleaire just outside Geneva, will be switched on for the first time. The LHC will eventually perform experiments simulating the temperatures in the universe shortly after the Big Bang. To celebrate this, Radio 4 is broadcasting a series of programmes throughout the day covering the subject of physics,



Inside the 27km diameter tunnel of the Large Hadron Collider at CERN, Geneva.

Reports that the experiments at CERN may create mini black holes which will grow by sucking in all the matter around them until the whole Earth has been engulfed, or that a new universe may be born out of the plasma fireball which will grow indefinitely until it has swallowed ours, are said by experts in the field to be "unfounded". If you want to explore these ideas further, listen to the Radio 4 afternoon play on Wednesday 10th September – or maybe by then it will be just too late...?

STAR CHART



The Night Sky at 10pm (BST) next Saturday (13th September)

The “Summer Triangle” of Vega, Deneb and Altair is sinking into the south-west now, though still high. The great galaxy in Andromeda is high in the east. See if you can spot it with the naked eye! That’s the furthest object you will ever see. Sweep the area of Perseus and Cassiopeia looking for galaxies and nebulae. There are lots to keep you occupied there. The globular cluster, M13, in Hercules is not too low down in the west. And finally, try searching for Uranus and Neptune in the south and south-east, either side of the crescent Moon.