WAS NEWS

Monthly Newsletter of the **W**orthing **A**stronomical **S**ociety
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Number 204 **January 2007**

ALMANAC

All times U.T.

January/February

LUNAR

January	Date	Time	Rise	Set
Full Moon	3rd	13.57	15.26	08.42
Last Quarter	11th	12.45	00.12	10.53
New moon	19th	04.01	08.41	16.37
First Quarter	25th	23.01	10.09	00.00
February				
Full Moon	2nd	05.45	17.04	08.07
Last Quarter	10th	09.51	01.35	09.39
New moon	17th	16.14	07.23	17.07
First Quarter	24th	07.56	09.21	02.11

EARTH

January	Sunrise	Sunset
3rd	08.06	16.04
11th	08.03	16.14
19th	07.56	16.26
25th	07.49	16.37
February		
2nd	07.38	16.51
10th	07.24	17.06
17th	07.11	17.18
24th	06.57	17.31

PLANETS

(As at January 25th)

	Constellation	Rises	Sets	Mag.
Mercury	Capricornus	08.31	17.41	-1.0
Difficult evening object in the south west				
Venus	Aquarius	08.50	18.35	-3.9
Evening object in the south west				
Mars	Sagittarius	06.19	14.05	+1.4
Unfavourable				
Jupiter	Ophiuchus	04.24	12.38	-1.8
Morning object in the south east				
Saturn	Leo	18.05	08.48	+0.1
Visible most of the night				
Uranus	Aquarius	09.15	20.06	+5.9
Unfavourable				
Neptune	Capricornus	08.25	17.54	+8.0
Unfavourable				
Pluto	Sagittarius	04.58	14.13	+14.0
Unfavourable				

PHENOMENA

Day	Hour	January
15th	15	Jupiter 6° N. of moon
17th	02	Mars 5° N. of moon
19th	19	Mercury 1° N. of moon
20th	17	Venus 0.7° N. of moon

		February
3rd	00	Saturn 0.8° S. of moon
7th	18	Mercury at greatest elongation E. 18°
8th	16	Neptune in conjunction
10th	19	Saturn at opposition
12th	09	Jupiter 6° N. of moon
14th	05	Mercury at stationary point
15th	02	Mars 3° N. of moon
18th	09	Mercury 4° N. of moon
19th	16	Venus 2° S. of moon

Minima of Algol

January 11th 02.06 13th 22.54 16th 19.42 19th 16.30 31st 03.48
February 3rd 00.42 5th 21.30 20th 05.36 23rd 02.24 25th 23.12

Lunar Occultation's

Times as at Old W.A.S. Observatory

Date	U.T.	S.A.O. No	Mag	Phase
January	**h. m. s.**			
22nd	16.53.46	146639	5.7	Diss
22nd	17.53.58	146659	6.7	Diss
24th	17.23.08	109623	6.7	Diss
24th	18.56.27	109652	8.5	Diss
24th	20.42.02	109696	6.9	Diss
24th	20.56.40	109700	7.3	Diss
24th	22.19.09	92304	6.6	Diss
25th	19.42.00	92731	8.1	Diss
25th	20.01.16	92742	8.2	Diss
26th	21.58.10	75673	4.7	Diss
26th	23.48.53	75705	8.0	Diss
27th	17.36.27	76236	6.6	Diss
27th	18.10.13	76259	7.5	Diss
27th	20.41.28	76319	8.4	Diss
27th	21.53.07	76345	8.4	Diss
28th	23.01.52	76880	6.6	Diss
29th	22.15.00	77818	7.0	Diss
February				
8th	06.26.24	157923	1.0	Diss
19th	18.21.05	146973	6.0	Diss
20th	18.44.56	1094.70	6.1	Diss
20th	19.06.42	109474	4.4	Diss
21st	19.57.35	92606	8.6	Diss

The list above is a selection of the more easily observed evening events, about18% of the list available, there are lots more in the wee small hours for the insomniacs amongst us

Dave Wells

Editors Note

Well- wasn't that nice….I hope that everyone fee rested and ready for the year ahead.

Who knows what 2007 will bring? Eleven excitemer soaked issues of WASNews for sure and the same ol clarion call again this year I'm afraid, '*Your article please / thank you*'– beyond that, who can tell.

Regardless – A Happy New Year to you all

Rob

Dates for Your Diary

Total Lunar Eclipse

Graham Boots

On Saturday evening the 4th March 2007 beginning at 9 30 PM there is a total lunar eclipse. All members are invited to attend the Observatory at Windlesham House School to share the experience of this event if clear.

The eclipse goes into the next day so members can leave when they wish. Please wrap up warm, bring a hot drink and torch.

Further details from Graham Boots Tel., 01903 505346.

Reports

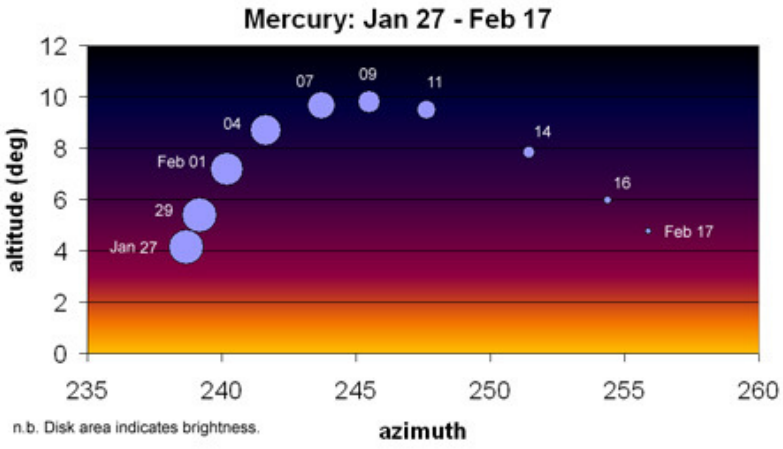
The Planets in January 2007

Glen Thomas - Planetary Section Director

Mercury starts a nice evening apparition during the last week of January, rising to over 9° altitude in the south-west in early February.

The table shows the location of the planet at the start of civil twilight, when the Sun reaches 8° below the horizon and the sky is dark enough for brighter objects to become visible.

To estimate the altitude when observing, a rough guide is that a hand held at arm's length is about 10° across and a thumb about 5° long.



Venus is past inferior conjunction with the Sun and will begin to be visible again during January. It is several times brighter then Mercury. It is much easier to spot in the darkening twilight sky and so could be used as a guide for finding Mercury. Venus will continue to climb in the evening sky throughout the first half of 2007.

		Mercury			Venus (mag. -4)	
Date	**Time**	**Alt**	**Az**	**Mag**	**Alt**	**Az**
Jan 27	17.20	4.1	239	-1	10.7	233
29	17.23	5.4	239	-1	11.3	234
Feb 1	17.28	7.2	240	-0.9	12.1	236
4	17.33	8.7	242	-0.8	13.0	237
7	17.38	9.7	244	-0.5	13.8	238
9	17.41	9.8	246	-0.2	14.4	239
11	17.45	9.5	248	0.1	14.9	240
14	17.50	7.8	251	1	15.7	242
16	17.53	6.0	254	1.8	16.3	243
17	17.55	4.8	256	2.2	16.6	244

Mars is too low (5° altitude) to view easily before dawn.

Jupiter rises an hour earlier, at around 5.00 in the middle of the month, but it only reaches an altitude of around 14° as the morning sky brightens.

Saturn is highest around 2.00, rising around 19.00. The rings are narrowing but the planet is well placed for observation throughout the night.

Uranus is nearly 10 magnitudes (10 000 times) fainter and very hard to spot in the twilight sky.

Neptune trails Venus by only 5° and is too faint to see. Asteroid **7 Iris** is a binocular object at magnitude +9, moving from Aries towards Taurus, closing to within 5° of the Pleiades by mid-February.

Dwarf planet **134340 Pluto** is not easily visible until later in the year, despite technically being a morning object.

M42 – The Great Orion Nebula

Ed Sampson

M42 The Grat Orion Nebula star forming region 20 x 2 Min Subs Orion Starshot CCD 20 December 06 23.30 UT Colour, Ha and O3 Composite

The above image was taken with a 80mm f6 refractor mounted piggyback on a Meade 20cm. that is used for automatic guidance

Solar Section Report - December, 2006

Brian Halls Section director

The beginning of the month saw a spottier Sun that of late; indeed the northern solar hemisphere which had been very quiet over the last few months also showed a slight increase in sunspot activity.

The large monopolar sunspot visible at the beginning of November drifted into view at the end of the first week of December. It had reduced slightly in size but was recorded as a naked-eye object by Graham on three separate occasions and Brian on two. This group, now catalogued as AR 930, was quite a magnetically active and, on the 5th produced a powerful force 9 x-ray flare.

AR 930's presence caused a lot of disturbance in the solar environment. It was also the only sunspot visible for the ten day rotation.

After it drifted off of the solar disk, the Sun was spotless until the holiday period had begun – two short lived sunspots appeared, and then cleared.

Large active area AR 930, and now catalogued as AR933 reappeared once more on the 30th.

The almost continual grey leaden skies reduced the number of opportunities for solar observing, however, the Sun was observed by WAS members on a total of 15 days. Reports were received from Graham Boots (13 days), Brian States (8).

WAS R= 16.2 (MDF = 1.14)

R_i = 13.6 (provisional)

December Lecture Reviewed - Report by Graham Boots

Aurorae & Glows in the Atmosphere (Colouring the Sky – Nature's Cathode Tube)

Professor Alan Aylward

Alan is head of the Atmospheric Physics Laboratory at University College London and drove to Worthing from his home in Sutton, Surrey to deliver his lecture.

He began by explaining that many of us would have seen an aurora display but not recognise it as such. Often minor aurora displays can be seen very low on the northern horizon as a dull and faint red glow. Aurorae have been reported since at least the earliest of biblical times. The Huron who are a first nation people of North America liken the aurora displays to a shoal of fish and the Inuit of Greenland, a nasty woman. In Roman times roman soldiers mistook what must have been a very active aurora display and were fooled into thinking a city had been attacked to the north of them. Believing this city was in flames they were sent to the rescue. Chinese records of 1652 revealed an aurora. Captain James Cook while in the southern seas close to New Zealand recorded an aurora display to the south and it was later found that on the same day the people of South Korea recorded one to the north.

The Vikings of Scandinavia were not familiar with the 'northern lights' despite their voyages at high northern latitudes across the North Atlantic to Iceland, Greenland and North America. It is believe that at the time of the Viking era the north magnetic pole was centred on the far side of the North Pole thus displays were not local to them. Celsius of temperature scale fame believed that there were many active volcanoes in a land to the north causing the displays.

Many of the displays are like a floppy curtain waving in the wind and show many different colours. For example, the green light comes from atomic oxygen and red from oxygen also but at a different level of excitement. Alan showed images taken from the space shuttle in Earth orbit where the aurora appears as a continuous illuminated oval with the Earth's magnetic pole at its centre. This point differs greatly from the Earth's geographic poles. Currently the north magnetic pole is in the Lancaster Sound just south of Devon Island in Northern Canada and year-by -year heads eastwards.

Notices

Astronomical Publications

The society annually subscribes to the following four organizations and receives their publications which are circulated free to members. Please let me know if you would like to go on any of the circulations lists letting me know which journals you would like. My telephone number is 01903 505346.They are ***Astronomy Now, Sky & Telescope, Society of Popular Astronomy*** including news letters and journal of the British Astronomical Association.

Announcement

Graham Boots

Would you like to receive your copy of WAS News by email?

If you have an Internet facility and elect to receive your copy this way it will be in colour and you will save the society funds on postage.

The copies members collect at monthly meetings or have posted to you if you are not present are only normally in black and white.

If you require your WAS News by email inform the editor Rob Davis on
wasnews@tiscali.co.uk or wasnews@was.org.uk

Observatory

Graham Boots

Is any member willing to organise regular observing sessions at our Observatory albeit just once a month? Some members really miss the observer's nights when the Observatory was sited in my back garden.

Articles

What to really expect with your new Scope

Ed Sampson

It's a new year and in astronomy terms some of us will have had a new telescope or a larger telescope. One of the biggest problems we encounter is where to start and what to see. This little guide should help those new to the hobby or give others a renewed start in observing the heavens.

1 The moon
Our only natural satellite should always be the first place to start; the moon will always show off your scope regardless of aperture. Scopes from 60mm and up will show a wealth of detail on the moon, it even stands up well to high power but bear in mind that your scope will have a limit on magnification.

What to expect
A large amount of geological features that can be viewed at low or high power.
Features include – Craters, mountains, Mare (seas), rills and valleys.

How to record your observation
The moon is the easiest object to record, you can –
Use a Dictaphone and describe the lunar features you can see, Sketch the feature you are observing, Use a compact digital camera at the eyepiece and snap it, Use DSLR attached to the telescope Or Use a webcam.

Other equipment that can help
A neutral density or moon filter will help people with apertures over 150mm (6") and on any size during a full moon.

2 Planets
Planets are also relatively easy to find. They are one of the few objects in space that NEED high magnification.

What to expect
Planets can show a wealth of detail you will expect to see Phases, clouds, storms, other moons and transits. Planets are also one of the few objects in space that will show colour. 60mm will show detail on Jupiter and Saturn but 100mm (4 inch) should be considered for all round study of every planet. Bear in mind planets are seasonal.

How to record your observation
Dictaphones, Sketching, Compact Digital cameras at the eyepiece and webcams. Try to capture as many features as you can see. And always record the time (in UT) Or join a planetary organization to send your observations.

Other equipment that can help
Colour filters for planets. These really do work they wont enhance all the planet at the same time but they will bring out different features that can't be easily seen.

3 Stars
Stars are great, these distant suns won't show any detail but there are many different types and ways to observe them.

What to expect
Stars like planets are one of the few objects that show colour, they also have optical companions, Physical companions, Invisible companions or irregular behavior. Most apertures can be used but 80mm (3.1inch) is a good start.

How to record your observation
You can join an organization dedicated to Nova, Binaries and variable stars. You can sketch or use a Dictaphone (for magnitude estimates), use a DSLR, or CCD.

Other equipment that can help
You can purchase a reticule eyepiece for binary stars or if you are into the exotic - a spectrograph. But in this case a SLR or sketch pad and contribute enormously.

4 Deep Sky objects
These are all challenging objects for the beginner. A 60mm (2.5in) scope will reveal a few but 100mm should be the bare minimum to consider finding most. The best all rounder would be a 150 mm reflector to start going deep. DSOs can be broken down into these main groups-

A) Open star clusters

What to expect
Probably the easiest Deep sky objects to observe 80-100mm will have no trouble showing the majority of the magnificent groups of stars. Expect to see mists, colored jewels and a sea of stars. Low power will be the best power to observe many of these.

How to record your observation
SLR, CCD or best of all a Sketch pad
Other equipment that can help
A star atlas, nothing essential.

B) Globular star Clusters

What to expect
These balls of stars much resemble bees around a hive. They stand up well to power but appear nothing more than oval mists in 60-70mm 80-100 is a good aperture to resolve the edges and 200-250 mm (8 to10 inches) to the cores. Expect to see hundreds if not thousands of stars in a compact space.

How to record your observation
SLR, CCD or if you dare a Sketch pad
Other equipment that can help
Nothing essential, a good star atlas.

C) Nebulas

What to expect
This is a tricky area of astronomy. The subject of observing nebulas has been shadowed by those beautiful pictures we see everywhere. In recent times I have met more beginners who expect to see red, green and rose pink first time out than ever before!! You will be sorely disappointed if you hope to see anything like that. They show up best on low to medium powers. There are some very impressive nebulas visible in the night sky and they quickly turn into the observer's showpiece objects. Expect to see misty grey clouds crossed by dark lanes and star clusters.

How to record your observation
SLR, CCD or a simple Sketch pad and soft pencil.

Other equipment that can help
A Deep sky or Narrowband (UHC) filter will make the objects stand out and even reveal the invisible, a star atlas.

D) Galaxies

What to expect
Again all those spectacular shots in the media have blighted the beginner in what to expect. Firstly there is no colour that is down to cameras, Secondly only the cores of those galaxies will be visible in most of the objects with a very FEW exceptions. You will need at least 100mm though I would recommend 150-200mm to start seeing them as these targets are very faint in general.

How to record your observation
SLR, CCD or a simple Sketch pad and soft pencil
Other equipment that can help
A very dark site and a dark adapted eye. A star atlas.

E) Planetary nebulas

What to expect
These objects are the remains of dying stars. They vary in size and brightness. Again these objects will show no colour and require high power to observe many. Look for tiny disks or ovals of misty grey.

How to record your observation
SLR, CCD or a simple Sketch pad and soft pencil

Other equipment that can help
A narrow band (UHC) or Line filter (Oxygen 3 in particular) will easily reveal these objects. A good star atlas.

Finally
The Sun
A wealth of detail is available on our nearest star.
DO NOT commence any sort of observation until you have spoken to *Brian Halls* - WAS solar section director. He will advise you on how best to commence any solar observing programme and all the safety aspects required.

This information is just a guide to help aid the beginner in their first steps into astronomy. Other people have different views so please treat this article as a guide only. All you need is a good star atlas or the monthly maps provided in the monthly magazines (Astronomy Now – S@N)

If you would like any information on sketching, digital camera, Webcam or CCD capturing please speak to myself (Ed Sampson) or E-mail me at star.man1@ntlworld.com.I have articles to aid on these subjects and would be happy to provide copies.

You can borrow a good star atlas from the WAS library, Please speak to Dave or Linda Storey.

Any information on filters please speak to Graham Boots or read his great article in Dec06 WAS newsletter.

Properties of Solar Mass Ejection

Michael A Marshall

Professor Alan Aylward gave an elucidating but necessarily generalised talk on aurorae at the meeting of the thirteenth of December, so what may remain intriguing to some of us is the detailed nature of the plasma and magnetism of the mass that is ejected from the sun, and exactly how they interact with the Earth and its enveloping magnetic field. Without the aforementioned talk, this detail would seem irrelevant to astronomy. An account of this detail is offered as follows, beginning with a recapitulation of the meanings of plasma, a material, and magnetism, a force.

If, say, hydrogen molecules receive sufficient thermal energy, the molecules vibrate to such an extent as to impact on their neighbours hard enough to shatter the bond between the atom pairs that form the molecules, thus releasing negatively charged electrons from the positively charged protons: heat overcomes the electrical attraction or electrostatic bond between electrons and protons. In this state of affairs there exists an electrically conductive gas of free electronic and protonic (ionic) charges, a plasma. The glow from a neon, mercury or sodium lamp is from a low-level plasma; indeed plasma radiates electromagnetic energy at discrete frequencies whether they be in the radio, infra-red, optical, ultraviolet, or X-ray band. However, such plasmas as a static whole are no more magnetic than a crucible of settled molten iron.

An electrical charge, such as that carried by an electron, is invariably associated with a magnetic field, but the fields of many electrons jostling about cancel one another out as to not generate magnetic energy from nowhere. If however they are energised to move steadily in a straight line relative to a given environment, they carry along a spiralling magnetic field: a continuous flow of electrons, as in a wire carrying an electrical current, is virtually shrouded in a magnetic cloak or field, and this property of course is taken advantage of in the construction of electromagnets. In a plasma, because electrons are much lighter than protons, electrons are scattered more randomly. Thus in the turmoil of the sun's surface due to differential rotations and thermal venting, as are readily visible on the surface of Jupiter, the mass of the plasma swirls, the protons and other nuclei more orderly follow the swirling motions. The magnetic fields due to protons thus add up much better than those of electrons as to create net magnetic fields: swirling plasma carries magnetic force.

A mass ejection from the sun thus constitutes a greater or smaller mass of ionised gas which is swirling to a greater or smaller extent as to carry a corresponding shape and extent of magnetic field: an imprint of the sun's magnetic field at the sunspot site of mass ejection is liberated as swirling motion embodying the so-called dynamo effect. (Apparently the workings of the dynamo effect in the sun and planets with magnetic fields is a controversial issue, but is there really a dynamo effect to complicate the issue rather than a simple electromagnet effect?)

Such are the various states of affairs possible in a plasma, that the plasma interacts with the Earth and its enveloping magnetic field in various ways. A highly magnetised plasma in rapid motion will not only wipe away the intervening Earth's magnetic field hut also generate electrical currents in the Earth's surface: a moving magnetic field and a relatively stationary conductor of the Earth's damp surface and anything metallic upon it constitute a real dynamo effect as to induce very heavy electrical currents and consequent burn-outs.

A plasma with little swirl or mass does not wipe away the Earth's intervening magnetic field. Instead, the electrons of the plasma spiral in one direction along the imaginary field lines and the protons spiral in the other direction along the field lines. (A line is directional and not physical.) As Michael Faraday demonstrated, just as a magnet with its magnetic field can rotate about an electric current, an electric current with its flow of electrons can rotate about the field of a magnet when appropriate arrangements are made: it was a question of relativeness to what.

The spiralling charges of electrons and protons radiate electromagnetic energy by virtue of their centripetal accelerations, and as they possess their individual speeds, the frequencies of radiation are varied and many, including those that are visible. Radiation drains the electrons and protons of energy of motion, and so the discrete frequencies gradually fall.

It is no wonder that, when picked up by radio amateurs, some of the frequencies are like those carrying closely adjacent radio stations as to beat and so cause whistles, but as the frequencies of spiralling charges are gradually falling the whistles become squeals.

Another interaction of course is where plasma particles strike the atoms in the upper atmosphere as to ionise them and so cause glows as explained in Wednesday's talk.

Mentioning swirling plasmas and their charges of which the negative charges are less orderly, it may be understood that the rotating plasma disc around a black hole causes a polar magnetic field, but one that is not running through the black hole out of which nothing actually comes. As an inverse effect of solar mass ejection striking the Earth's magnetic field, a mass ejection of some disc plasma jets out at the magnetic polar regions of a black hole.

If any reader finds fault in the foregoing account, I and perhaps we would like to know about it so that a correction can be made. A duty of Astronomy surely is the presentation of answers, whether by professionals or amateurs.

Stitching images

Ed Sampson

Disclaimer

This small article is based on my personal experience for stitching images. I only offer this information as one of many techniques on the subject.

What do I need?

The main thing required is an image processing programme capable of working with layers and curves. In this case I use Adobe Photoshop.

The first thing to do is convert your processed FITS into a Bitmap, Tiff or Jpeg.
I recommend a Bitmap (.BMP).
Run Photoshop and load up your multiple images.
The next step involves a bit of math's you need to work how many pixels in height and width your final image is going to be.

For example if you are going to stitch 2 images on top of each other it is best to double the height and not the width so a 640x480 image becomes a 640x960 image.

You do not have to be precise and it is best to overestimate, (after all you may do a high res moon shot) you can always crop the excess later.

Once you have a rough guess on size you the go to your FILE menu on your Image processing programme and select NEW.

A menu will appear. In the columns Height and width type in you approximations

And don't forget to select pixels not inches or CMs. It is worth setting the background colour to black. When done click ok.

Now a large black blank image should appear. Click on one of your images and use the rectangular marquee tool (or equivalent) to draw a box around the image. Do not drag the box to the edges if the bmp has not already been cropped. The edges of most images are slightly distorted and will not look good when trying to merge the images.

Now select the Menu FILE and COPY. Click on the black canvas select FILE and PASTE. The image should appear as a layer on the black canvas. Select the image (layer) you would like in the center and select the move tool to drag it there using the mouse.

A layers box should appear listing the image on the canvas.

Now repeat the above with the next image you want to join. Once pasted on the canvas
Select the new layer to DIFFERENCE or EXCLUSION mode on the layers box. This will make the image see through and enable precise placement where the image overlaps.

Once you are happy select NORMAL on the layers pull down box.

Now adjust the CURVES or BRIGHTNES and CONTRAST until the shading matches.

Repeat the above for every image that needs stitching on the canvas.
Finally when you have finished select the LAYER menu (not box) and the FLATTEN IMAGE sub menu.

Finally crop the excess of the image and perform final tweaks to the black point and colour. This method works with all sorts of stellar objects even planets.

I hope it is not too difficult to follow but with a bit of practice you will end up with rewarding images.

WAS Ad

Sussex Astronomy Centre

For all your astronomy needs
Meade, Celestron, SkyWatcher, Tal Telescopes
Large range of accessories, software, books etc
16 Mulberry Lane
Goring by sea
Worthing, West Sussex.
Telephone 01903-247317
Email worthingastronomy@tiscali.co.uk
Web Site. www.sussex-astronomy-centre.co.uk
Ask for Paul Farmer (Club Member)

What's on the Box

Saturday 13th January 2007

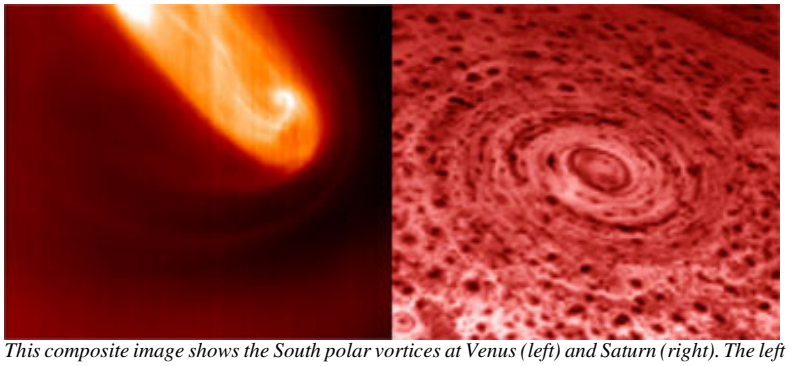
BBC TWO

12.45 – 13.05**:** The Sky at Night
Astronaut: British-born astronaut Piers Sellers talks to Patrick Moore about life orbiting the earth and the future of the manned space programme. Chris Lintott previews NASA's forthcoming rescue mission to the Hubble space telescope.

WAS News News

Saturn joins Venus in the vortex club

European Space Agency News Release



This composite image shows the South polar vortices at Venus (left) and Saturn (right). The left image was taken by Venus Express in May. The right image was taken in October by Cassini. Credits: NASA/JPL/Space Science Institute/University of Arizona

Ever since the late 1970s, scientists have known of a similar polar vortex on Earth's nearest neighbour. For six months now, ESA's Venus Express has been studying this enigmatic atmospheric structure.

NASA's Pioneer Venus spacecraft discovered the north polar vortex over 25 years ago. It is perhaps the most puzzling vortex to be found in the Solar System because it has two 'eyes'.

When Venus Express arrived in orbit around Venus in April 2006, one of the top priorities was to discover whether the South pole possessed a similar double-vortex. It did.

Polar vortices represent a key element in the planet's atmospheric dynamics but they are not hurricanes. "Hurricanes are caused by moist air rising into the atmosphere," says Pierre Drossart, Observatoire de Paris, France. In addition, they require the Coriolis force - the interplay between the circulation of the atmosphere and the rotation of the planet - to whip them up. But the Coriolis force is inefficient for driving vortices at the poles and on Venus it is virtually non-existent anyway because of the planet's slow rotation: the planet rotates just once every 243 Earth days.

Instead, a polar vortex is created by an area of low air pressure that sits at the rotation pole of a planet. This causes air to spiral down from higher in the atmosphere. Polar vortices are common structures and can be found at the poles of any planet with an atmosphere, even Earth.

What sets Venus apart is the double-lobed structure of the vortices. "This double structure is not well understood at present," says Drossart, who is the co-Principal Investigator on Venus Express's Visible and Infrared Thermal Imaging Spectrometer (VIRTIS).

To help understand the vortex, every time Venus Express draws within range, its instruments target a polar region. Collecting as much information as possible is vital because

of the rapid variability of the vortices. By watching them change, scientists can see how they behave, and this can give them vital clues as to the way the whole atmosphere circulates.

At the same time, data on the Saturn polar vortex will continue to be collected by Cassini. In addition to his work with Venus Express, Drossart is also part of the team that controls the Visual Infrared Mapping Spectrometer (VIMS) on Cassini.

The VIMS team will use their instrument to peer down into the heart of Saturn's polar vortex. By using infrared wavelengths, they can see through the clouds that normally block the view. "We will see down to more than 100 kilometres below the visible cloud tops," says Drossart.

Such observations will allow the scientists to build a picture of the three-dimensional structure of each polar vortex. With these in hand, they can make detailed comparisons of the vortices on Venus with those on Saturn and other worlds. The similarities and differences between the polar vortices should then give vital clues to the differences between the various planetary atmospheres that planetary scientists see throughout our Solar System.

Such studies are called comparative planetology. By studying Earth-like phenomena on other planets, we can better understand the Earth.

Diary

10th January 2007 New Year Social & Member's Contributions

14th February 2007 The Enigma of Neptune's Prediction
Dr. Nicholas Kollerstrom Science & Technology Studies University College London

14th March 2007 Space Astronomy: XMM-Newton X-ray satellite & Swift the gamma-ray watchdog satellite
Dr. Graziella Branduardi-Raymont F.R.A.S., Mullard Space Science Laboratory Dorking

11th April 2007 Member's Contributions

10th May 2007 TBA

14th June 2007 TBA

12th July 2007 TBA

12th September 2007 Cosmology & WMAP - Professor Malcolm MacCullum F.R.A.S.,Department of Mathematics Queen Mary University of London

*All Meetings **(bold)** are held on the second Wednesday of every month unless otherwise stated, at Heene Church Rooms, Worthing at 7.30 p.m. Meetings include the latest astronomical work, reports and, photographs by members. For further information find us on the Internet at www.was.org.uk or email: chairman@was.org.uk*

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Note to Contributors

Contributions & Correspondence for the **February** issue of WAS NEWS should be with the Editor by **February 1st**. All material for inclusion should be sent to the Editor.

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