

Light Pollution Talk by Dr. Richard Wainscoat

Besides the potluck to get us past hump-month we have a familiar face to talk about light pollution. This is something of considerable importance to HAS due to the planned construction of a real estate development near Dillingham Airfield. This is supposed to be a kind of gentleman's country home development where the gentry can try their hand at a little farming of some sort. Chris Peterson and others are actively involved in monitoring this development to hopefully be able to convince the developers that they can accomplish their aims without a flood of light pollution that would seriously degrade the star gazing experience at Dillingham Airfield. Perhaps Dr. Wainscoat might be able to shed some light on the politics as well as the astrophysics of the aforementioned project.

Membership List

Beginning on page 8 and continuing to page 13 (the penultimate page) you can find the complete the complete list of HAS members less those who requested to not be listed.

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Upcoming Events:

- The next meeting is on Tuesday, Jun. 2nd at the Bishop Museum 7:30 PM.
- 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., May 31 at 3:30 PM in POST building at UH.

President's Message June 2015

Science is largely data driven. While there are some visionaries such as Albert Einstein who can devise theories that can't even be tested with existing technology, most advances are produced when new data becomes available. Whenever it has become possible to observe celestial objects in a new part of the electromagnetic spectrum, for example, new discoveries have followed and led to greater understanding of phenomena.

Serendipity also plays a part. Sometimes we set out to make observations with one objective in mind but find something unexpected. Many amateur astronomers have stumbled on an object other than what they were searching for. Sometimes it's even a more satisfying view than was expected.

The same thing happens with serious scientific investigations. A recent example is provided by the Kepler mission. Kepler was designed to detect planets orbiting other stars by measuring the minute drop in magnitude of a star as a planet passes in front of it. To do this, the spacecraft looked at the same portion of the sky and took measurements every 30 minutes of the brightness of over 100,000 stars. During its main mission, it discovered thousands of planet candidates, many of which have already been confirmed to be exoplanets.

Of course, Kepler's images captured more than just the target stars. Many galaxies were also in its field of view. A team of researchers monitored Kepler's observations and discovered three Type Ia supernovae that Kepler had observed before, during, and after the explosion. These events can happen when two white dwarf stars collide or when a white dwarf accretes sufficient material from a companion

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The Astronews is the monthly newsletter of the Hawaiian Astronomical Society. Some of the contents may be copyrighted. We request that authors and artists be given credit for their work. Contributions are welcome. Send them to the Editor via e-mail. The deadline is the 15th of each month. We are not responsible for unsolicited artwork.

Planets Close To the Moon
Times are Hawaii Standard Time










- June 1, 10h, M 1.9° N of Saturn
(169° from sun in evening sky)
- June 8, 15h, M 3.1° NNW of Neptune
(98° from sun in morning sky)
- June 11, 10h, M 0.47° SSE of Uranus
(61° from sun in morning sky)
- June 14, 16h, M 0.14° WSW of Mercury
(19° from sun in morning sky)
- June 19, 23h, M 5.6° SSW of Venus
(45° from sun in evening sky)
- June 20, 11h, M 4.5° SWS of Jupiter
(51° from sun in evening sky)
- June 28, 16h, M 1.9° N of Saturn
(142° from sun in evening sky)

Mars is closer than 15° from the sun when near the moon in June.

Other Events of Interest
Times are Hawaii Standard Time

- June 2, 06:19h, Full Moon
- June 6, 08h, Venus at greatest elongation
(45.4° east of the sun in evening sky.)
- June 11, 08h, 2 Pallas at opposition
- June 14, 06h, Mars at conjunction with sun
(Passes into morning sky)
- June 16, 04:05h, New Moon
- June 21, 06:38h, summer solstice
- June 24, 07h, Mercury at greatest elongation
(22.5° west of the sun in morning sky)
- June 29, 12h, 1 Ceres at opposition

Planets in June

| | | |
|--|--|--|
| <p>Mercury</p>  <p>makes a fairly good morning appearance during the last half of June..</p> | <p>Venus</p>  <p>shines very brightly in the evening sky, reaching its greatest elongation of 45.4° on June 6.</p> | <p>Mars</p>  <p>is too close to the sun to be observed in June.</p> |
| <p>Jupiter</p>  <p>shines brightly in the southwest after sunset.</p> | <p>Saturn</p>  <p>reached opposition last month, so is visible most of the night.</p> | <p>Uranus</p>  <p>is in the eastern sky before dawn. Will be better placed for viewing later in the year.</p> |
| <p>Neptune</p>  <p>rises about midnight and is visible in the morning sky.</p> | <p>1-Ceres (Dwarf Planet)</p>  <p>reaches opposition on June 29 at magnitude +7.2.</p> | <p>2-Pallas (Asteroid)</p>  <p>reaches opposition on June 11 at magnitude +9.4.</p> |

President Chris Peterson called the May 5, 2015 meeting of the Hawaiian Astronomical Society to order at 7:31 p.m. The meeting was held in Planetarium, on the grounds of the Bishop Museum, Honolulu, Hawaii. There were twenty-six members and three visitors in attendance.

Hawaii Space Lecture Series – This month’s lecture at the UH Manoa is scheduled for 7:30 p.m. Tuesday, May 26, 2015. Dr. Peter Mouginis-Mark will speak on “The Rosetta Mission; Riding with a Comet.” 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>.

Notes- President Chris Peterson reported that he represented the club at the recent IFA Open House on Sunday, April 12, 2015. Chris hosted a table for both the Planetary Data Center and the Hawaiian Astronomical Society, passing out club information and star charts to the interested public.

Chris also reported that the club will take part in the upcoming annual Lacy Veach Day of Discovery at Punahou School. It will take place during October 2015. The actual date will be given at the next meeting. Gretchen West will have a sign up page at the June general membership meeting.

Upcoming Pot Luck Supper – We would like to announce that H.A.S will have another potluck get-together prior to the June 2015 meeting in the Hall of Discovery at the Bishop Museum. If you are interested in participating and bringing goodies, let Gretchen West to sign up your contribution. We will need someone to bring soft drinks or water, cups, plates and napkins, and ice, as well as the special goodies we all look forward to. Help us make the Summer Pot Luck a success.

Next Month’s Speaker – Next month’s speaker will be Richard Waincoat, who will speak on light pollution and what can be done about it.

Give Away – Sue Girard spoke briefly and offered up a free table-top equatorial mount.

Star Party Report – John Gallagher reported April star parties at which we provided support.

April 24 – Ala Wai Elementary School

May 1 – Hawaii Baptist Academy Middle School – The star

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Hawaiian Astronomical Society Event Calendar

JUNE

SUNDAY

CALENDAR YEAR / MONTH

FIRST DAY OF WEEK

2015/June

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--|------------------------------|--|------------------------------|------------------------------|---|--|
| 31 | 01 |  02 7:30 PM Club Meeting | 03 | 04 | 05 6:45 PM Public Star Party (D) | 06 |
| 07 Sunset 17:03 | 08 8:00 PM Globe at Night |  09 8:00 PM Globe at Night | 10 8:00 PM Globe at Night | 11 8:00 PM Globe at Night | 12 8:00 PM Globe at Night 6:45 PM Club Star Party (Private) | 13 8:00 PM Globe at Night |
| 14 8:00 PM Globe at Night Sunset 17:08 | 15 8:00 PM Globe at Night |  16 8:00 PM Globe at Night | 17 8:00 PM Globe at Night | 18 | 19 7:30 PM Hope Chapel West Fam Cp (Private) | 20 |
| 21 Sunset 17:08 | 22 |  23 | 24 | 25 | 26 | 27 7:00 PM Public Star Party (G) 7:00 PM Public Star Party (K) |
| 28 Sunset 17:09 | 29 | 30 | 01 | 02 | 03 | 04 |

Upcoming Star Parties

Public Party-Dillingham Jun. 6 Gretchen West

Public Party Geiger Jun. 27

Public Party Kahala Jun. 27

Upcoming School Star Parties

| | | |
|-----|--------------|--|
| Fri | May 22, 2015 | Hokulani Elementary School (Univ Hawaii Area) |
| SAT | May 23, 2015 | Community Park, Cub Scout Astronomy |
| Fri | Jun 19, 2015 | Camp Timberline (Hope Chapel West Fam Cp) (Kapolei Area) |

President's Report (Continued from page 2)

ion star. The team combined data from Kepler, Swift, and terrestrial telescopes to determine that all three were from white dwarf mergers. In its new mission, Kepler may observe supernovae in other parts of the sky.

It's good to remember that unexpected discoveries happen. While we can't always find what we're looking for, sometimes something more interesting will show up unexpected.

Chris Peterson

(Continued from page 4) Meeting Minutes

party was a bit cloudy, with astronomers sneaking views of the Moon, Jupiter and Venus.

Club astronomers are being asked to contribute their time and expertise at Hokolani Elementary School on Dole St on May 22nd. A club scout troop will join sky enthusiasts at Kahala Field on May 23rd during the monthly suburban viewing at first-quarter moon. Chris Peterson has volunteered to meet the troop prior to the star party and give them tips on how to view the constellations and the etiquette for telescope viewing.

Happy Birthday Hubble - This year marks the 25th anniversary of the advent of the Hubble Space Telescope. H.A.S. President Chris Peterson lead us through an interesting and informative power point presentation showing year-by-year accomplishments achieved through its construction, rehabilitation and use.

Thirty Meter Telescope – Chris reviewed the controversy that has arisen regarding the Thirty Meter Telescope to be built at the summit of Mauna Kea on the Big Island of Hawaii. Chris outlined the protesters concerns and how the developers of the TMT have worked to address those concerns. H.A.S. has supported the TMT and hopes a resolution of the difficulties will come about soon.

Hokulea's Voyage – Our intrepid Joanne Bogan gave us a glimpse of the maps used by the wayfarers of the voyaging canoe, Hokulea and its teamed vessel, the Hikianalia. Joanne put up on the dome the night skies that the voyagers will encounter. She then projected the mapping tools the wayfarers will use to aid them as they move across the globe. Amazing stuff.

Mahalo – As there was no further business, the meeting was adjourned at 9:37 p.m. Refreshments were served in the rotunda.

Respectfully Submitted,

Gretchen West

H.A.S. Secretary

Going up into space is the best way to view the universe, eliminating all the distortionary effects of weather, clouds, temperature variations and the atmosphere's airflow all in one swoop. It's also the best way, so long as you're up at high enough altitudes, to view an entire 50 percent of Earth all at once. And if you place your observatory at just the right location, you can observe the *same* hemisphere of Earth continuously, tracking the changes and behavior of our atmosphere for many years.

The trick, believe it or not, was worked out by Kepler some 400 years ago! The same scientist who discovered that planets orbit the sun in ellipses also figured out the relationship between how distant an object needs to be from a much more massive one in order to have a certain orbital period. All you need to know is the period and distance of one satellite for any given body, and you can figure out the necessary distance to have any desired period. Luckily for us, planet Earth has a natural satellite—the moon—and just from that information, we can figure out how distant an artificial satellite would need to be to have an orbital period that exactly matches the length of a day and the rotational speed of Earth. For our world, that means an orbital distance of 42,164 km (26,199 miles) from Earth's center, or 35,786 km (22,236 miles) above mean sea level.

We call that orbit *geosynchronous* or *geostationary*, meaning that a satellite at that distance always remains above the exact same location on our world. Other effects—like solar wind, radiation pressure and the moon—require onboard thrusters to maintain the satellite's precisely desired position above any given point on Earth's surface. While geostationary satellites have been in use since 1963, it was only in 1974 that the Synchronous Meteorological Satellite (SMS) program began to monitor Earth's weather with them, growing into the Geostationary Operational Environmental Satellite (GOES) program the next year. For 40 years now, GOES satellites have monitored the Earth's weather continuously, with a total of 16 satellites having been launched as part of the program. To the delight of NASA (and Ghostbusters) fans everywhere,

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Who Are the Shining Stars of HAS ?

Please refer to the May 2015 issue of the ASTRONEWS for an explanation of this column. This column recognizes and commends members of the club who go the extra miles to support school and other star parties that are outside the club's Public star parties thus fulfilling a prime mission of the club to provide outreach on the Wonders of the Night Sky. This report covers the period from 21 Apr 15 through 20 May 15:

Joanne Bogan, Steve Chun, John Gallagher (2), Susan Girard, Dyron Mack, Chris Peterson (2), Charles Rykken, Sapavith (ORT) Vanaprucks (2)

Treasurer's Report

by April Lew

| HAS Financial Report April 16, 2015 to May 15, 2015 | | | |
|---|----------------------------------|--------|---------|
| Beginning Balance | | | 2507.61 |
| Income: | | | |
| | Dues Received | 286.00 | |
| | Donation | 26.00 | |
| | Magazine subscription orders | 102.00 | |
| Total Income | | | 274 .00 |
| Expenses: | | | |
| | May Astronews printing & mailing | 173.80 | |
| | Astronomy Mag. sub | 102.00 | |
| Total Expenses | | | 275.80 |
| | | | |
| Ending Balance | | | 2505.81 |

. We welcome four new members this month. They are **Robert & Terrie Swanson, Jordan & Jonathan Barnes, Peter & Ben Faso, Robert Black & Libby Stoddard, and Vasana Chiu.**

Many thanks to those renewing their membership (Mary Becker, John Gallagher, Mark, Ryan, & Lauren Grattan, and Liz Tam, Enoy Vongsay Donation \$15.00, Duane & Joanna Wenzel, Elissa Yellin Donation \$5.00, Leighton & Diane Hasegawa, Albert, Aurora, Joy, Anthony, & Zoe Mariana). As a reminder, please check your membership anniversary date listed on the Astronews address label. Clear skies to all!

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GOES-R series will launch in 2016, with thrice the spectral information, four times the spatial resolution and five times the coverage speed of its predecessors, with many other improved capabilities. Yet it's the simplicity of gravity and the geostationary "G" in *GOES* that gives us the power to observe our hemisphere all at once, continuously, and for as long as we like!

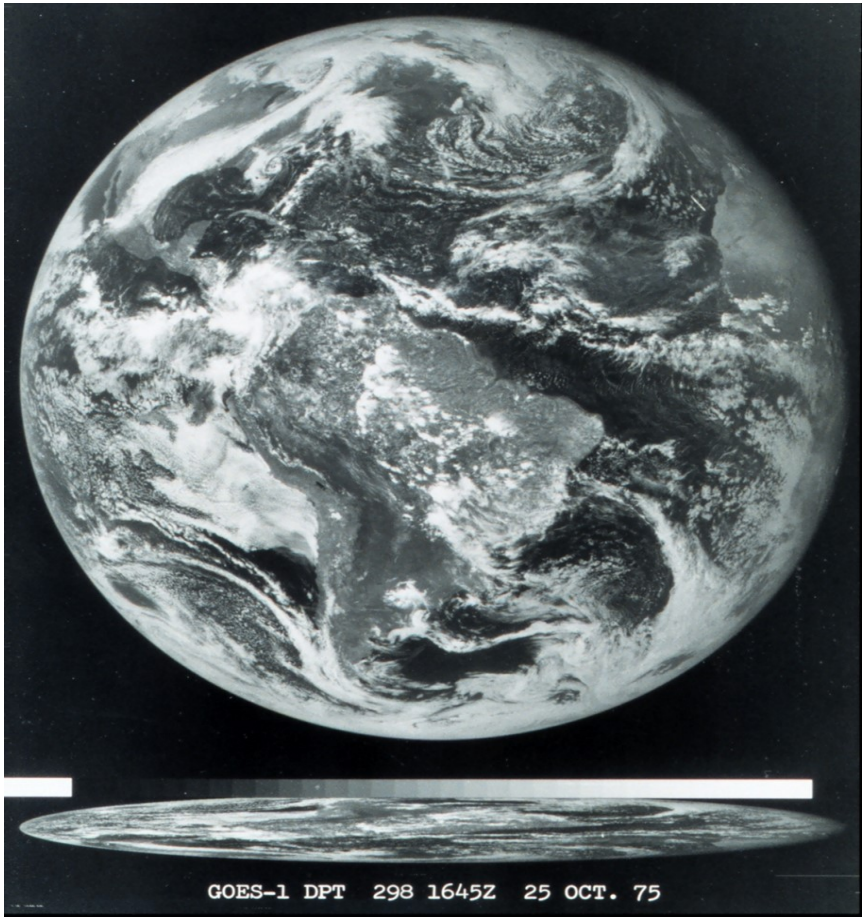
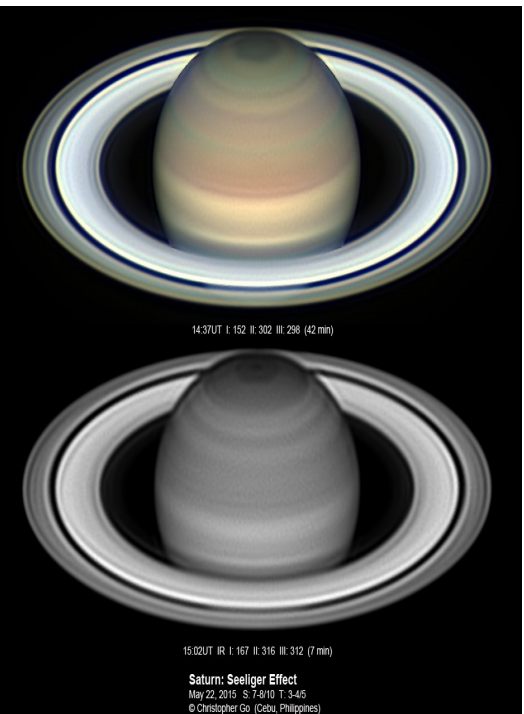


Image credit: National Oceanic and Atmospheric Administration, of the first image ever obtained from a GOES satellite. This image was taken from over 22,000 miles (35,000 km) above the Earth's surface on October 25, 1975.

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Explanation: Telescopic observers on Earth have been treated to spectacular views of Saturn lately as the ringed planet reached its 2015 opposition on May 23 at 0200 UT. *Of course* opposition means opposite the Sun in Earth's sky. So [nearopposition Saturn is up all night](#), at its closest and brightest for the year. [These sharp images](#) taken within hours of the Sun-Earth-Saturn alignment also show the strong brightening of Saturn's rings known as the opposition surge or the [Seeliger Effect](#). Directly illuminated, the ring's icy particles cast no shadows and strongly backscatter sunlight toward planet Earth, creating the dramatic surge in brightness. Saturn currently stands in the [sky now file](#) from bright Antares, alpha star of the constellation Sagittarius.

Place cover
up this snudge
with some-
thing. A post-
age stamp is
suggested..