

Renew now for 2015. Don't let your membership expire. See page 5 for details.

From the President

By Chris Angelos

By the time you read this the 2014 season of public programs will have ended at the Fremont Peak Observatory.

The Fremont Peak Observatory Association has a contract with the California Parks and Recreation to provide those programs and I want to thank all those FPOA members who volunteered to help bring astronomy to the public this year. It is our volunteers that it possible to complete the programs required by the State. Not everything the FPOA does is mandated by the state. The Star-B-Q and Member Appreciation Night (MAN) are primarily for the benefit of FPOA members. In addition, members with an observer class membership and Challenger certification can also schedule the use of the 30 inch Challenger Telescope for themselves or their group. It is our FPOA board members who take responsibility to keep it all running.

Now that that this year's public programs are complete, it is time when the FPOA board looks forward to the coming year. The 2015 schedule of public programs and board meetings has already been determined and approved.

More important, the board is concerned about how grow the FPOA membership and what improvements we should make to the observatory in the future. For past several years The FPOA membership has barely maintained its numbers. As with many volunteer organizations, it is the same people year after year who to deal with building maintenance, the equipment, finances, tax forms, etc. The FPOA needs more people passionate about bringing astronomy to join the FPOA and get involved with the programs we do for our members and the public.

FPOA Programs 2015

Saturday Evening Programs

Apr 11, 18, 25 May 9, 16, 23
Jun 13, 20 Jul 11, 18, 25
Aug 8, 15, 22 Sept 5, 12, 19
Oct 3, 10, 17

Solar Programs

Mar 21 Apr 18 May 16 Jun 20
Jul 18 Aug 15 Sept 12 Oct 10

Board Meetings

Jan 24 Feb 21 Mar 21 Apr 18
May 16 Jun 20 Jul 18 Aug 15
Sept 12 Oct 10 Nov 14

Special Events

Star-B-Que Aug 15
Member Appreciation Night Sept 12

Please check <http://www.fpoa.net/schedule.html> for changes or updates to this schedule.

Pluto

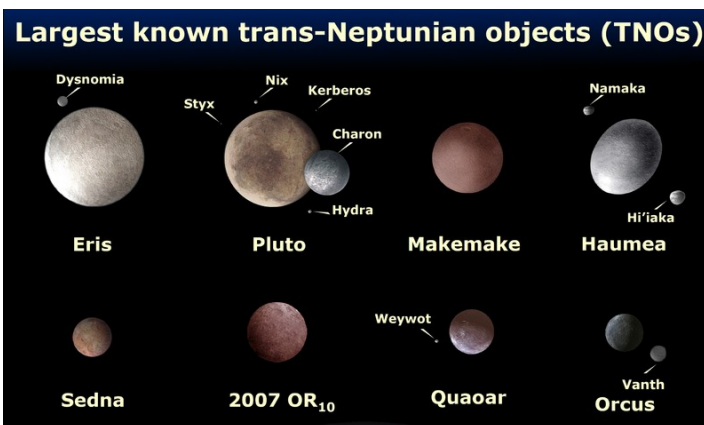
By Patrick Donnelly

My favorite saying from the last five (5) years is, "A dwarf planet is a celestial object, which is not a planet..." WOW, how's that for a contradiction? Using this logic a dwarf star is a celestial object, which is not a star. I bring this to your attention because this statement accurately illustrates the ridiculousness and the convoluted logic used in the Pluto controversy.

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What should have been stated is, "Pluto is a planet of a different type than Earth or Saturn." Moreover, Earth is a different type of type of planet than Saturn. As it stands at the present (October 2014) Pluto is designated as a Dwarf Planet, which is the third type of planet in our solar system. The other two (2) types of planets are gas giants and rocky terrestrials.

Having established the planetary nature of Pluto, those who say Pluto has been demoted, are not correct. If anything Pluto has been promoted. Because of Pluto a new type of planet, dwarf planet, has been established, and Pluto is the first dwarf planet. The latest research indicates that Pluto is the largest of the dwarf planets. The size of Eris has been refined and now appears to be slightly smaller than Pluto. Pluto has five (5) moons, and the largest moon is almost the same size as Pluto. In many astronomical publications both Pluto and Ceres are listed with the other eight (8) planets, which is something of a promotion. Finally, Pluto has an entire class of celestial objects named after it. All dwarf planets orbiting beyond the orbit of Neptune are considered "Plutoids." There are four known Plutoids, Pluto, Eris, Makemake, and Haumea and a list of up to 70 more potential candidates. If one wishes to consider Pluto as not special any more, the facts about Pluto would seem to suggest otherwise.



Right now Pluto is hiding up in the constellation of Sagittarius, embedded within the background of the Milky Way. I say hiding because finding a +14.1 magnitude object against the background of the Milky Way would be extremely difficult. I estimate that a good 12" or larger telescope at high power may be necessary to find Pluto. This is necessary, in order to get a very small field of view, where Pluto can be identified.

Pluto is located about 4° north east of M22 near 29 Sagittarii. To find the largest of the dwarf planets and the prototype for the class of astronomical objects known as Plutoids, one will need an extremely detailed star chart. Considering that Pluto will remain within the background of the Milky Way for the next 10 or so years, one should try to spot Pluto now or wait a long time.

October 23rd Partial Solar Eclipse

By Rob Hawley

As someone who travels to see total eclipses, the partial phase is always a distraction or tease leading up to totality. However, on October 23 the umbra never reached the earth's surface, so the partial phase became the whole attraction. Since it was visible in my backyard and traveling to Northern Canada would just give a a greater percentage of partial, I just stayed home.



This was taken about 2223 UTC (3:23 PM PDT) and is nearly the maximum.

One thing notable on this eclipse was the large sunspot grouping. It was easy to see with your naked eyes (behind eclipse glasses). It was so impressive that it was made an Astronomy Picture of the Day. Other groups were visible all over the sun.

For more pictures see my website

<http://robhawley.net/partial141023/index.html>

The next total eclipse will be in March in the arctic. In August 2017 the moon's shadow comes to the U.S.

Rob Hawley

www.robhawley.net

Memorial Bench Provides Spectacular Southern Vistas

By Doug Brown

A new bench now graces the southeastern corner of the pad area, providing a convenient place to relax and appreciate Fremont Peak's spectacular southern views.



The bench was donated by Rebecca Stone and children, Ruth Callaway and David Callaway, in memory of their beloved husband and father Joseph E. Callaway. Rebecca says that one of their favorite memories of things they did before Joseph's health deteriorated was enjoying a meteor shower while lying on blankets in the parking lot of Fremont Peak State Park. While they were not at the time members of FPOA, they had always talked about wanting to make more frequent trips to Fremont Peak and qualify as observers.

A dedication ceremony will be held early next year, and a memorial plaque will hang in the observatory.

Please join me in thanking Rebecca and family for their extremely generous donation to FPOA, which will provide years of use while memorializing Joseph. Thanks also go to the highly skilled installation crew, including Loren Dynneson, Rick Morales, Pat Donnelly, Rob Hawley, and John Parker.

CAMS at Fremont Peak Observatory

By Peter Jenniskens

It is a cold and gray day here at Fremont Peak Observatory. The drizzle of rain has left puddles on the window of the CAMS video camera surveillance box above the entrance to the observatory. I am not worried. If the sky clears tonight, the cameras will come to life and the warm air inside the box will clear up the window to the sky.

Since October 2010, twenty video surveillance cameras have filmed the night sky over Fremont Peak and recorded everything that moves high up in the atmosphere over an area stretching north to Sacramento and south to nearly San Luis Obispo. We are hunting for meteors. The direction to each meteor track is calibrated against the background stars and combined with similar observations from Lick Observatory and Sunnyvale, at the camera stations operated by Bryant Grigsby and Jim Albers. Jim's home-run station in Sunnyvale has inspired him to make many improvements to the CAMS system, that also benefit the station at Fremont Peak Observatory.

At the end of last year, 175,000 meteoroid tracks were recorded throughout the year. A few weeks in the winter months are still poorly observed, but the rest of the year is well covered. The 3-year drought here in California came with many clear nights. Results up to March 2013 have been analyzed and a total of 320 meteor showers were mapped, over 100 of which were never observed before.

Many of these are weak showers that need more observations to establish their true identity. For that reason, we are working to expand the CAMS network by adding more PC-run cameras operated by amateur astronomers from home. Former FPOA board member Dave Samuels coordinates these "Single-CAMS" stations in the Bay Area and beyond and has written many scripts to run PC-operated cameras autonomously. Bay Area single-CAMS stations now include San Mateo (Dean Drumheller), Walnut Creek (Jim Head), Foresthill (Jim Wray), and Brentwood (Dave Samuels).

The more cameras, the higher the yield of meteors. Single-CAMS no longer means running a single camera. Pete Gural of Sterling, Virginia, developed the tools to run two, four or even eight cameras from a single framegrabber board. This year, Jim Wray in Foresthill, with help of Pete and Dave,

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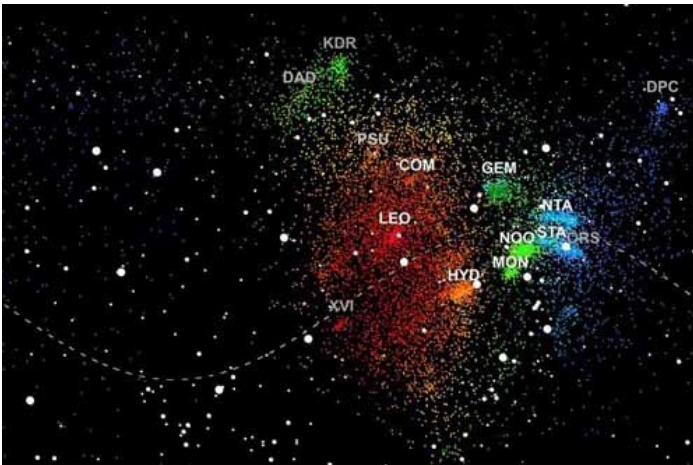
CAMS

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developed a 16-camera setup, which uses one PC and two 8-channel Sensoray framegrabber boards. The new setup opens up a big area north of the Bay Area that now needs Single-CAMS coverage for triangulation. If you are interested in helping out by setting up your own cameras go to :

<http://cams.seti.org>.

Today, I am downloading the data from December. The five unix computers in the observatory lecture room at Fremont Peak Observatory are humming along while I copy the pre-processed data to portable hard drives. The storage drive of unit 2 has developed a problem. First time for Fremont Peak. I need to let Rick Morales know that unit 2 will be offline for a few days. Rick keeps an eye on the proper operation of the station.



A single-week (December 1-8) compilation of directions from which 3240 CAMS-derived meteors and 4250 meteors observed by the Japanese SonotaCo network were approaching us. Fast meteors are red, slow are blue. The blobby concentrations of meteor directions are meteor showers, labeled by their IAU approved 3-letter code. Examples: GEM are the annual Geminids, while DPC are the December Phi Cassiopeiids, a shower detected by CAMS in 2012, but not in other years.

Sadly, Fremont Peak has no internet connection. All other stations send their detected meteor trails automatically to the SETI Institute where, after all data have come in, I do the triangulations. Typically, we have between 100 and 200 meteor trajectories per night, but good nights can go up to 500 or 600. The more meteors are detected, the more detailed are the maps that show the direction and speed at which those meteors are approaching us.

Two nights ago, the Ursid meteor shower is rumored to have had exceptional meteor activity over

Japan. After I get home, I will analyze the data gathered here at Fremont Peak Observatory and hope we caught a glimpse of that event!

If we didn't catch it, others might have. Pete Gural is responsible for the CAMS software, which makes it possible to process the video from many video cameras. Pete now also runs a small network on the east coast (CAMS@Atlantic). Another small 2-camera network is run by Andy Howell near Gainesville in Florida (CAMS@Florida).

CAMS is expanding globally. In the Netherlands, there now is a 30-camera CAMS@BeNeLux network run by Carl Johannink. And since September we now also have a 32-camera network in the southern hemisphere. In a project with meteor astronomer Jack Baggaley of Canterbury University at Christchurch, New Zealand amateur astronomers Ian Crumpton and Peter Aldous are operating 16 cameras each at West Melton (near Christchurch) and 110 km south from there in Geraldine.

The CAMS-derived trajectories are now also used for other purposes. Since March of 2013, we are running a box of 16 cameras at Sunnyvale with objective gratings that take the light of the meteor and split it into the emission lines from elements iron, magnesium, sodium, and calcium. From this, we get the composition of the brightest meteors. Each clear night we catch a few. We are still working on developing the software tools to analyse this data.

About 2–3 times a year, CAMS catches a bright fireball. Visual sightings of these fireballs are reported on a website run by the American Meteor Society. The CAMS-calculated trajectory points to where meteorites may have fallen. Based on these directions, Novato resident Lisa Webber recovered the meteorite that fell on her house on October 17, 2012. Freshly and pristinely recovered meteorites are a unique window on the solar system's early evolution. Results were published in the August issue of the journal *Meteoritics and Planetary Science*.

The most recent CAMS-detected fall was in the Central Valley, just north of Patterson. The fireball was detected on June 2 at 09:48:28 UT. Doppler weather radar may have glimpsed the falling rocks. Mike Koop and I searched the public roads in that area, but did not see any black-crust rocks. Since the successfully recovered Sutter's Mill fall in April of 2012, Wendy Guglieri coordinates a small but dedicated team of volunteer searchers, but they too did not succeed yet in finding pieces of this rock from space.

If you like to follow the CAMS project, set up your own camera, or like to read about possible meteorite falls in our area, please go to: <http://cams.seti.org>

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Calculated fall area of the 2014 June 2 fireball north of Patterson. The fireball moved north to south (white line), with winds blowing meteorites to the east. Purple areas are the radar reflections that may indicate falling meteorites.

Peter Jenniskens is a meteor astronomer with the SETI Institute and NASA Ames Research Center. He is the principal investigator of NASA's CAMS project.

2015 Membership Renewal

Renewals are easy. You can use the forms on the membership page <http://www.fpoa.net/membership.html> to pay with either PayPal or via a credit card. For those preferring paper you can just send a check (that has your current correct address) to : FPOA Membership, c/o Rob Hawley, 1233 Hillcrest Dr, San Jose CA 95120

If your email has changed, then please be sure to include that in either the PayPal payment as a comment or a note with your check.

EMAIL DELIVERY OF THE OBSERVER

Dear FPOA Members,
We have been delivering the Observer via email for the past several years. This obviously saves the Association postal expenses, and assures the quickest delivery to you. However, several of you no longer have valid email addresses, due to ISP changes, moves, etc. If you would like to continue to receive, or begin to receive, notification of the Observer via email, please send your current email address to membership at fpoa.net

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The *Fremont Peak Observer* is published four times a year (Winter, Spring, Summer, Fall). Articles from members are encouraged and should be emailed to <schedule at fpoa.net > Articles should be in plain text or MS Word format. Deadlines are Feb. 1, May 1, Aug. 1 and Nov 1, respectively.

FPOA on the Internet

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