



# The Refractor

*The Bulletin of the Eastbay Astronomical Society*  
 Founded in 1924 at Chabot Observatory, Oakland, California

Volume 88  
 Number 02  
 December 2011

## December EAS Lecture

**Title: “A Guide to Lakefront Vacationing on Titan: Hydrocarbon Lakes and their Role in the Methane Cycle”**

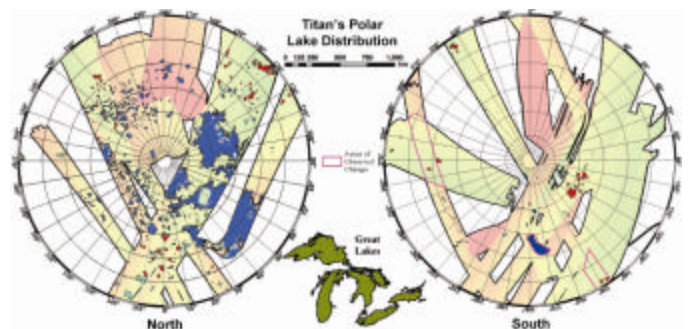
**Speakers: Dr. Alex Hayes,  
 University of California, Berkeley**

**When: Saturday, December 17th, 7:30pm**  
**Location: Hauben Resource Center Room**  
**2nd Floor, Dellums Building**  
**Chabot Space & Science Center**

Saturn’s moon Titan is the only extraterrestrial body currently known to support standing bodies of liquid on its surface and, along with Earth and Mars, is one of only three places which we know to possess or have possessed an active hydrologic cycle. Understanding the nature of Titan’s hydrologic system teaches us about the history of volatile compounds across the solar system and helps define Earth’s place within it. Titan’s hydrologic cycle represents a simpler version of Earth’s water cycle, lacking an ocean as a global sink of liquid and heat, and acts as a model for the evolution of planets around other stars, as its methane-based system may be more common than Earth’s water-based system.

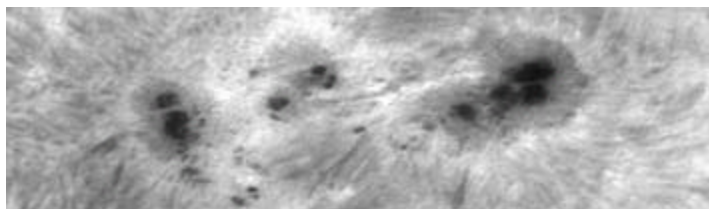
This lecture will review several studies related to Titan’s hydrologic system, particularly focusing on the role of lacustrine (lake) deposits. Synthetic Aperture Radar (SAR) images of Titan’s polar regions reveal hydrocarbon lakes with morphologies and scales similar to terrestrial counterparts. We will review the geographic distribution of these features, discuss their evolution, and model their interaction with a local porous regolith. There is a hemispherical

asymmetry in lake distribution, potentially explained by an asymmetry in the intensity of Titan’s seasons caused by Saturn’s orbital parameters. The periodic evolution of these parameters provide a mechanism for transferring not only methane, but also less volatile species such as ethane, from pole to pole over tens of thousands of years.



In addition to discussing the nature and evolution of Titan’s lakes, we will also review the other mechanisms that modify its surface including aeolian (wind/sand), fluvial (liquid/channels), pluvial (rainfall), cryo-volcanic (ice volcanoes), and impact processes. These processes generate landforms, such as vast equatorial dune fields and dendritic channel networks, which are similar in both scale and appearance to landforms commonly observed on Earth. This strange yet familiar landscape makes Titan one of the most Earth-like planetary bodies in our solar system. At the end of the seminar, we will review the future of Titan research including an overview of the Cassini Solstice Mission and TiME; a proposed NASA mission to land a boat in a Titan lake!

Alex Hayes is a Miller Postdoctoral Fellow at the University of California, Berkeley, and an Adjunct Assistant Professor in the Astronomy Department at Cornell University. Alex is a Planetary Scientist who uses spacecraft-based remote sensing to study the surfaces of solar system objects. To-date, his research has focused on Mars and Titan using data from the Mars Exploration Rovers, Mars Reconnaissance Orbiter, and Cassini Mission to Saturn.



### See Sunspots at Chabot!

Live viewing of the sun every clear Saturday and Sunday afternoon.

**DINNER WITH THE SPEAKER**  
 5:30, Sat, Dec 17  
**Hunan Yuan**  
 4100 Redwood Rd.  
 (next to Safeway)  
 No need to confirm,  
 Just show up!

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**EAS Library:** The collection contains books from the EAS Burn's Memorial Library, the old Chabot Observatory Library, and will eventually include book collections donated by EAS members Harold Weaver, Carter Roberts, Betty Neall and John Westfall. Recently added to the collection is a complete copy of the National Geographic's - Palomar Observatory Sky Survey - both 14" square prints and negatives. A light table will shortly be installed for examining the negatives.

Hours: 3:00-6:00pm / 7:00-10:00pm weekdays, and 30 minutes before and immediately following monthly EAS lectures. The library is located on the second floor of the Dellums Building, down the hallway next to the interactive lunar lander exhibit. Off-hour access can also be arranged by contacting the EAS librarian John Fang at [jhfang@sbcglobal.net](mailto:jhfang@sbcglobal.net).

Volunteer librarians are needed to expand library hours. **We are particularly interested in any member having experience with book cataloging software.** If you'd like to help contact EAS president Barry Leska at [b.leska@comcast.net](mailto:b.leska@comcast.net)

### **FUTURE CONJUNCTIONS 2011-2012**

Dec 17 General Meeting, Chabot, Hauben Rm, 7:30pm  
 8 Board Meeting, Chabot, Library, 7:30pm  
 4 EAS MOVN, 7pm-10pm, Wightman Plaza  
 Jan 8 Holiday Party, Chabot, Hauben Rm, 7:30pm  
 12 Board Meeting, Chabot, Library, 7:30pm  
 EAS MOVN, 7pm-10pm, Wightman Plaza

For questions or if you are uncertain about the weather, call (925)926-0853 before 6pm, or check Chabot's weather page at <http://www.chabot.space.org/forms/weather.aspx>

### **WANTED: PHOTOS OF OLD CHABOT**

Do you have photographs of the Mountain Boulevard Chabot Observatory? If you do, pick out the best of the best and send a scanned image to the Newsletter editor. A new image will be posted in the newsletter each month.

**EAS Loaner Scope Program** has telescopes available for rental by EAS members. Scopes include 60mm and 80mm refractors, a C-90, two 10 inch Dobsonians, and ; 4 and 8 inch Schmidt-Cassegrains. Scope rental is \$15 a month, with a \$50 deposit. For information, contact Barry Leska by E-mail at [b.leska@comcast.net](mailto:b.leska@comcast.net)

### **Chabot Space & Science Center Invites EAS Members to Volunteer with Us!**

- Share your knowledge of and passion for astronomy with thousands of CSSC visitors
- Experience the unique opportunity to operate Chabot's historical telescopes
- Share your own telescope at Chabot\*
- Inspire young astronomers and future scientists by assisting students in our astronomy education programs

**Explore these opportunities And find out about our next Volunteer Orientation!**

<http://www.chabot.space.org/adult-volunteers.htm>

*\*EAS members who are only interested in sharing their own telescope at Chabot (not a full volunteer commitment) are required to attend a volunteer orientation. After completion, you may join us on deck and share your own telescope any Friday or Saturday night! Chabot Volunteers must make the regular volunteer commitment and pursue official placement through the Volunteer Manager.*

# NEAR MISS AT CHABOT!

## Asteroid 2005 YU55 08 November 2011



Asteroid 2005 YU55 as it traversed 9 arc minutes of the sky in just 90 seconds. The asteroid is nearly black in color, so it appears darker than the background stars. Thirteen images of the asteroid are combined in this photo to graphically show its movement relative to background stars.

On Tuesday, November 8th, asteroid 2005 YU55 made a spectacular close approach to the Earth. The 400 meter (1,300 ft.) asteroid came within 202,000 miles of the Earth -- closer than the Moon!! It made its closest approach at 3:30 in the afternoon, but was still very close, and moving very quickly during the evening after dark.

Gerald McKeegan, Conrad Jung and Alan Roach set up three cameras on Chabot's 36-inch telescope (Nellie), including a MallinCam color video camera that fed live images to a monitor next to the telescope, as well as to

Chabot's web site. Despite the short notice, more than 200 visitors came up to the observatory to get a once-in-a-lifetime chance to watch an asteroid move across the sky in real time.

The asteroid was moving so fast that Nellie had to be repositioned every few minutes. EAS member Alan Roche was a real trooper, manning Nellie's hand controller for three hours, keeping the asteroid in the video camera's field of view.

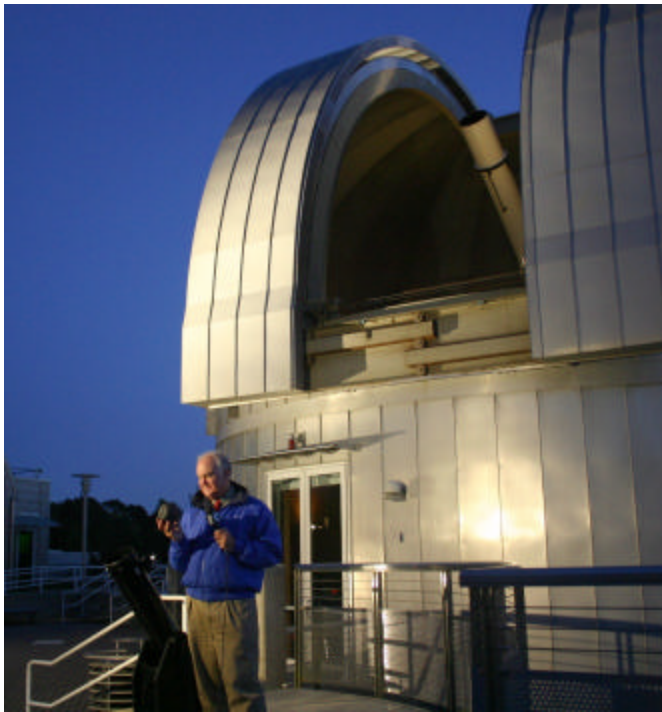
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More than 200 visitors came up to the observatory for a once-in-a-lifetime chance to watch live video of a very close passing asteroid moving across the sky. EAS member Alan Roche, at left with Nellie's hand control, constantly adjusted the telescope pointing to keep the fast moving asteroid in the field of view on the wide screen computer monitor.



Chabot visitors watching live video feed from one of Nellie's cameras as the asteroid quickly moved across the field of background stars. Alan Roche at far upper right controlling Nellie's tracking.



Along with all the visitors, we had two local TV news crews on site for the event. They made liberal use of both Nellie and Rachel as backdrops for their live reporting.

In addition to the images included hear, Conrad Jung's image of the asteroid made it to the Spaceweather.com website. Check it out at:

[http://spaceweather.com/submissions/large\\_image\\_popup.php?image\\_name=Conrad-Jung-4x15sec2005YU55-8btsjpv2smjp\\_1321028956.jpg](http://spaceweather.com/submissions/large_image_popup.php?image_name=Conrad-Jung-4x15sec2005YU55-8btsjpv2smjp_1321028956.jpg)

Report and photos provided by Gerald McKeegan

#### Live news coverage of the event.

Channel 2 science reporter John Fowler reporting live on the observing deck.

Channel 5 reporter Len Ramirez at right with Nellie.



## **Eastbay Astronomical Society Holiday Potluck Dinner**

When: Sunday, Jan. 8th, 6:30pm-9:30pm


Where: Chabot Space & Science Center,  
Kepler-Copernicus rooms.

EAS will provide turkey and ham while trimmings shall be provided by EAS members according to last names:

A-F: Finger Food   G-L: Drinks  
M-R: Dessert   S-Z: Salads/Veggies.

And, yes, yet another Wacky Gift Exchange. These are not necessarily gifts that are wacky, but rather, it's the process of giving/getting the gifts that's wacky. If you wish to participate, simply bring a wrapped gift. It could be new or used, but must be something someone would actually want (no poo-pets, scented soap, whoopee cushions, non-working devices, etc., please). It should have a value of between \$5 and \$10 (or more, if you can afford it). Participants draw numbers from a hat, the first person picks a present, and opens it. The second person can choose to steal the first person's gift, or open a new gift. If the first person's gift is stolen, s/he gets to pick a new gift, and opens it, and so on and so forth. After the last gift is opened, the first person has the option to steal someone else's gift, however, each gift can only be stolen twice; after that, it is un-steal-able.

Setup will start around 5:30pm, and if you're so inclined, we could use extra hands then and after the festivities. Anyone interested in helping with set ups please contact Don Saito at (510) 301-2570 or send email to [don-saito@comcast.net](mailto:don-saito@comcast.net).



# Eastbay Astronomical Society

At Chabot Space & Science Center  
10000 Skyline Boulevard • Oakland, CA 94619

**December 2011**  
RETURN SERVICE REQUESTED

## Eastbay Astronomical Society

President: Barry Leska b.leska@comcast.net

Treas: Richard Ozer (510) 532-5477 rozer@pacbell.net

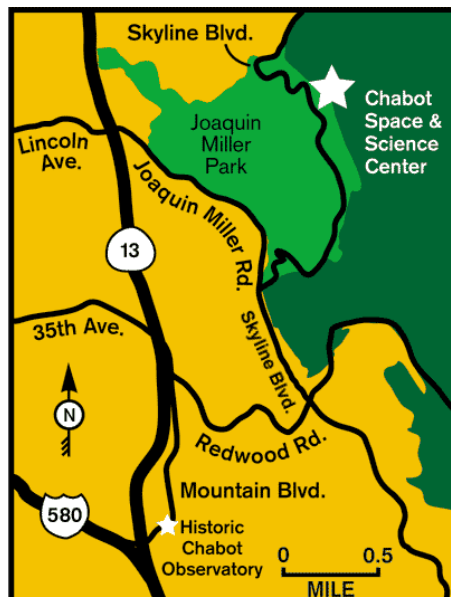
Secretary: Linda Lazzaretti (510) 633-2488

Articles and photos for *The Refractor* are encouraged. Deadline for the Jan. 2012 issue is Jan. 1, 2012. Items may be submitted by snail-mail or E-mail to: Editor - Jim Ferreira, 753 Oriole Avenue, Livermore CA 94551 bakerst@comcast.net (925) 449-0107

Vice President: Paul Hoy ahoy@aol.com

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Events Coord: Gene Weber (925) 963-1165 gene.weber@gmail.com



### FUTURE CONJUNCTIONS

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**8** Board Meeting, Chabot, Library, 7:30pm  
**4** EAS MOVN, 7pm-10pm, Wightman Plaza  
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### Join the Eastbay Astronomical Society

- Regular, \$24/year  Family, \$36/year
- Contributing, \$40/year  Student, \$15/year (digital news-letter, only)
- Sustaining, \$60/year or more

Contact: Richard Ozer, EAS Treasurer  
Phone: (510) 532-5477 Email: rozer@pacbell.net

Sign up online at <http://www.eastbayastro.org/>