The Astronews

HUI KILOLANI

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September 2014

Wilds of the Marketplace

Peter Besenbruch

There I was this morning, sitting and looking through my new Astrozap filter at the sun. I already owned a perfectly good, year old Astrozap, but I had to buy another. Why? The answer will highlight the great difficulties that we astronomers face. I bought the solar filter, because my single axis drive controller failed last year. I own a marvelous 6", f6 Newtonian that I mounted on a Great Polaris mount. When the hand controller gave out for the fourth and final time last October, I tried contacting telescope stores for a replacement. Vixen, maker of of the Great Polaris mount, had revamped its electronics the year before, and had stopped supplying the old style electronics. Naturally, the new electronics cost $800, and probably wouldn't fit. Celestron, long time seller of Vixen Equipment, was now a Chinese company called Synta. They referred me to some guy in New Mexico who hoarded Vixen junk. He might have something that would work, but he never a) replied to e-mails, or b) answered the phone.
The Celestron CG5 went on closeout sale last December. Here was a Great Polaris clone that cost $700 including shipping. Best of all, it was full com-

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Inside this issue:

Upcoming Events:

- The next meeting is at 7:30 p.m. on Tuesday, Sep..2nd at the Bishop Museum.
- Bishop Museum's planetarium shows are every Saturday of the month at 8:00 PM www.bishopmuseum.org/calendar
- The next Board meeting is Sun., Aug 31 at 3:30 PM in POST building at UH.

President's Message
September 2014

September 27th will be a big mutual event day. Saturn will be occulted by the Moon that night. Saturn will just miss the Moon as seen from the mainland, so we are in a privileged position here in Hawaii for this one. The International Occultation Timing Association gives the disappearance time for Saturn as about 7:34 p.m. for Honolulu, reappearance at about 8:26, and within minutes of those times for other Hawaii locations. The Sun will set more than an hour before Saturn disappears, so it should be easy to find Saturn visually before it disappears, or with binoculars even earlier. The two objects will be only be about 16 degrees above the horizon at disappearance and 6 degrees at reappearance, so that is not ideal. The Moon will be a waxing crescent, only four days old, so Saturn will disappear behind the night side and reappear from behind the daylit side, although the reappearance may not be visible from our Dillingham observing site.

That same night, Mars passes a little more than 3 degrees from the star Antares, named to distinguish it from Mars on occasions such as these. Mars will be slightly brighter than Antares, but the colors are very similar. This is a great chance to compare them side by side.

As it happens, these events occur on the night of our Dillingham public star party. We can probably expect some publicity and a large crowd that night. Fortunately, the disappearance of Saturn is not instantaneous, so many people should be able to see it partially occulted if the weather cooperates, but only one person at each telescope will be able to see it actually disappear, so some people may be disappointed. If any imagers will be there with computer displays hooked up, that could help more people witness the event. Please

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Hawaiian Astronomical Society
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Planets Close To the Moon
Times are Hawaii Standard Time

Sep 8, 00h, M 4.3° NNW of Neptune
(170° from sun in midnight sky)
Sep 10, 16h, M 1.1° NNW of Uranus
(153° from sun in evening sky)
Sep 19, 22h, M 5.3° NNW of Jupiter
(43° from sun in morning sky)
Sep 25, 17h, M 4.1° NNE of Mercury
(25° from sun in evening sky)
Sep 27, 18h, M 1.2° S of Saturn
(Occultation visible in Hawaii)
(44° from sun in evening sky)
Sep 29, 08h, M 5.0° S of Mars
(64° from sun in evening sky)

Venus is closer that 15° from the sun when near the moon in September

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Other Events of Interest
Times are Hawaii Standard Time

Sep 8, 15:38h, Full Moon
Sep 20, 10h, Mercury 0.55° SSW of Spica
26° from sun in evening sky, Mag 0.1 & 1.0)
Sep 21, 12h, Mercury at greatest elongation
(26.4° east of the sun in evening sky)
Sep 22, 16:29h, Autumn equinox
Sep 23, 20:12h New Moon
Sep 27, 14h, Moon 0.16° SSW of dwarf planet 1 Ceres
(43° from the sun in evening sky)
Sep 28, 05h, Moon 1.0° ENE of asteroid 4 Vesta
(51° from sun in evening sky)

4-Vesta (Asteroid) and 1-Ceres (Dwarf Planet) - both have very close approaches to the moon this month.

Planets in September

☿ Mercury
has a rather poor evening apparition this month. It is best viewed in mid-month..

♀ Venus
is too close to the sun to be viewed easily this month.

♂ Mars
is visible in the SW evening sky and is gradually becoming dimmer. .

♃ Jupiter
is climbing in the eastern sky before dawn, rising about 2 hours before the sun .

♄ Saturn
is in the SW after sunset, good viewing. There will be an occultation by the moon on the evening of Sep 27.

♅ Uranus
will reach opposition early next month, so is well placed for viewing after midnight

♆ Neptune
at opposition last month and so is visible most of the night. Late evening is the best time to view .

♇ Pluto
Is visible in the evening sky, setting around midnight

Meeting Minutes

H.A.S. Secretary

President Chris Peterson called the August 5, 2014 meeting of the Hawaiian Astronomical Society to order at 7:38p.m. The meeting was held in the Planetarium, on the grounds of the Bishop Museum, Honolulu, Hawaii. There were twenty members and two visitors in attendance.

Hawaii Space Lecture Series – Regular lectures usually take place at the NASA Pacific Regional Planetary Data Center, room 544 in the Pacific Ocean Science and Technology Building on the Manoa campus of the University of Hawaii. Should you be interested in upcoming lectures or for information you can contact NASA PRPDC at 808-956-3132 or on the Web go to http://www.higp.hawaii.edu/prpdc.

In the News - The Rosetta Spacecraft, of the European Space Agency, will rendezvous with Comet 67P/CG early in August. The orbiter/lander will both orbit and land on the comet. The mission is to image the icy comet as it moves around the sun. The lander portion of the spacecraft will descent to the surface while the orbiter will remain in orbit outside the coma.

Comet Siding Spring (C/2013 A1) is a comet that will make a close pass of Mars around October 19th 2014. The comet may endanger man-made satellites orbiting the Red Planet. The comet is visible through a telescope at about Mag. 9.5 in the late evening sky, getting earlier as the month lengthens.

Comet Jacques (C/2014 E2), discovered only in March of 2014 is a visible object in the northern skies at about Mag. 6.4 in the morning twilight. The comet will be at its closest to Earth at the end of the month, around August 29th.

Lacy Veach Day 2014 – The Hawaiian Astronomical Society will participate with astronomers at the upcoming Lacy Veach Day of Discovery to be held again on the grounds of Punahou School Saturday, October 25th. Gretchen West had a sign-up sheet for those who wish to help out.

Astronews News – At-Large representative and club member Charles Rykken has volunteered to become the new **Astronews** editor. The assembled members voted unanimously to accept him as the new editor. As Charles is our new editor, Andy Stroble volunteered to become the new At-Large representative. The vote to accept Andy as the new At-Large member was also unanimous.

Star Parties – John Gallagher reports that there is one school star party scheduled August and September. Waialua Church and Bible School has asked for a party on August 15th.

President Chris Peterson reported that two donations were received as a result of viewing events earlier this summer: one from Upward Bound at the UH and another from a Kahala School group.

John also suggested that during the summer season that exit times at public and club star parties at Dillingham Airfield be later in the evening. The sun sets so late in the summer months that it seems silly to have exit times that are only one hour after sunset. It was decided that the

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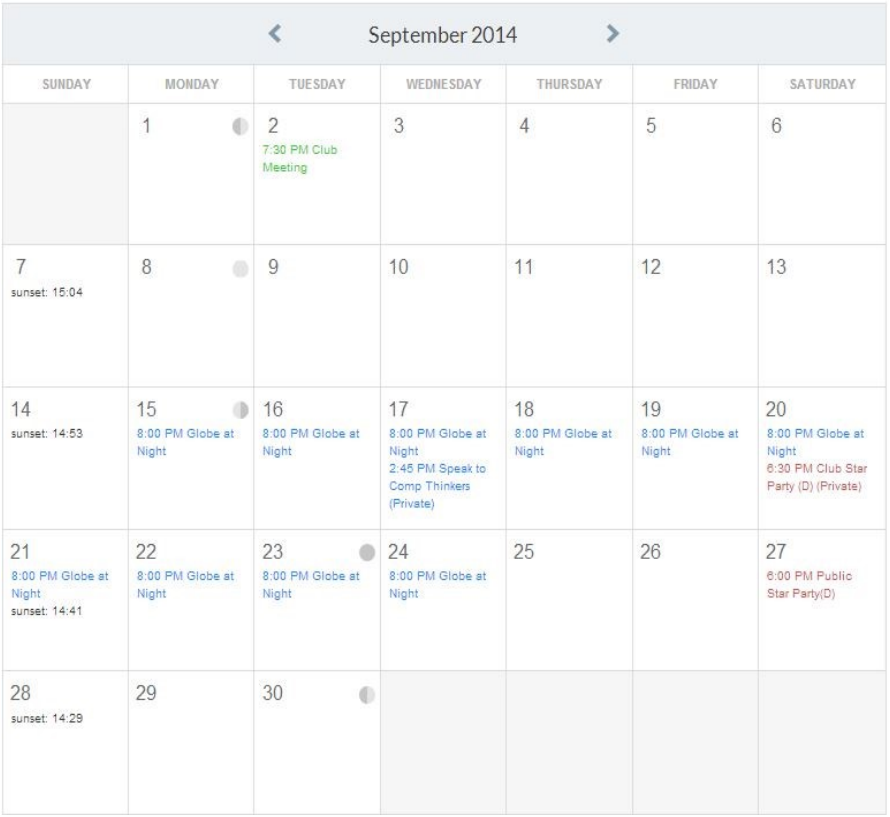

September 2014

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2 7:30 PM Club Meeting	3	4	5	6
7 sunset: 15:04	8	9	10	11	12	13
14 sunset: 14:53	15 8:00 PM Globe at Night	16 8:00 PM Globe at Night	17 8:00 PM Globe at Night 2:45 PM Speak to Comp Thinkers (Private)	18 8:00 PM Globe at Night	19 8:00 PM Globe at Night	20 8:00 PM Globe at Night 6:30 PM Club Star Party (D) (Private)
21 8:00 PM Globe at Night sunset: 14:41	22 8:00 PM Globe at Night	23 8:00 PM Globe at Night	24 8:00 PM Globe at Night	25	26	27 6:00 PM Public Star Party(D)
28 sunset: 14:29	29	30				

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H.A.S. Board member in charge at the star parties would decide the exit times.

Our suburban star parties at Kahala Park in East Oahu and at Geiger Park in Ewa on August 31, 2014 are designated as our time efforts for "International Observe the Moon Night."

Waianae Viewing – Chris Peterson and Tom Giguere described a viewing area in Waianae Valley that is available to the club. They explained that the area is on the grounds of the Mauna Farm Arts and Cultural Village in Waianae Valley. The area is private property that has a good field of view to the East and Northeast horizon. Views to the West suffer some light pollution but it seems to be viable as a good place for viewing meteor showers. Chris and Tom will be determining a date for us to check the place out during an upcoming meteor shower that is not hindered by bright moonlight. More details will be available later.

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President's Report *(Continued from page 2)*
consider coming out to Dillingham that night with your telescope to help out, whether you're an imager or not, to give as many people as possible a chance to view this uncommon event.

Chris

Minutes *(Continued from page 5)*

Starlight Reserve Committee – There was a meeting of the Starlight Reserve Committee in late July or early August. We hope to hear about it at the next meeting by Barry Peckham.

"Wayfinder" Debut – Joanne Bogan indicates the new "Wayfinders" video will be presented to club members at the next H.A.S. general membership meeting. The newly mastered presentation runs about 45 minutes long.

TMT Moves On - It has been reported that the Thirty-Meter Telescope has overcome most of the roadblocks that have been in opposition to its construction. H.A.S. looks forward to its ground breaking.

Help Out at the Bishop Museum – The Bishop Museum is requesting volunteers to sign up to help out at the Museum and run the scope on Saturday evenings 6:30 to 10:00. Anyone interested contact Joanne Bogan.

Speaker – Norbert Schorghoffer, now a member of the faculty at UH Manoa's Institute for Astronomy, via the University of Chicago, MIT, and Cal Tech, joined us at the August meeting to bring us up to date on information about planetary microclimates. As the astronomers and astrobiologists say, "Follow the water." It has been theorized that water imbedded in comets and asteroids have provided the Earth with its water. It seems only logical to look for evidence of water on other planets and in other solar systems in our search for life on other worlds.

Dr. Schorghoffer explained about planetary "cold traps" in our own solar system that harbor ices. Dr. Schorghoffer surprised members by revealing both simple and complex polar cold traps on the planet Mercury. He explained his research using data obtained using the Arecibo telescope. He further explained about such cold traps on Earth's moon and cold air sinks in tropical locations on Earth. Dr. Schorghoffer took questions from the audience as well.

Mahalo – As there was no further business, the meeting was adjourned at 9:17 p.m.

Respectfully Submitted,

Gretchen West
H.A.S. Secretary

Droughts, Floods and Earth's G ravity

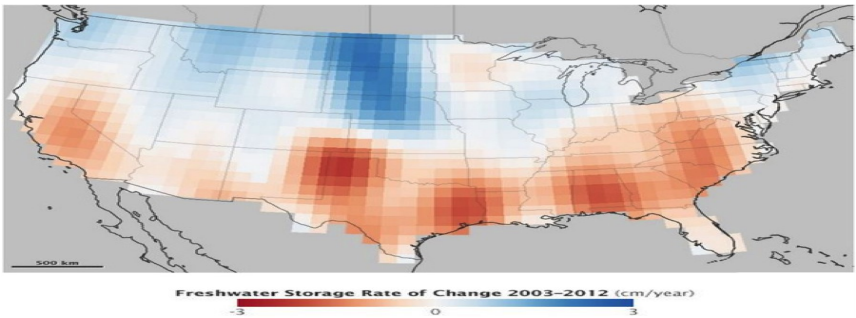
by Dr. Eathan Siegel

When you think about gravitation here on Earth, you very likely think about how constant it is, at 9.8 m/s2 (32 ft/s2). Only, that's not quite right. Depending on how thick the Earth's crust is, whether you're slightly closer to or farther from the Earth's center, or what the density of the material beneath you is, you'll experience slight variations in Earth's gravity as large as 0.2%, something you'd need to account for if you were a pendulum-clock-maker.

But surprisingly, the amount of water content stored on land in the Earth actually changes the gravity field of where you are by a significant, measurable amount. Over land, water is stored in lakes, rivers, aquifers, soil moisture, snow and glaciers. Even a change of just a few centimeters in the water table of an area can be clearly discerned by our best spaceborne mission: NASA's twin Gravity Recovery and Climate Experiment (GRACE) satellites.

Since its 2002 launch, GRACE has seen the water-table-equivalent of the United States (and the rest of the world) change significantly over that time. Groundwater supplies are vital for agriculture and provide half of the world's drinking water. Yet GRACE has seen California's central valley and the southern high plains rapidly deplete their groundwater reserves, endangering a significant portion of the nation's food supply. Meanwhile, the upper Missouri River Basin—recently home to severe flooding—continues to see its water table rise.

NASA's GRACE satellites are the only pieces of equipment currently capable of making these global, precision measurements, providing our best knowledge for mitigating these terrestrial changes. Thanks to GRACE, we've been able to quantify the water loss of the Colorado River Basin (65 cubic kilometers), add months to the lead-time water managers have for flood prediction, and better predict the impacts of droughts worldwide. As NASA scientist Matthew Rodell says, "[W]ithout GRACE we would have no routine, global measurements of changes in groundwater availability. Other satellites can't do it, and ground-based monitoring is inadequate." Even though the GRACE satellites are nearing the end of their lives, the GRACE Follow-On satellites will be launched in 2017, providing us with this valuable data far into the future. Although the climate is surely changing, it's water availability, not sea level rise, that's the largest near-term danger, and the most important aspect we can work to understand!



Meteor Log—September 2014

by Tom Guigere

Late in July, on Wednesday the 30th, a few of us journeyed out to the Waianae side of the island for a look at a potential new observing site. Chris Peterson had previously received an invitation, and had actually been out to the site one time before. Club member, Mary Becker also attended. The purpose of our visit was actually three-fold: provide telescope viewing to the other volunteers, observe the δ-Aquariids meteor shower, and evaluate the site for future use.

The location is actually very interesting and our host was very welcoming. The "farm" is actively worked and provides fresh produce for the residents. It also serves as a quiet retreat for contemplation and a place for artisans to ply their craft. A group of about 20 volunteers were there to help with projects during the next day. These folks were our "customers" for the evening. Following an excellent vegetarian meal, we set up scopes and observed Mars, Saturn, etc. Many of the volunteers were educators and had many questions.

The δ-Aquariids shower was a nice addition to the evening. The shower is not very productive at 15 meteors per hour (maximum under ideal conditions), but we still managed to see 8 -9 members as a group, plus some sporadics. All in all, the site is in a fairly dark location, with just a few lights to the east and west. The horizon varies quite a bit in height. Many showers have a radiant to the northeast, which has a low horizon. The horizon to the west is also low. We can really forget about southern showers as there's a large peak to the south that limits viewing in this direction.

In the future, we'll schedule another telescope session and meteor viewing event, so that club members can check out this new site.

First Quarter	**Full Moon**	**Last Quarter**	**New Moon**
September 2	September 9	September 16	September 24

Shower	**Activity**	**Maximum**		**Radiant**		**V∞**	***r***	**ZHR**
		Date	**λ☐**	**α**	**δ**	**km/s**		
α-Aurigids (AUR)	Aug 28 -Sep 05	Sep 01	158.6°	91°	+39°	66	2.5	6
Sept. ε-Perseids (SPE)	Sep 05 – Sep 21	Sep 09	166.7°	48°	+40°	64	3.0	5

Delta Aquarid meteor, Credit Jimmy Westlake

Treasurer's Report

by April Lew

HAS Financial Report as of August 15, 2014

Initial Balance:	**$3184.54**
Income:	
Donations	120.00
Dues Received	102.00
Total Income:	**$122.00**
Expenses:	
Microsoft program for Astronews	83.76
Astronews printing	65.28
Astronews postage	61.74
S&T Magazine Subscriptions	65.90
Astronomy magazine subscription	34.00
Total Expenses:	**$310.68**
Ending Balance:	**$2995.86**

We welcome three new members this month. They are **Scott Plater** , **Ann Hau** , and **Chen Johnson**. A special thanks to **Gil Contreras** and **The University of Oregon Alumni Assoc.** for their donations. Many thanks also to those renewing their membership(Gil Contreras, David F. Dellalana and Gretchen West)and . As a reminder, please check your membership anniversary date listed on the Astronews address label. Clear skies to all!

2015 Meeting & Star Party Dates

Club Meeting	Dillingham Public	Dillingham Club Only	Kahala/Geiger
Jan 6	Jan 10	Jan 17	Jan 24
Feb 3	Feb 7?	Feb 14	Feb 28
Mar 3	Mar 21	Mar 14	Mar 28
Apr 7	Apr 11	Apr 18	Apr 25
May 5	May 9	May 16	May 23
Jun 2	Jun 6	Jun 13	Jun 27
Jul 7	Jul 18	Jul 11	Jul 25
Aug 4	Aug 15	Aug 8	Aug 22
Sep 1	Sep 5	Sep 12	Sep 19
Oct 6	Oct 3	Oct 10	Oct 17
Nov 3	Nov 14?	Nov 7	Nov 21
Dec 1	Dec 12	Dec 5	Nov 19

Message from your VP:

Here is a reminder that the club has two 8", f6 Dobs, and a 6", f8 Dob for rent. Each comes with two eyepieces and a Barlow lens. The cost is $20 for a month, plus a $20 deposit (which you get back, unless you accidentally dirty the scope by dropping it into Halema'uma'u). If interested, contact Peter

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puterized, and the electronics weren't by Vixen. Highpoint Scientific sold it to me through Amazon store name of Stillwater Equipment, not realizing that I lived in Hawaii. They sent it book rate in revenge, and I received it two months later. It is in many ways a marvelous mount. It could be pointing west,
and you could request an object in the far east, and it would swing around the
zenith and bullseye it. The trouble came when looking for objects overhead. Often telescope and tripod leg tried to occupy the same space, throwing out the alignment. The tripod, a good foot higher than my previous one, would put the eyepiece in an awkward position, making me rotate the telescope tube, and throwing out the cone error alignment, thus forcing another realignment.
Then Synta had another sale. They reduced the price of their mid-range APO line by 10%. What was $1550 for a 120mm ED refractor, emerged as $1400 this July. Better still, the shipping was 2nd Day Air and free. Better, better still, my credit card gave me another 3% off. Besides, my 6" needed recoating (not,really). An unobstructed 4.7" would easily match or beat a 6" Newtonian with a 1.5" secondary (almost true). I really "needed" to use my 2" eyepieces again,,and the refractor's 2" focuser would let me do that (we're talking first world "needs" here). OK, I had to order another eyepiece to fill a gap in the eyepiece range, and I really "needed" that 16" mount extension post so refractor and tripod leg wouldn't try to occupy to same space. Then there was the clumsy focus tube clamping system that made rotating the star diagonal sucha pain. I HAD to fix that with a Baader Clicklock. So much for all the money saved. Is the new scope any better than the old? Yes and no. No, the optics aren't as good. We are talking about mass produced, Chinese stuff, compared to a perfect Parks mirror. We are talking modest zones verses perfection inside and outside of focus. Still, I am impressed with the subtle detail and shadings visible on
Saturn. Even more surprising were the deepsky objects from light struck Mililani. I resolved M4, 5, 10, 12, and 22. M11 looked very good with a nebula filter. All this because a drive controller failed. Now I am forced to sit, looking at the sun's granulation, faculae, and sunspots. We astronomers do suffer.

P.

S.

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About This Image

Intricate spiral arms contain areas of new star formation in this dusty galaxy. This galaxy, which lies about 100 million light-years away, toward the direction of the constellation Leo, was home to a supernova that appeared in 1994.

Credit: NASA, The Hubble Heritage Team and A. Riess (STScI).