New Zenith

The Monthly Newsletter of the Vectis Astronomical Society

Vol 24 Issue 2 — March 2016 *When Printed, this Newsletter costs VAS at least £1*

Society News

Transit of Mercury

As members will almost certainly know, on Monday May 9 there will be a transit of Mercury across the Sun's disk. This relatively rare phenomenon is always an interesting spectacle to watch and we are intending to be at the observatory with equipment to witness the event. The actual transit lasts from 12:12 BST till 19:41 BST.

If we can attract enough members (minimum 8) to attend we will open things to the public and advertise it. Using the VAS solarscope and a Coronado (kindly offered by John Langley) we should, weather permitting, get a good view.

If you can help, even for a couple of hours, please contact Elaine Spear (elainespear1@gmail.com).

Physics Event

VAS have been invited to Cowes Enterprise College for a Physics Day on Tuesday 5th July. They are expecting visits from most of the Island's schools and hope we can provide an insight to astronomy.

We would have an exhibition stand and need some volunteers to help for the day. If you can help for an hour or two please drop me an email.

Treasurer

Our Treasurer, David Kitching, is leaving us! David has decided to stand down this year as he is moving off the Island to be closer to his (growing!) family.

Firstly, on behalf of the members and Committee, thank you David for your help over the last few years, you've done a great job, we'll miss you and hope that it wasn't us that drove you away ;)

If anyone fancies a go at being treasurer, now would be a good time to volunteer, you'll at least get a chance to pick David's brain before he leaves!

Brian Curd
Editor New Zenith.

VAS Website: wightastronomy.org

Submissions or letters to New Zenith are always welcome and should be sent to:

The Editor New Zenith
75 Hefford Road
East Cowes
Isle of Wight PO32 6QU
Tel: **01983 296128** or email: **editor@wightastronomy.org**

Material for the next issue by the 6th of the month please.

VAS Registered Office

75 Hefford Road, East Cowes, Isle of Wight, PO32 6QU

Registered Charity No 1046091

Observatory Diary

Monday, 19.30hrs	Members Only and by arrangement Telescope and night sky training. Please contact Martyn Weaver 07855 116490
Thursday, 19.30hrs	Members and Public. Informal meeting and observing

Contents this Month

2016 Monthly Meetings

Date	Subject	Speaker
Please check **wightastronomy.org/meetings/** for the latest information		
26 Feb	Basket Balls and Beyond ***Bring a Friend***	Jane A Green
25 Mar	Death From Space	Ninian Boyle
22 Apr	Astronomy on the Tablet	Dr Lilian Hobbs
27 May	Meteors	Richard Kacerek
24 Jun	***TBA***	***TBA***
22 Jul	ESA EUCLID Mission Latest Update	Dr Tom Kitching
26 Aug	AGM Starts at 7pm sharp William Herschel and the Rings of Uranus	Dr Stuart Eves
23 Sep	Galaxy Formation	Prof Chris Lintott
28 Oct	Radiation protection in space (for manned missions)	Dr Elizabeth Cunningham
25 Nov	Stellar population modelling	Dr Claudia Maraston

Observatory Visits Booked

None booked this month
It would be appreciated if members could avoid using the observatory at these times.

Electrical Saga

The alterations to the observatory have been delayed somewhat following the discovery of a few electrical wiring "*inconsistencies*".

An electrician has been contacted and should be sorting things out very soon.

Everything in the observatory is safe to use as the affected circuit has been isolated but please ask if you are unsure of anything.

VAS Contacts 2014/15

President	Barry Bates president@wightastronomy.org
Chairman	Bryn Davis chairman@wightastronomy.org
Secretary	Richard Flux secretary@wightastronomy.org
Treasurer	David Kitching treasurer@wightastronomy.org
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NZ Editor	Brian Curd editor@wightastronomy.org
Membership Secretary	Norman Osborn members@wightastronomy.org
NZ Distribution	Brian Bond distribution@wightastronomy.org
Others	Mark Williams & Nigel Lee

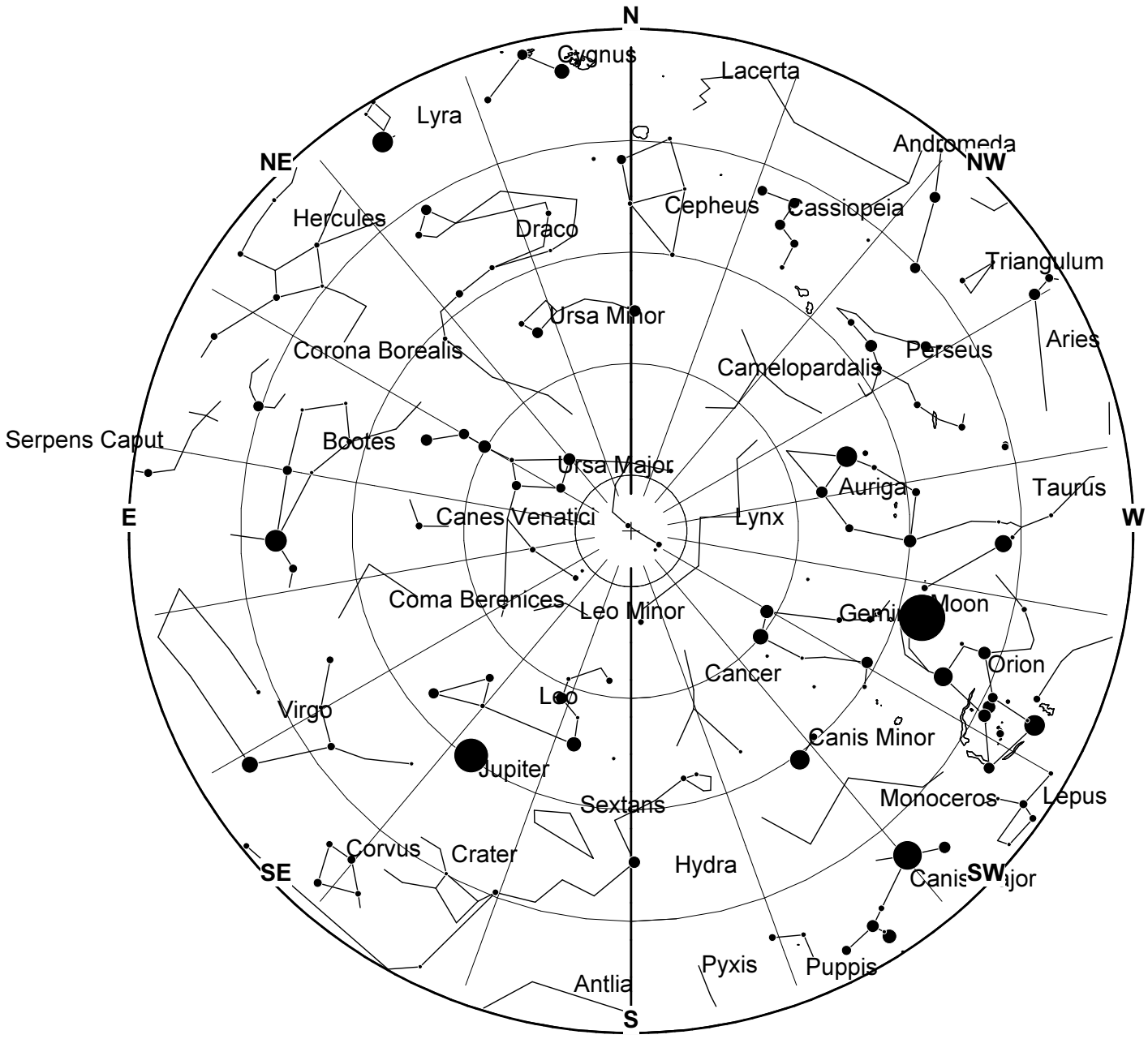
Important

Members using the observatory outside normal Thursday meetings MUST enter a line or two in the Observatory Log Book.

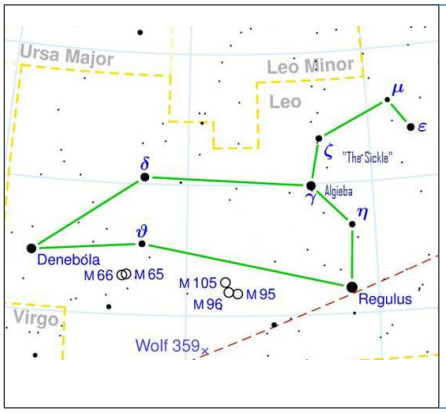
On several occasions, lights, heaters and the Meade LX200 have been left on!

When leaving, please ensure all is secure and all lights, heaters and telescopes are TURNED OFF.

March 2016 Sky Map



View from Newchurch Isle of Wight UK - 2200hrs - 15 March 2016



Leo contains many bright galaxies; Messier 65, Messier 66, Messier 95, Messier 96, Messier 105, and NGC 3628 are the most famous, the first two being part of the Leo Triplet.

The Leo Ring, a cloud of hydrogen and helium gas, is found in orbit of two galaxies found within this constellation.

M66 is a spiral galaxy that is part of the Leo Triplet, whose other two members are M65 and NGC 3628. It is at a distance of 37 million light-years and has a somewhat distorted shape due to gravitational interactions with the other members of the Triplet, which are pulling stars away from M66. Eventually, the outermost stars may form a dwarf galaxy orbiting M66. Both M65 and M66 are visible in large binoculars or small telescopes, but their concentrated nuclei and elongation are only visible in large amateur instruments.

March 2016 Night Sky

Moon Phases

New	First Qtr	Full	Last Qtr
			
9th	15th	23nd	1st/31st

Planets

Mercury

This month Mercury is passing behind the Sun on its way to next months evening apparition.

Venus

Venus is in the sun in the morning sky rising shortly before Sun making it a challenging object to spot with the naked eye in the brightening sky.

Mars

Mars can be seen low down, about and outstretched hand span above the horizon in the south at around 5am. It is brighter than any other star in that part of the sky and distinctly red in colour. Look lower down to the left to find a fainter red star, this is Antares the opposite of Mars, this is a red giant star so large that if placed in our solar system would engulf Saturn.

Jupiter

This month Jupiter is at opposition, meaning that it is at its closest to the Earth and opposite to the Sun. It rises in the east at around sunset, passes due south at midnight and can be seen heading to the west until sunrise. Jupiter outshines any star and is in an area of the sky where there are very few bright stars close by. This makes it a very easy object to spot. A small telescope will show the cloud bands and if you are lucky and view at the right time the great red spot. Any small pair of binoculars will show the Galilean moons, some will appear to change position hour by hour as they orbit the planet.

Saturn

Saturn is another early morning object. It can be found about a hand width to the left of Mars in the pre-dawn sky. It is a little fainter than Mars and by comparison distinctly yellowish in colour. A good pair of binoculars will show that the object is not circular, but a telescope is needed to show the rings.

Uranus & Neptune

Both outer planets are lost in the glare of the sun and will not return to our skies until later in the year.

Deep Sky

M44 The Beehive Cluster
RA 8h 41m Dec 19°44' Mag 4.0

This cluster which has been known since ancient times is easily visible to the naked eye as a faint round patch of nebulosity in the centre of the constellation of Cancer. In view of its large size, more than twice the diameter of the full moon, it is best viewed with binoculars, or to show more bees swarming around the hive a low power telescope. Being located in an area of sky with a low star density this cluster stands out readily against the background sky.

M67 The King Cobra Cluster
RA 8h 52m Dec 11°50' mag 7.5

About a fist width south of M44 is M67, a much smaller and fainter cluster that although visible in binoculars is best viewed through a small telescope. The brighter members trace out two loops of stars that are reminiscent of the markings on the hood of an angry cobra. You won't get bitten; fortunately this snake is at a very safe viewing distance; about 2700 light years.

NGC2392 The Eskimo Nebula
RA 7h 29m Dec 20° 54' mag 9.9

First discovered over 200 years ago by William Herschell and made into a spectacular image by the Hubble space telescope, a large telescope and dark skies are needed to see any detail in this planetary nebula.

Peter Burgess

SILLY QUESTIONS?

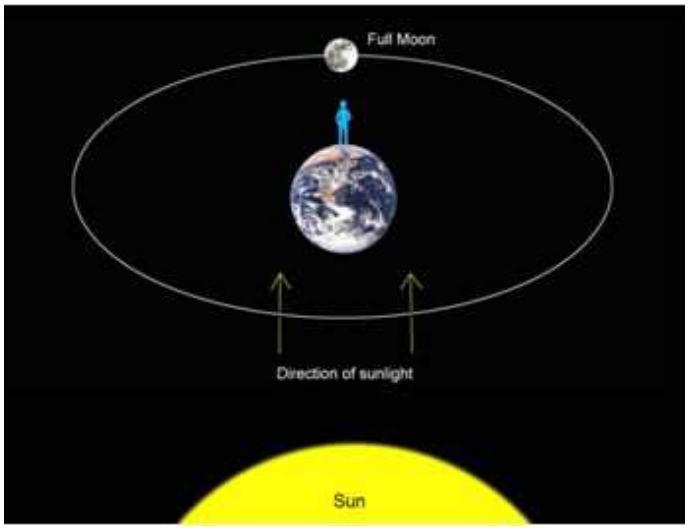
WE ALL KNOW THAT THERE'S NO SUCH THING AS A SILLY QUESTION BUT.....

Why does the moon shine?

The Moon does not make its own light. Instead, the light we see from the Moon is really sunlight.

The moon shines because its reflects light from the Sun, and even though it sometimes seems to shine very brightly, it only reflects between 3 and 12% of the sunlight that hits it. The perceived brightness of the moon from Earth depends on where the moon is in its orbit around us.

The moon orbits the Earth every 29.5 days, and during its journey, is lit by the Sun from varying angles.



The moon is at its brightest when it is 180° from the Sun from our perspective (picture the Sun, Earth and moon in a straight line). The, the full half of the moon's surface facing the sun is illuminated and is visible from Earth. This is what's known as a full moon.

At "new moon," on the other hand, the moon isn't even visible from our vantage point. This is when the moon is between the Sun and the Earth, so that the side of the moon reflecting sunlight is facing away from Earth.

In the days before and after a new moon, we'll see a sliver of the moon reflecting sunlight. And during those times, the faint brightness of the rest of the moon - the part not brightly lit as a sliver - is a result of what scientists call "earthshine," in which the moon's relatively dark disk is slightly illuminated by sunlight that reflects off of Earth, then off the moon, and back to our eyes.

Please send your "Silly Question" to the Editor (details on the front page).

Largest Fireball Since Chelyabinsk Falls Over the Atlantic (*Hardly anyone noticed!*)

On Feb. 6, at about 14:00 UTC, a tiny chunk of interplanetary material plunged into Earth's atmosphere and burned up - likely exploding - about 30 kilometers above the Atlantic Ocean. The energy released was equivalent to the detonation of 13,000 tons of TNT, making this the largest such event since the (much larger) Chelyabinsk blast in February 2013.

OK, so first, off: Don't panic! As impacts go, this was pretty small. After all, you didn't even hear about until weeks after it occurred. Events this size aren't too big a concern. Had it happened over a populated area it, would've rattled some windows and probably terrified a lot of people, but I don't think it would've done any real damage.

For comparison, the Chelyabinsk explosion, which was strong enough to shatter windows and injure more than 1,000 people (due to flying glass), had an equivalent yield of 500,000 tons of TNT, 40 times the energy of this more recent impact.

The event was reported on the NASA/JPL Near-Earth Object Fireball page, which lists some of the brightest such things.

More at ***Slate.com***

Eternal 5D data storage could record the history of humankind

Universal Declaration of Human Rights recorded into 5D optical data

Scientists at the **University of Southampton** have made a major step forward in the development of digital data storage that is capable of surviving for billions of years.

Using nanostructured glass, scientists from the University's Optoelectronics Research Centre (ORC) have developed the recording and retrieval processes of five dimensional (5D) digital data by femtosecond laser writing.

The storage allows unprecedented properties including 360TB/disc data capacity, thermal stability up to 1,000°C and virtually unlimited lifetime at room temperature (13.8 billion years at 190°C) opening a new era of eternal data archiving. As a very stable and safe form of portable memory, the technology could be highly useful for organisations with big archives, such as national archives, museums and libraries, to preserve their information and records.

The technology was first experimentally demonstrated in 2013 when a 300kb digital copy of a text file was successfully recorded in 5D.

Now, major documents from human history such as Universal Declaration of Human Rights (UDHR), Newton's Opticks, Magna Carta and Kings James Bible, have been saved as digital copies that could survive the human race. A copy of the UDHR encoded to 5D data storage was recently presented to UNESCO by the ORC at the International Year of Light (IYL) closing ceremony in Mexico.

The documents were recorded using ultrafast laser, producing extremely short and intense pulses of light. The file is written in three layers of nanostructured dots separated by five micrometres (one millionth of a metre).

The self-assembled nanostructures change the way light travels through glass, modifying polarisation of light that can then be read by combination of optical microscope and a polariser, similar to that found in Polaroid sunglasses.

Coined as the 'Superman memory crystal', as the glass memory has been compared to the "memory crystals" used in the Superman films, the data is recorded via self-assembled nanostructures created in fused quartz. The information encoding is realised in five dimensions: the size and orientation in addition to the three dimensional position of these nanostructures.

Professor Peter Kazansky, from the ORC, says: "It is thrilling to think that we have created the technology to preserve documents and information and store it in space for future generations. This technology can secure the last evidence of our civilisation: all we've learnt will not be forgotten."

The researchers will present their research at the photonics industry's renowned SPIE - The International Society for Optical Engineering Conference in San Francisco, USA this week. The invited paper, '5D Data Storage by Ultrafast Laser Writing in Glass' will be presented on Wednesday 17 February.

The team are now looking for industry partners to further develop and commercialise this ground-breaking new technology.

More at: ***http://www.southampton.ac.uk/***

Galaxy Clusters are Way More Complex Than We Thought

Image Credit: ESA/Hubble

Galaxy clusters are groupings of hundreds to thousands of galaxies bound together by gravity, and are the most massive structures found in the universe.

These clusters are embedded in a halo of invisible dark matter. There is a connection between galaxy clusters and their dark matter halos that holds a great deal of information about the universe's content of dark matter and accelerating expansion due to dark energy.

"MEASURING THE WAY GALAXY CLUSTERS CLUMP TOGETHER ON LARGE SCALES IS A LINCHPIN OF MODERN COSMOLOGY."

Traditionally, cosmologists have predicted and interpreted clustering by calculating just the masses of the clusters and their halos.

However, theoretical studies and cosmological simulations suggested that mass is not the only element at play - something called assembly bias, which takes into account when and how a galaxy cluster formed, also could impact clustering.

"Simulations have shown us that assembly bias should be part of our picture," says Rachel Mandelbaum, a member of Carnegie Mellon University's McWilliams Center for Cosmology. "Confirming this observationally is an important piece of understanding galaxy and galaxy cluster formation and evolution."

In the current study, the research team - led by Hironao Miyatake, Surhud More, and Masahiro Takada of the Kavli Institute for the Physics and Mathematics of the Universe - analyzed observational data from the Sloan Digital Sky Survey's DR8 galaxy catalog. They demonstrated that when and where galaxies group together within a cluster impacts the cluster's relationship with its dark matter environment.

The researchers divided close to 9,000 galaxy clusters into two groups based on the spatial distribution of the galaxies in each cluster. One group consisted of clusters with galaxies aggregated at the center and the other consisted of clusters in which the galaxies were more diffuse.

They then used a technique called gravitational lensing to show that, while the two groups of clusters had the same mass, they interacted with their environment much differently. The group of clusters with diffuse galaxies were much more clumpy than the group of clusters that had their galaxies close to the center.

"Measuring the way galaxy clusters clump together on large scales is a linchpin of modern cosmology. We can go forward knowing that mass might not be the only factor in clustering," Mandelbaum says.

The team, which included researchers from Princeton and the University of Arizona, published a paper in ***Physical Review Letters.***

The Japan Society for the Promotion of Science, the World Premier International Research Center Initiative, the FIRST program, the National Science Foundation, NASA, and the US Department of Energy supported the project.

http://www.sciencerocksmyworld.com/

Monitoring Climate Change from Space

Ever wondered what all those satellites are doing up in space? I know I have?

Earlier in the year I took part in a 5 week Course with Future Learn in conjunction with the European Space Agency (ESA). Future Learn is owned by the Open University, and this particular course was organised by Southampton University.

It was an entirely online course, and at the beginning of each week we were sent a schedule which involves watching videos, reading text, interim quizzes, looking at data, interactive exercises, and joining in forums. At the end of each week we had to complete a test, which gave access to the next week. I was very pleased with my final score of 98%, and over the next few NZ editions I shall attempt to summarise my learning.

There are thousands of satellites in space. Some take pictures of our planet. Some take pictures of other planets, the Sun and other objects. These pictures help scientists learn about Earth, the solar system and the universe. Other satellites send TV signals, phone lines around the world and give us our internet.

This course introduced the powerful role of satellite 'Earth observation' (EO) technology in monitoring our changing climate and environment, and to the beautiful and inspiring nature of the imagery and data it produces.

Earth observation (EO) is a collective term for the gathering of data and information about our planet's physical, chemical and biological systems through the process of 'remote sensing'.

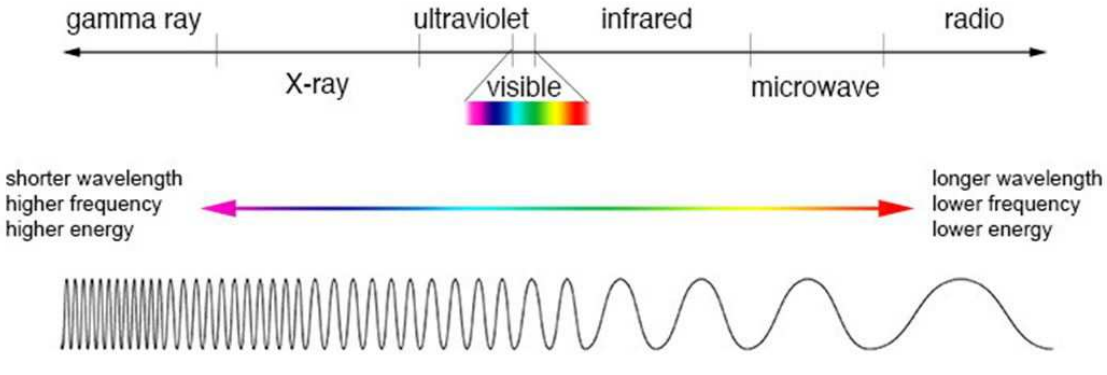
It's an important tool in monitoring and making decisions about climate change and the environment, and encompasses a wide range of techniques used to map, measure, and monitor parameters and processes on the Earth.

Remote sensing is the measurement of electromagnetic radiation (EMR) emitted or reflected by the Earth. This includes measurements made at the wavelengths of visible light, (for example from cameras on satellites, the International Space Station or even astronaut photography), but also those made at shorter wavelengths such as in the ultraviolet, or longer wavelengths such as in the near infrared, thermal infrared and microwave regions of the electromagnetic spectrum.

Specialised instruments on board EO satellites collect a range of types of data and imagery, at a local and global scale, as they orbit around the Earth. This data enables us to make better informed decisions, over longer timeframes, than is possible by just using other forms of environmental monitoring.

Depending on the exact wavelength and nature of the electromagnetic radiation (EMR) measurements, and the type of technology employed to make them, EO can provide information related to the Earth's atmosphere, land surface, rocks, soils, vegetation, its rivers, lakes and oceans, and on places where water is frozen into ice or snow (the cryosphere). It can even provide information related to processes happening below the surface, such as changing levels of ground-water or inside volcanoes.

A mix of mathematical equations, computer based algorithms and human interpretation is used to convert these measurements of reflected and emitted EMR into the desired information about the Earth system. For example,



when using measurements of reflected sunlight over land, we can understand the distribution and health of plants in croplands or forests. Or when measuring sunlight over the ocean, we can look at the abundance of micro-algae (phytoplankton). When making measurements at much longer thermal infrared wavelengths, we can map the changing temperature of the land and ocean surface, or the distribution of water vapour and other gases in the atmosphere.

All of the measurements mentioned in the paragraph above generally rely on so-called 'passive' remote sensing techniques, meaning they use naturally occurring EMR signals. Engineers and scientists have also developed various types of 'active' remote sensing instruments, which act as EMR sources as well as receivers. The most commonly used 'active' technique is microwave radar, the signals of which can reach the Earth's surface even through thick cloud cover. This technique can be used for example to measure the height of the Earth's ocean surface when deployed as a 'radar altimeter'.

A single satellite image has the potential to show the spread of air pollution across a continent, the precise damage done in a region struck by an earthquake or forest fires, or the entire span of a 500km hurricane from the calmness of its eye to its outermost storm fronts.

Earth Observation provides objective coverage across both space and time. The same space-based sensor gathers data from sites across the world, including places too remote or otherwise inaccessible for ground-based data acquisition.

And because Earth Observation satellites remain in place for long periods of time, they can highlight environmental changes occurring gradually. Looking back through archived satellite data shows us the steady clearing of the world's rainforests, an apparent annual rise in sea level approaching 2mm a year and the depletion of the ozone layer by atmospheric pollution.

Over the next few editions I'll report on some of the observations performed by the satellites. How the observations are carried out and what the collected data tells us.

Elaine Spear

Milky Way's Place in the Cosmos - "New Insights Into the Great Attractor and Dark Energy"

In September 2014, a group of astronomers including R. Brent Tully of the University of Hawaii and Hélène Courtois of the University of Lyon determined that our Milky Way galaxy is part of a newly identified enormous supercluster of galaxies, which they dubbed "Laniakea," 500 million light-years in diameter and containing the mass of one hundred million billion Suns spread across 100,000 galaxies. The discovery clarifies the boundaries of our galactic neighborhood and establishes previously unrecognized linkages among various galaxy clusters in the local Universe.

The Milky Way resides in the outskirts of the supercluster, which means "immense heaven" in Hawaiian, whose extent has for the first time been carefully mapped using the new mapping techniques pioneered by Tully and colleagues.

The supercluster consists of four subparts, the Virgo Supercluster, the part where the Milky Way resides; Hydra-Centaurus Supercluster; the Great Attractor, the Laniakea central gravitational point near Norma Antlia Wall, known as Hydra Supercluster; Centaurus Supercluster; Pavo-Indus Supercluster; Southern Supercluster, including Fornax Cluster (S373), Dorado and Eridanus clouds. The most massive galaxy clusters of Laniakea are Virgo, Hydra, Centaurus, Abell 3565, Abell 3574, Abell 3521, Fornax, Eridanus and Norma.

The entire Laniakea supercluster consists of approximately 300 to 500 known galaxy clusters and groups. The real number may be far larger, because some of these are traversing the Zone of Avoidance, making them essentially undetectable. The project also clarifies the role of the Great Attractor, a gravitational focal point in intergalactic space that influences the motion of our Local Group of galaxies and other galaxy clusters.

More at ***http://www.dailygalaxy.com/***

Earth could be unique among 700 quintillion planets in the Universe, study finds

So much of humanity's astronomical research is based around the notion of finding something like us out there – whether that's looking for environments that could sustain life, ranking planets in terms of their potential habitability, or comparing distant worlds to our own.

But what if – statistically speaking – the odds are stacked against us finding another planet even remotely like Earth? That's the thinking behind a new study by an international team of researchers, which has taken what we know about the exoplanets that lie outside our Solar System and fed the data into a computer model.

Their resulting calculations, designed to simulate how galaxies and planets have formed over some 13.8 billion years, produces a "cosmic inventory" of terrestrial planets – and one in which Earth very much looks to be unique.

"It's kind of mind-boggling that we're actually at a point where we can begin to do this," one of the researchers, Andrew Benson from the Carnegie Observatories in California, told Shannon Hall at Scientific American.

That said, the researchers acknowledge that their predictions on the spatial and temporal distribution of terrestrial planets in both the local and distant Universe is subject to a range of errors. Especially given how little we know about exoplanets – having only discovered about 2,000 of an estimated 700 quintillion or so.

"It's certainly the case that there are a lot of uncertainties in a calculation like this," said Benson. "Our knowledge of all of these pieces is imperfect."

More at ***http://www.sciencealert.com/***

Gi's a Job!

Vacancy for an astronomer at IAU - Office of Astronomy for Development

The IAU - Office of Astronomy for Development is announcing a vacancy for an astronomer position in its office in Cape Town, South Africa. The candidates should have as minimum requirements: a PhD in an astronomy-related field, three years of postdoctoral or related research work, with relevant international experience and to be fluent in English (both written and spoken). The selection process will begin after 15 March 2016.

For all the requirements and other details:
http://nrfintra.careerjunction.co.za/jobs/view/1927734/astronomer-in-cape-town-western-cape-at-national-research-foundation

Galaxy's missing gas found in its tail

Scientists noticed long ago that galaxy NGC 4569 contained less gas than expected but they could not see where it had gone.

Astronomers have discovered a spectacular tail of gas more than 300,000 light-years across coming from a nearby galaxy. The plume is made up of hydrogen gas — the material new stars are made of — and is five times longer than the galaxy itself.

The discovery was made by an international team of scientists led by Dr. Alessandro Boselli at the Laboratoire d'Astrophysique de Marseille in France, and published in the journal Astronomy & Astrophysics.

International Centre for Radio Astronomy Research astrophysicist Luca Cortese, who is part of the research team, said scientists noticed long ago that the galaxy NGC 4569 contained less gas than expected but they could not see where it had gone.

More at ***http://www.astronomy.com/***

ATLASGAL survey of Milky Way completed

APEX, the Atacama Pathfinder EXperiment telescope, is located at 5100 metres above sea level on the Chajnantor Plateau in Chile's Atacama region. The ATLASGAL survey took advantage of the unique characteristics of the telescope to provide a detailed view of the distribution of cold dense gas along the plane of the Milky Way galaxy. The new image includes most of the regions of star formation in the southern Milky Way.

The new ATLASGAL maps cover an area of sky 140 degrees long and 3 degrees wide, more than four times larger than the first ATLASGAL release. The new maps are also of higher quality, as some areas were re-observed to obtain a more uniform data quality over the whole survey area.

The ATLASGAL survey is the single most successful APEX large programme with nearly 70 associated science papers already published, and its legacy will expand much further with all the reduced data products now available to the full astronomical community.

At the heart of APEX are its sensitive instruments. One of these, LABOCA (the LArge BOlometer Camera) was used for the ATLASGAL survey. LABOCA measures incoming radiation by registering the tiny rise in temperature it causes on its detectors and can detect emission from the cold dark dust bands obscuring the stellar light.

The new release of ATLASGAL complements observations from ESA's Planck satellite. The combination of the Planck and APEX data allowed astronomers to detect emission spread over a larger area of sky and to estimate from it the fraction of dense gas in the inner Galaxy. The ATLASGAL data were also used to create a complete census of cold and massive clouds where new generations of stars are forming.

"ATLASGAL provides exciting insights into where the next generation of high-mass stars and clusters form. By combining these with observations from Planck, we can now obtain a link to the large-scale structures of giant molecular clouds," remarks Timea Csengeri from the Max Planck Institute for Radio Astronomy (MPIfR), Bonn, Germany, who led the work of combining the APEX and Planck data.

The APEX telescope recently celebrated ten years of successful research on the cold Universe. It plays an important role not only as pathfinder, but also as a complementary facility to ALMA, the Atacama Large Millimeter/submillimeter Array, which is also located on the Chajnantor Plateau. APEX is based on a prototype antenna constructed for the ALMA project, and it has found many targets that ALMA can study in great detail.

Leonardo Testi from ESO, who is a member of the ATLASGAL team and the European Project Scientist for the ALMA project, concludes: "ATLASGAL has allowed us to have a new and transformational look at the dense interstellar medium of our own galaxy, the Milky Way. The new release of the full survey opens up the possibility to mine this marvellous dataset for new discoveries. Many teams of scientists are already using the ATLASGAL data to plan for detailed ALMA follow-up."

More at: ***http://phys.org/news/***

The James Webb Telescope

NZ has included links to NASA's James Webb Telescope on several occasions but now, as the project gets much closer to completion, I urge all readers to visit the NASA website and marvel at the precision engineering that is been employed.

The ***latest timelapse video*** shows the completion of the primary mirror, the 18 primary mirror segments will work together as one large 21.3 foot diameter (6.5 metre) mirror.

If you'd like to see video feeds of the assembly taking shape then here's the link: ***Live cameras from the "factory" floor***

The telescope will be launched on an Ariane 5 rocket from French Guiana in October of 2018.

Main page: ***http://www.nasa.gov/mission_pages/webb/main/index.html***

THE BACK PAGE

LINKS, COMMENTS AND OBSERVATIONS

Online Mathematical Tool

I was recently browsing an article on Wired.com titled "***You–Yes, You–Can Calculate the Speed of Light Using Jupiter***", while reading the comments, I came across a link to an online mathematical tool called ***http://www.fxsolver.com/*** which may be of interest to our more technical readers.

From the website: ***"Equanalysis UG, was formed by a group of friends employed in various engineering fields who wanted to create a tool that would first and foremost make their work easier.***

The idea for fxSolver emerged: a free algebraic equation solver coupled to a large formula database, based on the need to quickly solve mathematical formulas without messing around with programming languages or spreadsheet software.

This is a public beta version of the site. We very much look forward to your feedback as well as any suggestions for additional features. Happy solving!!"

Our Galaxy "Nailed"

Cutoutandkeep.net has an article taken from "Try It! Nail Art" by DK Books.

The Galaxy manicure uses a simple technique that puts the cosmos at your fingertips. By layering colours with a sponge and adding lots of sparkle, you can create a whole universe of designs.

The complete 7-step procedure is given in the link so I expect to see some examples at the observatory in the next couple of weeks!

More at ***http://www.cutoutandkeep.net/projects/galaxy-nails-7***

Take Care When Visiting the Observatory

The NPS&CA will be starting work updating facilities at the Pavilion this year. The work is quite extensive and could mean there will be obstructions between the car park and the observatory.

It is vital that all visitors to the observatory take extra care during this work, torches are essential!

I have been assured that the builders will be under orders to mark any obstruction with reflective tape etc but please be very careful. The work will continue through the football "closed season" and will result in a much improved building.

VAS are investigating the possibility of transferring our monthly meetings to the Pavilion when work is complete and the Committee would welcome your thoughts on this idea. We realise the location is not as central as the current arrangements but, the relative ease of parking and proximity to the observatory could negate that. Please send any thoughts to the Editor.

editor@wightastronomy.org

Observatory

When visiting the VAS observatory, for your own safety, please bring a torch. Also, please make sure you close and lock the car park gate if you are the last to leave - if you need the combination to the lock, please contact a member of the committee.

Articles Needed

New Zenith needs letters, articles, reviews or pictures related to astronomy. Contributions to the Editor at the email or postal address on the front page.

"Everything is drawn inexorably toward the future"
Kip S. Thorne

"The type of nothing from which something can arise is truly something"
John K. Brown

"There are reasons to doubt that what we call the laws of physics necessarily apply everywhere in the universe - or that they were applicable to every time in its history"
Michael Brooks