

# The Sunset Gazette

*Serving the Tri-Cities since 1975*

Volume 6, Issue 5

January, 2009

### Meeting information

Meetings are generally in the theater in the Delta College Planetarium in Bay City. The meetings will usually be on the 2nd Friday of each month at 7:00 PM. Watch the newsletter for changes in dates and times. Membership is not required to participate in meetings and activities. See Page 6 for this month's meeting site.

### Membership Information

**Student / Senior:** (17 years & younger, 65+ years)

1 year - \$15

2 year - \$20

**Regular:** (18+ years)

1 year - \$20

2 year - \$30

**Family:** 1 year - \$25

2 year - \$40

New Members receive a New Member Observing Kit at their first meeting, courtesy of SAS. Membership includes voting privileges, the newsletter and free admission into Delta College Planetarium shows.

### Subscription Information

Subscription prices available at club rate with the purchase of individual or family membership.

"Sky and Telescope" Magazine:  
1 year - \$32.95 + Membership

2 year - \$65.90

"Astronomy" Magazine:

1 year - \$34.00 + Membership

2 year - \$60.00 + Membership

## The SAS Newsletter

### wishes you all

### and a

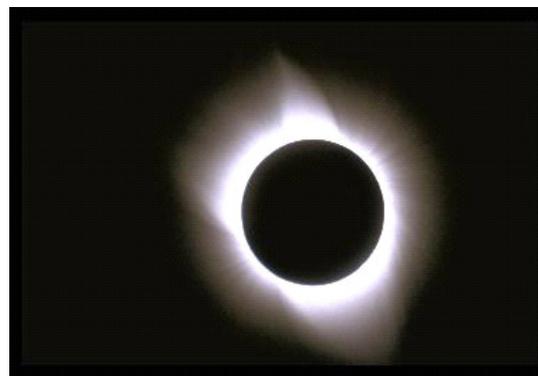


### January 9, 2009 Sunset Astronomical Society Meeting Notice:

## “The Black Sun - A Solar Eclipse in South America”

by Bill Albe

Bill will share what it is like to experience a total solar eclipse using descriptions, photos and a video of the entire event. Bill's experience with the Manitoba eclipse in 1979 prepared him to make the most of the observing opportunities during the South American eclipse of November 1994. You will learn about many eclipse phenomena and the ways to observe them. Bill will also include interesting cultural and sightseeing highlights. Afterwards, you can speak with others in our clubs who have been to a total solar eclipse. You may decide to encounter a total solar eclipse yourself – the next one crosses China on July 22, 2009. We have to wait until August 21, 2017 for one to cross the United States.



Picture of the Solar Eclipse of 3 Nov 1994 taken from 4000 meters high in the Altí Plano.



## President's Message

Wasn't the family open house at the Planetarium at the November meeting simply wonderful? We had a large and interested group from the public and many good displays to share. We'll have more opportunities to share our enthusiasm in 2009, "The International Year of Astronomy". We have been working with Garry and Bill at the Planetarium to bring more opportunities to interact with the public. One activity that we will do is observing at the Planetarium at dusk on the first Friday of each month. Bring your telescopes, binoculars and share your observing expertise with those interested in finding out more about the night sky. We will also continue our 'Sidewalk Astronomy' observing sessions at the Planetarium on clear nights before and after our monthly meeting time.

The open house was Dave Kube's last astronomy club meeting – he's moving to Indiana and we will miss his friendly and knowledgeable presence at our meetings.

Now that winter weather has settled in, I hope the many clear nights and late summer temperatures we enjoyed in fall don't average out this winter with colder and cloudier than normal winter weather. I've noticed though, that the clearest nights are usually unseasonably warm or cold so we may be in for some great observing nights this winter.

Did you see the Venus-Jupiter conjunction? Luckily I was outside with my granddaughter during a brief break in the clouds and we were able to see the bright conjunction in the southwest. The moon was approaching 1<sup>st</sup> quarter so they were all lined up in the sky. I never miss an opportunity when more than one solar system object is in the sky to point out that we are looking out at the plane of the Solar System, which is flat like a pancake. This is the same plane that the Sun appears to travel along during its daily journey and is called the "ecliptic". It is surprising how many, especially youngsters, have never realized that the planets are never found elsewhere in the sky except in the ecliptic plane.

In early November I took my 10" Dob to "The Rock", a youth club with lots of activities on a Friday evening. Luckily again it was clear enough for about 50 who wanted to, of the 80 in attendance, to observe Jupiter and its moons. I feel that it is more satisfying for me than it is for them because I know that I have made a life-long memory. I can still remember the details of my first view of Jupiter in a homemade 8" scope from the father of one of my high school friends. I bet you remember your first look at a planet through a telescope too.

I'm looking forward to sharing my eclipse experiences at the January meeting and to catching up on news with you.

Clear Skies,

Bill Albe

December 7, 2008

### ARE WE ALONE? or

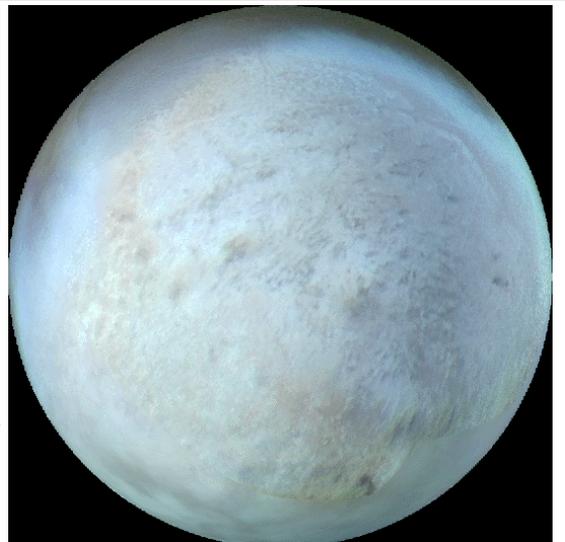
"The discovery of one-cell organisms on a distant planet in our solar system

or beyond would have an impact as big as the Copernicus revolution"

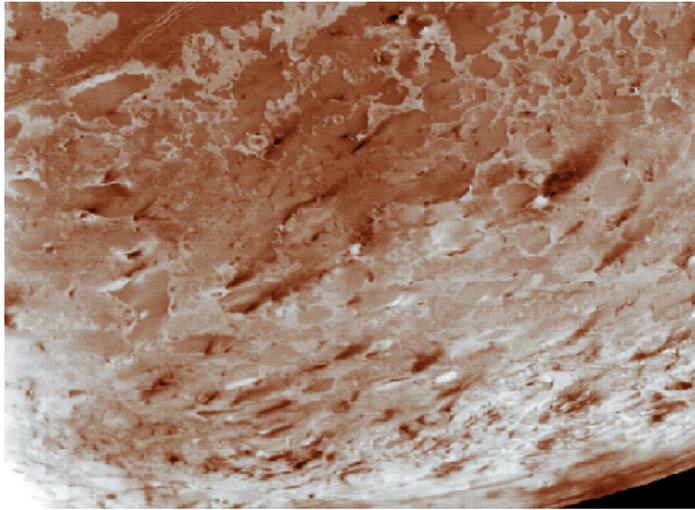
By Martin Grasmann. This is the ninth part of an extended summary of a lecture about Astrobiology that Dana Bachmann, SETI Institute/SOFIA-Ames gave on Wednesday, March 26th at the CMU.

We are now leaving the Saturn System, by-passing Uranus and its moons and heading straight for Neptune and its moon **Triton**, another world which is known to have cryo-vulcanism and therefore the possibility of the presence of liquid water, one of the main important condition for life to exist or evolve.

**Triton** is the largest moon of the planet Neptune and discovered on October 10, 1846 by William Lassell, a British astronomer.



With a diameter of 2700 km it is the seventh largest moon in the Solar system and comprises more of 99.5 % of the mass of all moons who orbit Neptune.

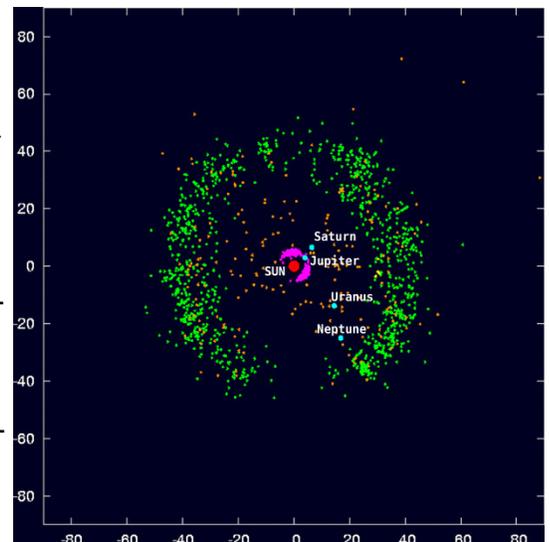


Triton's bright red south polar cap: The southern polar region of Triton is covered by a highly reflective cap of frozen nitrogen and methane sprinkled by impact craters and openings of geysers. Little is known about the north pole because it was on the night side during the *Voyager 2* encounter. However, it is thought that Triton must also have a north polar cap

There is also the interesting fact that Triton is by far the largest moon in the Solar System with a retrograde orbit, which means it is an orbit in the opposite direction to its planet's rotation. As mentioned Triton is geologically active with a young surface which has relatively few impact craters. Triton consists of a crust of frozen nitrogen over an icy mantle believed to cover a substantial core of rock and metal. Triton has a mean density of  $2.0 \text{ g/cm}^3$  and so is believed to be composed of approximately 15 – 35% water ice. When the *Voyager 2* probe studied Triton, it observed numerous icy volcanoes or geysers erupting liquid nitrogen, dust, or methane compounds from beneath the surface in plumes up to 8 km high. Although Triton is made of various ices, its subsurface processes are similar to those that produce volcanoes and rift valleys on Earth, but with water and ammonia lavas as opposed to molten liquid rock. Unlike Enceladus which probably gets the energy to sustain its cryo-vulcanism from tidal heating, the energy source for the Triton cryo-vulcanism is thought to come from seasonal heating from the Sun. To explain this we have to dive a little bit into celestial mechanics. Like our Moon and many other moons Triton orbits in synchronous rotation about Neptune; it keeps one face oriented toward the planet at all times. But Triton's axis of rotation is

unusual tilted 157 degrees with respect to Neptune's axis, which is in turn inclined 30 degrees from the plane of Neptune's orbit. Confused? The net result of these two axial tilts is that Triton's rotational axis lies close to the plane of Neptune's orbit, the moons north and south pole point almost directly toward the Sun! And so as Neptune orbits the Sun, Triton's polar regions take turns facing the sun, probably resulting in radical seasonal changes as one pole then the other moves into the sunlight. This traps solar heat under the nitrogen ice and creates a kind of "solid greenhouse effect", which slowly heats the subsurface until nitrogen beneath evaporates and erupts through the crust. Further research has to wait for the far future because currently there are no missions planned to visit the Neptune system with space probes.

The retrograde orbit of Triton has another interesting background: Moons, especially large one's like Triton which are formed out of the same region of the solar nebula as the planets they orbit, should have synchronous orbits. If they have retrograde orbits they must have been captured from somewhere else. It is believed the Triton's origin is actually the Kuiper belt and that it may just another of the many dwarf-planets like Pluto, Eris and others. This would also explain several features of the Neptunian system including the extremely eccentric orbit of Neptune's moon Nereid and the scarcity of moons as compared to the other gas giants. When Triton was first captured it had initially a very eccentric orbit and would have intersected irregular moons and disrupted those smaller natural moons and finally thrown them out of the Neptune system through gravitational interactions (kind of planetary bullying). The orbit of Triton around Neptune has now become a nearly perfect circle with an eccentricity of almost zero. Triton's orbit around Neptune is already close and because of tidal interactions it is slowly decaying further, and predictions are that, some 3.6 billion years from now, Triton will pass within Neptune's Roche limit. This will result in either a collision with Neptune's atmosphere or the breakup of Triton, forming a ring system similar to that found around Saturn.



Known objects of the Kuiper belt (green)

Want to know more about the outer Solar System and chances of life on planets circling distant suns? Then watch this space! The next parts of this gripping story of 'Are We Alone?' will follow in the next issues of the Sun-

**Martin Grasmann**  
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SUNSET ASTRONOMICAL SOCIETY  
THE SUNSET GAZETTE  
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**President, Bill Albe**

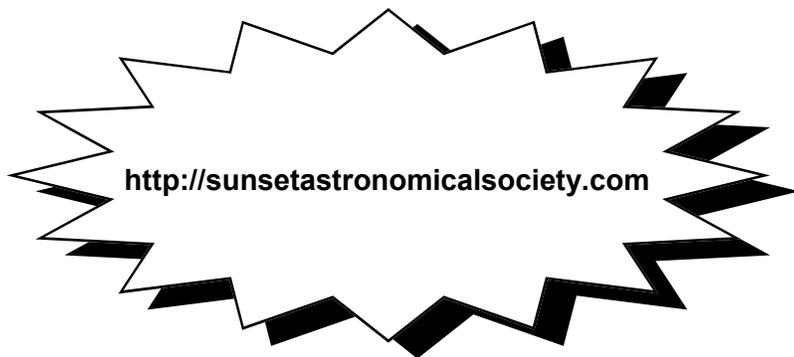
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<http://sunsetastronomicalsociety.com>

This issue can now be accessed in color on  
the website of the SAS!!!

## SAS Meeting

**January 9, 2009**

Delta College Planetarium Theater

7:00 Welcome, new members

**Dale Sisson's**

Constellation of the Month:  
"PERSEUS"

**Break:** Refreshments served

**Bill Albe** presents:

"The Black Sun - A Solar Eclipse in  
South America"

**Don't forget to bring your telescopes for some Sidewalk Astronomy after the meeting (weather permitting).**

**Observable Planets:**

Venus shines very bright in the southwest after sunset. Jupiter and Mercury very low in southwest after sunset.

## UPCOMING EVENTS

**Jan 1:** Waxing crescent Moon ca 15° above Venus.

**Jan 1 - 10:** Mercury relative easily seen 8 to 10° above the southwestern horizon half hour after sunset!

**Jan 2 - 3:** Don't miss the short but intensive Quadrantid meteor shower. Good views between midnight and dawn.

**Jan 4:** First quarter Moon.

**Jan 10:** Full Moon.

**Jan 14:** Venus appears nearly perfect half circle through a telescope.

**Jan 14 - 15:** Moon ca 6° right of Saturn when both rise at 10 pm.

**Jan 17:** Last quarter Moon.

**Jan 21 - 23:** Venus passes just 1.5° of the 6th magnitude Uranus. Binoculars or telescope needed.

**Jan 26:** New Moon.

**Jan 29:** The waxing crescent of the Moon is about 5° below Venus on the 29th.

## UPCOMING MEETINGS

**First Friday of each month:  
Public Observing at the  
Planetarium**

**February 13:** Telescope Workshop: "How to Use the Telescope You Got for Christmas" including "Collimate and Use Your Telescope"

**March 13:** Messier Marathon preparation.

**April 10:** "Astronomical Tutorial" / NASA Lunar Sample training.

+ SAS Elections

**April 17:** Star Party at Tawas: weekend of 17-19 (Fri - Sunday).

**April 24:** Messier Marathon with the AU.

**May 8:** "The Lunar Landings" Dick Van Effen

**May 1 - 31:** Possible Star Party at the 30" Observatory of Garry Beckstrom. Weather permitting on short notice.

**If you are interested in presenting to our club, please contact Bill Albe: (989) 835-4142**