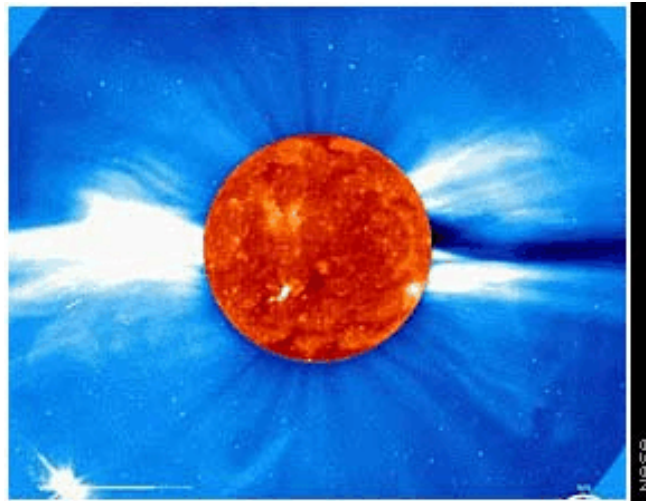


Cowichan Valley

StarFinders

Astronomy Society



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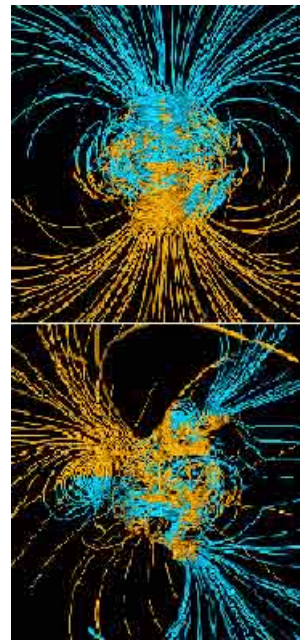
Volume 11 Number 2

As if we don't have enough to worry about, living 200km from an active subduction zone. Poised to unleash a massive earthquake and tsunami, the zone can release mayhem anytime. Or not. But why worry about something that may not happen for the next 300 years? Why not get excited about the next Solar Cycle and its attendant Coronal Mass Ejections? With the weakening of our Earth's magnetic field, radiation thrown off the sun during a Coronal Mass Ejection could be pelting down on you within a couple of years. Or sooner!

Actually, the magnetic field has weakened only about 10% in the last 150 years, so we remain well protected by the field. Eventually it will diminish, and over a period of time (months? years? decades?) there will be no single North or South pole. The field will then re-establish itself, perhaps with a reversal of poles. It is a process that has been happening for millions of years, on an average of every 200 000 years. The last reversal, which recorded itself in the slow ooze of lava at the mid-oceanic ridges, was about 780 000 years ago so we are overdue for such an event. But like the inevitable subduction zone earth quake, it will arrive in its own good time.

What will happen during such a reversal? First of all, life will go on! Previous reversals did not delete life from the earth's surface, but there is some speculation that species change may have been accelerated by the reversal. After all, more radiation reaching the surface means more genetic disruption. But the most noticeable impact may be in the occurrence and placement of auroras. With several poles, auroras could occur over any part of the planet. Using that new DSLR camera you bought, after Mike Dobel's presentation last March, you could be snapping auroras with palm trees in the foreground!

While you are waiting for the pole reversal, you might want to think about the current Solar Cycle. It is beginning its swing up to maximum activity over the next few years and will provide us with some interesting skies. If you live on the prairies, the auroras quickly lose their appeal, as they tend to be like clouds on Vancouver Island...frequent and annoying! But auroras on Vancouver Island are only an occasional visitor and very much worth the effort to check the skies. So as you wind up the clock and toss out the cat for the night, have a look up. You may be pleasantly surprised. And perhaps the wonder of the night sky will help you to forget about that subduction zone earthquake!



Normal magnetic field lines shown at top; during a reversal shown below

ASTRONOMY NEWS

Sun Puts Spin on Asteroids

Astronomers have theorized that light from the Sun influences the speed at which asteroids spin, and now they've gathered the evidence to back it up.

The “Yarkovsky-O’Keefe-Radzievskii-Paddack” (YORP) effect proposed that when sunlight strikes an asteroid’s surface, it warms the region up slightly. As the heat is radiated away, there’s a recoil effect that causes the asteroid to spin. It’s not a lot, but added up over millions of years, it can really set an asteroid spinning.

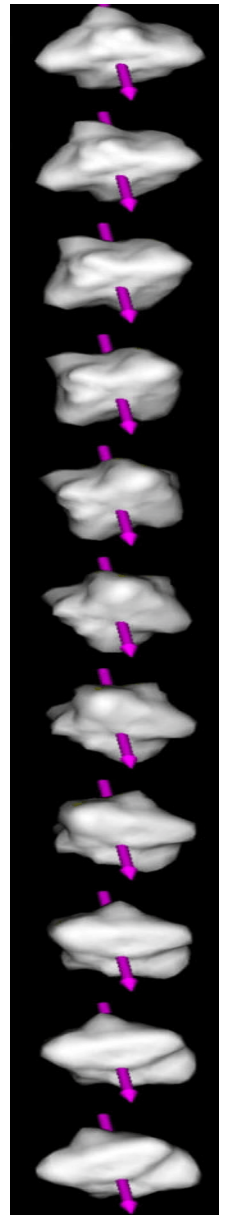
Now astronomers have found this effect in action on nearby asteroid 2000 PH5. They watched the asteroid using a variety of instruments across the Earth over the course of 4 years. During this period, they were able to measure an increase in its rotation speed. Although it takes 12 minutes to complete one rotation, that period is decreasing by 1 millisecond a year.

They calculated that over the next 35 million years, the rotation period will drop to 20 seconds, and it might end up spinning so fast that it reshapes itself or breaks apart.

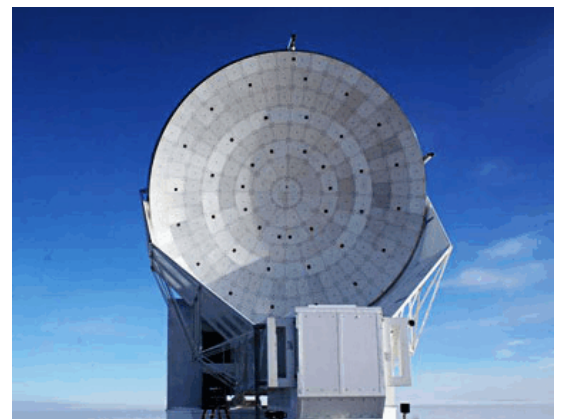
First Light for South Pole Telescope

Telescopes located on the Earth suffer from having to peer through our thick atmosphere. That’s why they’re located at high altitudes, where the air is cold and clear. In fact, the best place on Earth to locate a telescope is in Antarctica - the air doesn’t get any colder or clearer.

The newly constructed South Pole Telescope (SPT) was pointed to the skies for the first time on February 16, capturing images of Jupiter. This was just a test. When it gets up and running, the SPT will help astronomers understand dark energy’s influence on the expansion of the Universe, and precisely measure the cosmic microwave background radiation.



Rotation of asteroid 2000 PH5



Unlike Hubble, or the major visible light observatories here on Earth, the South Pole Telescope images at the submillimetre spectrum. This is a region in between radio waves and infrared radiation. Using submillimetre observations, astronomers can detect molecular clouds, map galaxy clusters, and chart the cosmic microwave background radiation.

The telescope stands 22.8 meters (75 feet) tall, measures 10 meters (33 feet) across and weighs 254 metric tons (280 tons). Getting it to Antarctica was the problem. Every part of the instrument had to be able to fit inside a C130 cargo plane. They were shipped from New Zealand, and then constructed on site during the relatively warm Antarctic summer.

Lunar Habitat

For the upcoming lunar return missions, the astronauts will be staying on the surface of the Moon far longer than they did during the Apollo. They'll need someplace safe to live.

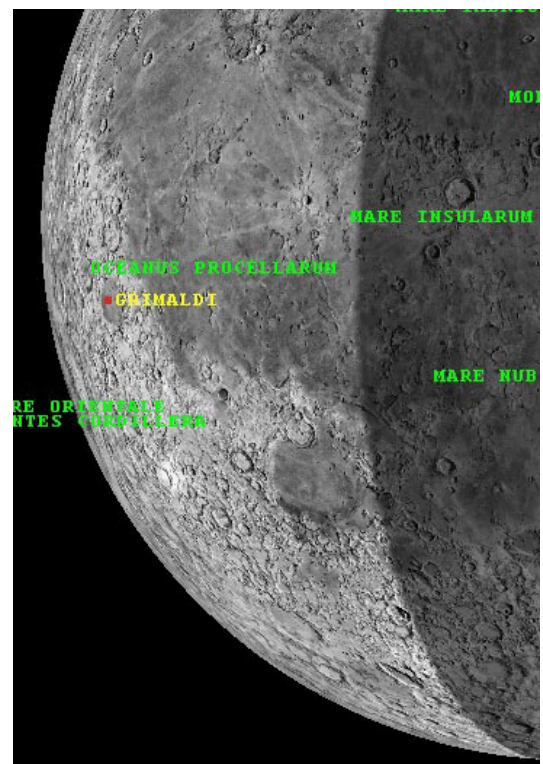
NASA is currently planning that humans will set foot on the Moon again, starting in 2020. The first four-person crews will only stay for 7-days, but over time, as a lunar base builds up, more people will stay longer, eventually stretching missions out to 180 days.

The agency recently unveiled a prototype inflatable lunar module that the astronauts might call home. The 12-foot (3.65 meter) diameter inflatable structure is made of multiple layers of fabric.

Over the next few years, engineers will test out the inflatable habitat, to see if it's tough enough and provides the right amount of space and radiation shielding to provide astronauts with a good shelter on the Moon.

Grimaldi Crater: Binocular Object

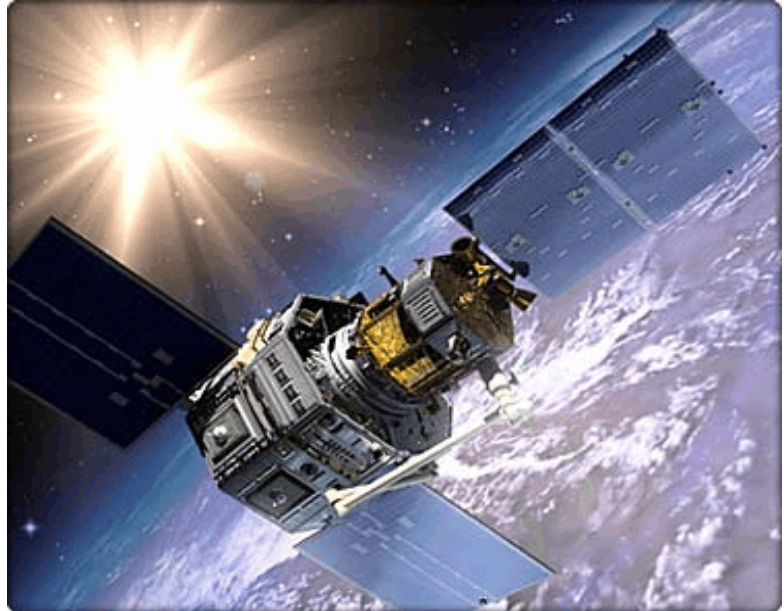
Due to libration of the moon ("wobble"), the crater



Grimaldi can be seen during spring viewing. But by fall it will be out of sight on the edge or around the back of the moon. On April 8 the Moon will be beside Jupiter and will be visible directly south at 5:30am, sandwiched between Sagittarius and Scorpius. A binocular sweep will not only give you a view of the waning moon and Jupiter, but also a preview of coming constellation attractions at the Island Star Party.

Orbital Express Launch

On March 9, the satellite Orbital Express was launched. It is actually two satellites: the Autonomous Space Transport Robotic Operations (ASTRO) service vehicle, and the Next-generation serviceable Satellite (NextSat). The pair will circle Earth in tandem, docking and undocking as they practice on-orbit refueling and satellite repair techniques. They'll also trade and install a functional battery and computer – the first unassisted component exchange in space history.



The satellite tracking website (www.heavens-above.com) might carry a schedule of appearances for this pair. At the time of writing (late March) the site does not show it, but that could be due to the nature of its path. If the two are separated by several kilometres, it could be an interesting object to observe. A number of years ago the Shuttle released a small satellite (German?) that followed it at a distance of 30 or more kilometres. Both were easily tracked, so perhaps ASTRO and NextSat can be seen if they separate far enough.

ASTRONOMY DAY

International Astronomy Day is Saturday, April 21. To recognize this day we will be setting up a display of telescopes, with one or more tracking the sun (using solar filters of course!). We will be located at the new Farmer's Market site, off Boys Road, behind Serious Coffee. If the weather looks like it will not co-operate, there is little point in having a display, so we will be using April 28 as the alternate date. Whichever date we end up with, we will be setting up at around 9am and will need to man the display until after lunch. If you can help out, please contact Norm Willey.

Input for the May Newsletter

Do you have an urge to write? Feel like contributing to the newsletter? I would like to collect stories about people observing; tell us about the mishaps, police visits, animal intrusions, or whatever you like! If I can get several stories I will put them all together in one newsletter. So email me your prose!

Cowichan Valley StarFinders Astronomy Society Executive:

President: Norm Willey

Vice President: Ed Maxfield

Treasurer: Phyllis Scott

Web Master: Brian Robillard

Executive positions for president, vice president and treasurer become open at the June Annual General Meeting, to be held on June 5. We will also need to fill two other positions, as required by the society act.

