



Spacelty's Space Magazine

by Space Saves Society

Issue 1 June 2011

Spacelty.com is an activity initiated and powered by Space Saves Society, a non-governmental organization which drives research on space technology being applied to socio-economic benefits.

Spacelty.com was created for people who took an interest in our cosmos, space missions and technology.

Our Websites

www.spacelty.com

www.spacesavesociety.org



Dear Space Friends,

This is the first issue of the monthly spacelty.com newsletter! Spacelty.com is an online repository of space news and activities and through the following pages we will guide on a trip to the galaxy, aboard on the last flight of the Endeavour space bus, and share with you breath-taking moments, like the total lunar eclipse of the month. Then, our trip will bring you back to Earth, as this is seen from above, using the latest space monitoring technology being processed by Space Saves Society, the empower of Spacelty, and you too shall be able to better understand our planet with the aid of multi-spectral high-resolution imagery and advanced radiometers!

We hope you'll enjoy this pilot work as much as we did, and we are looking forward to your feedback!

Live Long and Prosper,
The Spacelty Team

Image of the Month



The above image was taken two months ago over Jökulsárlón, the largest glacial lake in Iceland. The photographer combined six exposures to capture not only two green auroral rings, but their reflections off the serene lake. Visible in the distant background sky is the band of our Milky Way Galaxy, the Pleiades open clusters of stars, and the Andromeda galaxy. A powerful coronal mass ejection from the Sun caused auroras to be seen as far south as Wisconsin, USA. As the Sun progresses toward solar maximum in the next few years, many more spectacular images of aurora are expected.



Space Saves Society

MONITORING, CONTROLLING AND PROVIDING INFORMATION
ON THE STRESSES OF WATER RESOURCES ON OUR PLANET WITH THE USE OF SATELLITES

Space Saves Society is an open non-profit consortium that seeks global collaborative research empowerment and public awareness.

Space Saves Society is a jointed initiative aiming in exploring and promoting satellite applications towards socio-economic benefits. Our primary focus are the water resources of our planet, which we feel are the foundation of life prosperity and quality on Earth for now and future generations to come.

Satellite Earth Observation data can provide valuable information upon the status of our ecosystems and potential crisis these might undergo. These readings, coming from satellites orbiting miles away in space, can in fact provide unique insights in understanding the nature and sources of crisis and in designing effective turn-around mechanisms.

The Problem

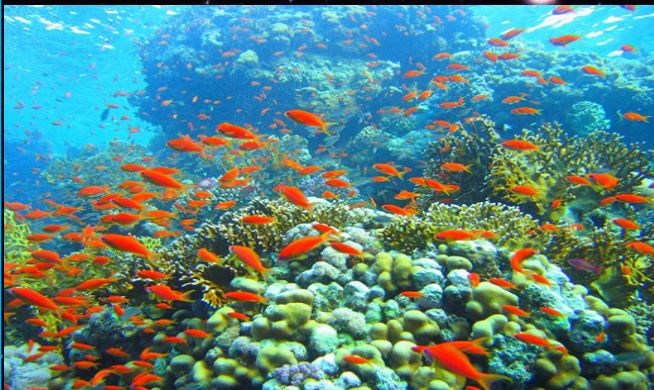
Pollution, human intervention and climate changes are only some of the driving factors which cause disturbances in water life quality.

Water pollution affects plants and organisms living in water bodies and very often effects are damaging both to individual species and populations as well as to the natural ecosystems. Water pollution is a major problem in the global context and it has been suggested to be the leading cause of deaths and diseases worldwide, counting thousands of deaths daily.

Many areas experience limited or no access to clean water; the privatization of water resources has been suggested as a sustainable method for introducing managing efficiency in the water services, but it has instead caused these essential services to be offered against risen prices, resulting to inaccessibility for the poor.

Both the over-population of Earth and the crisis experienced by areas in distress as well as in the overall global economy, urgently address the need of natural resources to be preserved and highly exploited in a sustainable manner.

In order to achieve this however, it is necessary not only to understand the means to receive profit from the water resources of our planet but to also perform this intelligently, so as to enable a long-term beneficial process of optimized impacts on the global economy, while maintaining and in turn optimizing underwater life.



FIVE LAKES

WATER PROTECTION GLOBAL PROJECT

The Space Saves Society **5Lakes Water Protection Global Project** is planned to be launched on July the 1st, 2011 and operate under a long-term horizon up to 2020. The project aims at studying five of the most important (with respect to water volume, spatial location, affected population, environmental challenges, etc) lakes in the world, with the aid of satellite monitoring. Data collected will be used for the assessment of the environmental prosperity of the regions, modeling of the underlying mechanisms affecting their statuses and in overall leading to valuable insights on climate change effects upon water resources worldwide.

The project will study five of the most important lakes in the world, with the aid of satellite monitoring. These lakes are:

- Baikal (Russia)
- Victoria (Tanzania, Uganda, Kenya)
- Titicaca (Bolivia, Peru)
- Superior (United States, Canada)
- Tanganyika (Burundi, Congo, Tanzania, Zambia)

The selection of these lakes was based on their importance, being justified in terms of affecting near-by urban and rural areas, water volume and surface area, hosting life to water and other organisms environmental challenges.

Our methods will include the following:

- Using satellite images to identify water pollution and mapping urban growth
- Monitoring water movement
- Monitoring Chlorophyll-A levels, Surface Temperature and Photosynthesis Activity
- Monitoring changes in water volume

If you find these activities important and would like to be a part, please [provide us with your support](#).

Space News

Shuttle Endeavour lands after its last space mission

The space shuttle Endeavour glided home for its final landing on Wednesday 1 June and the conclusion of the next to last mission of the 30-year-old US shuttle program.

"It is sad to see her land for the last time but she really has a great legacy," shuttle commander Mark Kelly said, moments after landing the youngest ship in the US fleet, ending its 25th journey to space.

The astronauts just finished a 16-day mission to the International Space Station, where they installed a \$2 billion physics experiment to probe the origins of the universe and conducted four spacewalks.



NASA to Launch New Science Mission to Asteroid in 2016

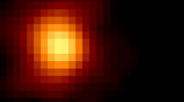
NASA will launch a spacecraft to an asteroid in 2016 and use a robotic arm to pluck samples that could better explain our solar system's formation and how life began. The mission, called Origins-Spectral Interpretation-Resource Identification-Security-Regolith Explorer, or OSIRIS-REx, will be the first U.S. mission to carry samples from an asteroid back to Earth.



Huge Space Explosion Is Farthest Thing Ever Seen

A short, extremely bright explosion of light recently spotted in the night sky may be the most distant object ever seen in the universe, astronomers say. Scientists can't be sure exactly how far away the so-called gamma-ray burst was, but their best estimates place it at around 13.14 billion light-years away, making it potentially the farthest object yet detected in space. That would also mean the burst occurred when the universe was only 520 million years old, less than 4 percent its present age. The universe is now about 13.7 billion years old, scientists estimate.

The flash occurred when a star died in a supernova explosion and released a powerful jet of high-energy gamma-ray radiation. The blast shined for a mere 10 seconds but packed as much light as several thousand galaxies (more than a million million times the brightness of the sun).



NASA Concludes Attempts to Contact Mars Rover Spirit

NASA is ending attempts to regain contact with the long-lived Mars Exploration Rover Spirit, which last communicated on March 22, 2010. Extensive communications activities during the past 10 months also have explored the possibility that Spirit might reawaken as the solar energy available to it increased after a stressful Martian winter without much sunlight. With inadequate energy to run its survival heaters, the rover likely experienced colder internal temperatures last year than in any of its prior six years on Mars. Many critical components and connections would have been susceptible to damage from the cold.

Spirit landed on Mars on Jan. 3, 2004, for a mission designed to last three months. After accomplishing its prime-mission goals, worked to accomplish additional objectives. Its twin, Opportunity, continues active exploration of Mars.



Galaxy Evolution Explorer Helps Confirm Nature of Dark Energy

A five-year survey of 200,000 galaxies, stretching back seven billion years in cosmic time, has led to one of the best independent confirmations that dark energy is driving our universe apart at accelerating speeds. The survey used data from NASA's space-based Galaxy Evolution Explorer and the Anglo-Australian Telescope on Siding Spring Mountain in Australia. The findings offer new support for the favored theory of how dark energy works -- as a constant force, uniformly affecting the universe, and propelling its runaway expansion. They contradict an alternate theory, where gravity becomes repulsive instead of attractive when acting at great distances.

New SETI survey focuses on Kepler's top Earth-like planets

Now that NASA's Kepler space telescope has identified 1,235 possible planets around stars in our galaxy, astronomers at the University of California, Berkeley, are aiming a radio telescope at the most Earth-like of these worlds to see if they can detect signals from an advanced civilization.

The search began on Saturday, May 8, when the Robert C. Byrd Green Bank Telescope - the largest steerable radio telescope in the world - dedicated an hour to eight stars with possible planets.

Once UC Berkeley astronomers acquire 24 hours of data on a total of 86 Earth-like planets, they'll initiate a coarse analysis and then, in about two months, ask an estimated 1 million SETI@home users to conduct a more detailed analysis on their home computers.



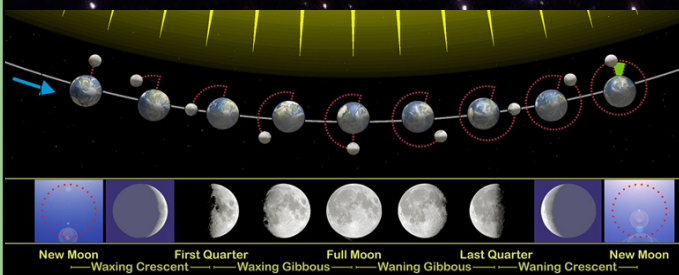
NASA's Gravity Probe B Confirms Two Einstein Space-Time Theories

NASA's Gravity Probe B (GP-B) mission has confirmed two key predictions derived from Albert Einstein's general theory of relativity, which the spacecraft was designed to test. The experiment, launched in 2004, used four ultra-precise gyroscopes to measure the hypothesized geodetic effect, the warping of space and time around a gravitational body, and frame-dragging, the amount a spinning object pulls space and time with it as it rotates. GP-B determined both effects with unprecedented precision by pointing at a single star, IM Pegasi, while in a polar orbit around Earth. If gravity did not affect space and time, GP-B's gyroscopes would point in the same direction forever while in orbit. But in confirmation of Einstein's theories, the gyroscopes experienced measurable, minute changes in the direction of their spin, while Earth's gravity pulled at them.



Sky Calendar - June 2011

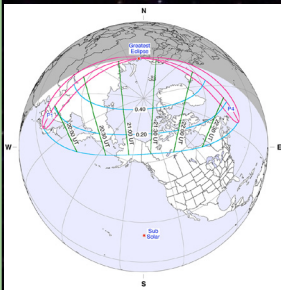
Phases of the Moon



New Moon: *Thursday 2 June*
 First Quarter: *Thursday 9 June*
 Full Moon: *Wednesday 15 June*
 Last Quarter: *Thursday 23 June*

Partial Solar Eclipse - 1 June 2011

The eclipse begins at sunrise in Siberia and northern China where the penumbral shadow first touches Earth at 19:25 UT. Two hours later, greatest eclipse occurs at 21:16 UT. At that time, an eclipse of magnitude 0.601 will be visible from the Arctic coast of western Siberia as the midnight Sun skirts the northern horizon. Although most of Alaska and northern Canada will witness the partial eclipse, the southern limit of the penumbra falls along a curve from south of Fairbanks to central New Brunswick and Nova Scotia.



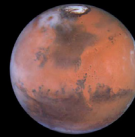
Reykjavik, Iceland receives a 0.462 magnitude eclipse just before sunset. Northern most Norway, Sweden and Finland also get a midnight Sun eclipse with the event hanging above the northern horizon. The partial eclipse ends at 23:06 UT when the penumbra leaves Earth just north of Newfoundland in the Atlantic Ocean.

Planets

Planet Saturn rises in the midday so when the night falls it will be already high in the sky. You can spot it on the constellation Virgo. It is significantly bright with apparent magnitude 0.75-0.88 and angular diameter of 18"-17". It reaches a maximum altitude of 45° at the beginning of the month until it is reduced to 29° at the end of the month.

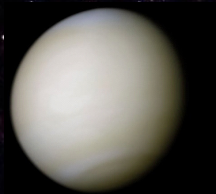


Planet Jupiter is visible before sunrise at the east, on the constellation Aries. It is very bright with apparent magnitude -2 and angular diameter of 35"-37". But it is significantly low above the horizon and it is not suitable for observation this season.



The observation of Planet Mars is even more difficult - impractical we could say - because it rises during the daybreak right before the sunrise and it has small angular diameter of 4".

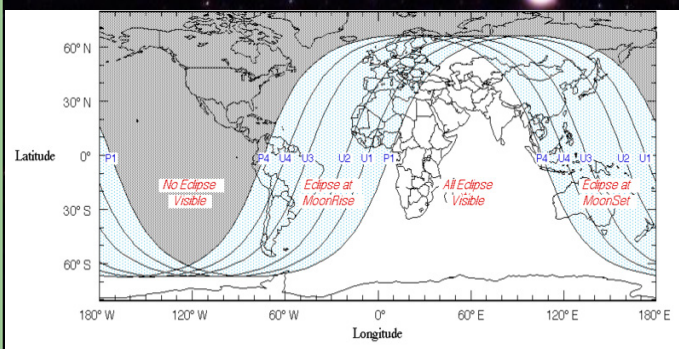
Planet Venus is visible right before sunrise at the eastern sky, on the constellation Taurus. It is remarkably bright with apparent magnitude -3.9 and angular diameter of 10". You can observe it for a limited time before the sunrise.



Total Lunar Eclipse - 15 June 2011

The eclipse will be seen from the eastern half of Africa, the Middle East, central Asia and western Australia. Observers throughout Europe will miss the early stages of the eclipse because they occur before moonrise. Fortunately, totality will be seen throughout the continent except for northern Scotland and northern Scandinavia.

Eastern Asia, eastern Australia, and New Zealand will miss the last stages of eclipse because they occur after moonset. Again, the total phase will be seen from most of these regions. Even observers in eastern Brazil, Uruguay and Argentina will witness totality. However, none of the eclipse will be visible from North America.



Beginning of the totality
19:22 UT

End of the totality
00:02 UT

