

diablo Moonwatch

Mount Diablo Astronomical Society



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Prof. Paul Kalas: **An Earthling's Guide to Photographing Extrasolar Planets**

MDAS February Meeting - Main Speaker

Marni Berendsen

Can we actually SEE a planet orbiting another star? Come to our February 23rd meeting when Professor Paul Kalas of UC Berkeley tells us how he did it.

More than 300 planets have been discovered orbiting stars outside our solar system. But most have been discovered by indirect means, not directly imaged. Photographing these planets is an enormous challenge, sometimes compared to finding a firefly next to a searchlight from a thousand miles away. The last time a new planet had been discovered through photography was our own Neptune in 1846.

So it's about time we try again.

That's just what Professor Kalas and his team did using the Hubble Space Telescope. In 2008, these astronomers announced the discovery of a new planet using the direct imaging approach. This new world is found around the bright star Fomalhaut, which is only 25 light years from our Sun. Professor Kalas will reveal the advanced techniques they used to capture these breakthrough photographs where the planet can be seen moving in its orbit around its parent star.

Paul Kalas is a professor of astronomy at the University of California, Berkeley. He specializes in searching for planetary systems around other stars using some of the world's most sophisticated astronomical observatories. He grew up in Michigan and received his Ph.D. from the University of Hawaii in 1996.

Mark your calendar for February 23rd and hear the story of the first extrasolar planet discovered by an Earthling with a camera.

For more information:

Prof. Paul Kalas

<http://astro.berkeley.edu/~kalas/>

The Circumstellar Disk Learning Site

<http://www.disksite.com/>



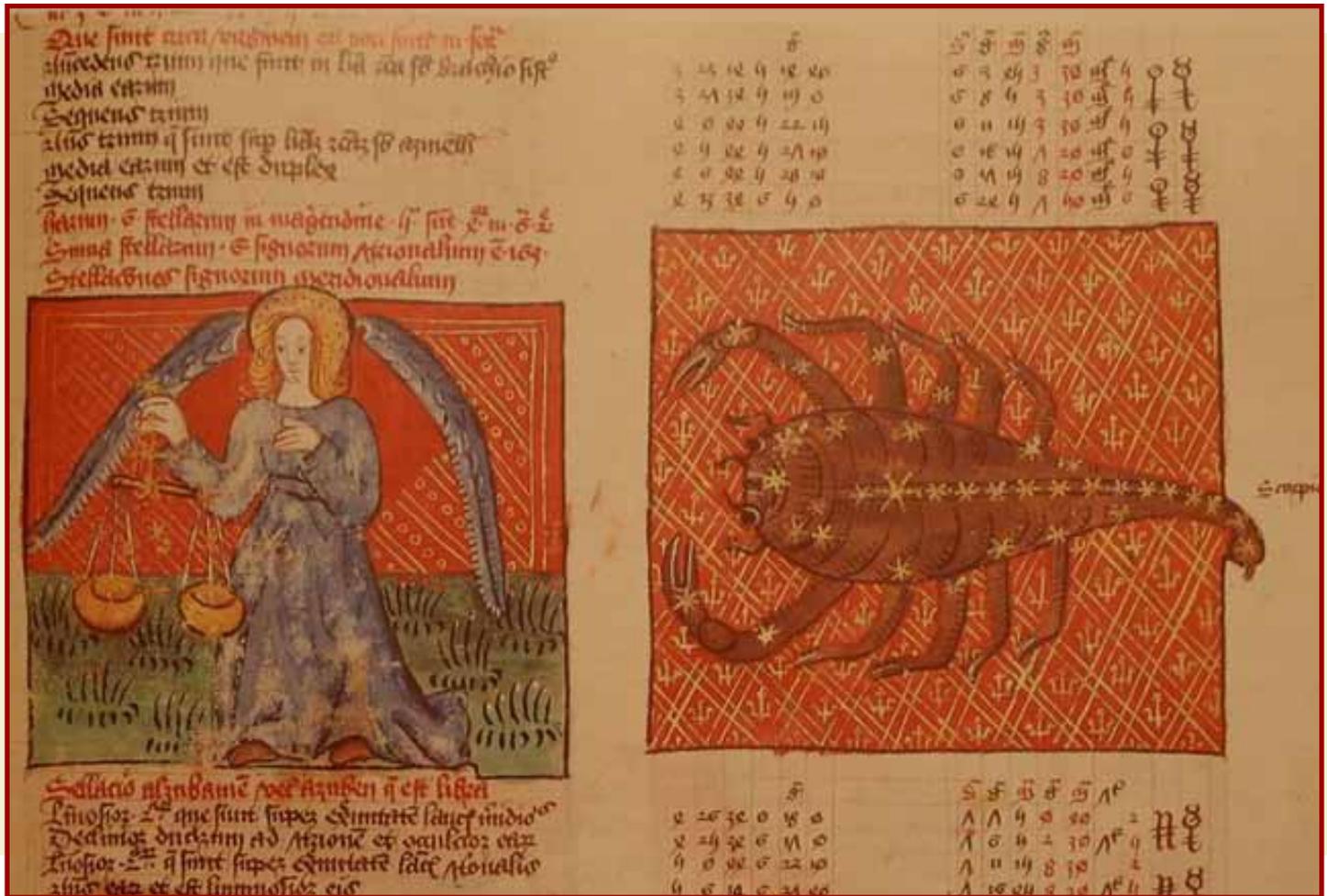
The History of Star Charts

MDAS February Meeting - What's Up?

Alan Agrawal

Perhaps since the beginning of time the most important questions we have asked are: where have we come from and where are we going? A necessary first step before probing these questions requires an understanding of where we are now. Our journey from primitive night sky observations, which began before the formation of early civilizations, to our current state of strikingly vast and accurate sky maps is a critical part of the exploration to divine our place in the universe.

For this month's What's Up, we'll cover, in chronologic fashion, the milestones in the development of the modern star chart, starting from the prehistoric period. We'll talk about the key individuals, their star charts, and the major innovations over time.



(from 1490 edition of Ptolemy's *Almagest*)



President's Corner

MDAS Updates

Liede-Marie Haitsma

I'm using the February President's Corner to bring forth some of the issues discussed at the January Board meeting that was held on January 11th. At this meeting, there were issues raised that will affect the entire membership of this club in the coming months and year, 2010.

1. A general email was sent to the membership, in January that membership dues will increase to \$25 to be effective immediately. This was discussed and voted for approval due to the fact that we are one of the few clubs that has not seen an increase in dues for quite a number of years. The Club is in need of items that will give our speakers, whether What's Up and/or Main Speakers, the ability to present a well equipped presentation.
2. The newsletter, the Moonwatch, will no longer be mailed out to the remaining twenty-nine members (**Of the entire membership, only 29 are still receiving the Moonwatch via regular mail, Ed.**) at the end of 2010. Starting in 2011 the Moonwatch will be sent electronically only. New members joining this year (2010) will automatically be sent the newsletter electronically. This issue was discussed and voted for approval by the Board.
3. A new membership application has been setup and is in use, and this is in relation to the Night Sky Network (NSN) that MDAS as well as other Astronomy clubs are now and will be a member of. Magazines, Astronomy and Sky & Telescope, can now be ordered and/or renewed through the NSN. The usage of PayPal is being setup for new and renewing members. Marni and Jim Head have played a large role in getting MDAS affiliated with the NSN; Richard Ozer and Glenn are getting the MDAS website ready for the changes with the use of PayPal and other ties to the NSN. Jim Head has made the Outreach/NSN sites easier for everyone to get involved in and to find information. More changes are on the way and will revolutionize Astronomy clubs all over the country to get in touch with each other.

Thank you for your attention.



What is Antarctic's Melting All About?

Jim Scala

Two red rubber boats appeared from behind the distant rocks and slowly grew as I looked at them over the ship's rail about a mile off the Antarctic Shore near the US's Palmer Station. Each Zodiac boat had seven people clad in heavy red suits against the intense dry cold and they looked very comfortable as they pulled alongside our cruise ship where a watertight door was opened, a rope ladder extended and they climbed aboard. After a nice meal in our ship's luxurious dining room they spent a few hours discussing their Antarctica research and findings. The most compelling discussions involved melting or the shrinking of Antarctica according to your point of view.



Seven Palmer Station scientists arriving at our cruise ship to discuss their research.

Almost 70 years of very good data have been recorded and shared at the Antarctic research stations of many countries. When people-especially scientists- spend about six months and some spend an entire year in the world's most isolated place a common bond grows that transcends politics. Hence cooperation and multitasking rules the day, so even if you're a scientist you have to take on other skills that range from CPR qualification, welding, fire fighting, water rescue and many other things that are important when something goes wrong or someone with that skill is gone. After all, Palmer Station like many other stations has about 40 people who can't call 911 when something goes awry, someone gets sick or a person in a really remote station gets stuck.

Antarctic's incredible beauty near the Palmer Station abounds while illustrating stark isolation.

One data point they all felt very strongly about is the changes seen in greenhouse gasses including methane, carbon dioxide, and oxides of nitrogen. Without interpreting the meaning of the gasses they are convinced that some gasses have increased almost 18% in the last 50 years. Those who have been involved in carbon dioxide measurements of ice cores taken at stations including Antarctic stations and Greenland ice caps feel rather strongly that Carbon Dioxide has increased about 18% since the last ice age. They also recognize that the greenhouse gas increase does not indicate humanity is at fault and they readily mentioned other explanations for their observations. I found one microbiological study particularly interesting.



Perhaps my background emerged when a microbiologist discussed the bacteria she studies. The organisms she studies extract carbon dioxide from sea water and as they age and die they sink to the bottom where they decay. She discussed that during the ten years she's been studying these microbes they have steadily increased per unit volume of sea water. She observed that's because it indicates that Carbon Dioxide steadily increased in the Antarctic water albeit by an almost imperceptible amount. It's important because increasing carbon dioxide in seawater has other indirect effects; especially in warmer water where coral is important.



Icebergs abound just about everywhere in the Antarctic. This large flat topped iceberg broke away from a glacier. It's layers are akin to the rock layers; hence are time and indicate the amounts of precipitation that occurred.

Two things the scientists were most adamant about were the decline in the ice area and the breaking off of enormous masses of ice and the increase of snow by almost 30% in Antarctic's central regions. The former indicates the melting because the melt water lubricates the flow and enormous pieces of the glacier simply crack and float away. In contrast the latter is evidence of upper air warming because the warmer air holds more moisture which finally falls as snow during the Antarctic winter. Each observation has several explanations and creates more

controversy. Indeed, the Antarctic's area has decreased by about 11.5% between 1978 and 2008 which translates to about 40.1K square miles per year. It translates to a decline of about 7.5% in the non-iceberg sea ice measured in summer and about 3% measured in winter. While those small percentages don't sound very large it's important. Diminished sea ice means equilibrium has been upset and means that the water is going somewhere else.

A very large glacial iceberg seen at sunset as we sailed away from the Antarctic.

We left Antarctica after spending time with the Palmer Station scientists and headed North into the Drake Passage towards Cape Horn where we would enter the Beagle Channel following Charles Darwin's passage over 100 years before and give me a chance to see the glaciers that captured his fertile imagination. I was still mentally digesting what I saw at the Falkland Islands, Elephant Island and such extreme places as the Polish Antarctic Station and the Penguin Colony on Deception Island.





Log Your Volunteer Hours Online on the Night Sky Network

Marni Berendsen

Through our membership in the NASA Night Sky Network, we now have an easier way to track volunteer hours and mileage. In March for our first Mount Diablo public astronomy night, you can enter all volunteer hours online through the Night Sky Network (NSN). You only need to log in. If you have not yet registered your MDAS membership on NSN, take a minute and do it now. Complete the form here:

http://nightsky.jpl.nasa.gov/club-apply.cfm?Club_ID=51&ApplicantType=Member

Check the page for our first public astronomy night in March as an example:

Log in and go to: http://nightsky.jpl.nasa.gov/club/event-view.cfm?Event_ID=14605

OR to just see the Public View: http://nightsky.jpl.nasa.gov/event-view.cfm?Event_ID=14605

For an overview of all the amazing features available free to us on the Night Sky Network: <http://Intro.NightSkyNetwork.org>

Bookmark the login page on Night Sky Network: <https://nightsky.jpl.nasa.gov/login.cfm> to have access to all these features.

NEW! Renew Your Magazines Online!

Marni Berendsen

Now all **Sky & Telescope** and **Astronomy** magazine subscriptions renewals will be handled online – AT THE CLUB DISCOUNT RATE!

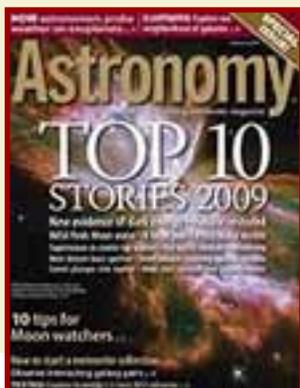
The Astronomical Society of the Pacific has made arrangements with these magazines to allow members of the NASA Night Sky Network to renew at the club discount rate. All you need is a login for the Night Sky Network (NSN) through our club. If you haven't already registered your MDAS membership on NSN, complete the form here:

http://nightsky.jpl.nasa.gov/club-apply.cfm?Club_ID=51&ApplicantType=Member

Once you get your username and password, you can log into Night Sky Network and go to the Links page to find the "New and Renewal Subscriptions" link. Here's the direct page (you will be allowed to log in first when you click this link):

<https://nightsky.jpl.nasa.gov/club/links.cfm>

No more delays or uncertainties about getting your renewals in on time!



Other Astro Events



RTMC links

<http://www.rtmcastronomyexpo.org/general.html>

general info

<http://www.rtmcastronomyexpo.org/detailed.htm>

detailed info

<http://www.rtmcastronomyexpo.org/registration.html>

registration

<http://www.rtmcastronomyexpo.org/vendors.htm>

vendor info

GSSP links

<http://www.goldenstatestarparty.org/>

general info

<http://www.goldenstatestarparty.org/home/2009-registration>

registration

<http://www.goldenstatestarparty.org/home/rules-guidelines>

rules & guidelines

<http://www.goldenstatestarparty.org/events-schedule>

event schedule

A dark, rectangular banner with the text 'Golden State Star Party 2010' in a white, serif font. The background of the banner is a dark, starry space scene.

Astro Classifieds

I have a **Konusmotor 114** (4.5", 900mm, f/8) equatorial reflector telescope with tripod available for sale. I got it in August 2008, but have never set it up or used it.

After attending some star parties, I realized rather quickly that I was more interested in stargazing with the naked eye.

I wonder if anyone might be interested in purchasing it.

Thanks for your help.

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Meetings are held:

Fourth Tuesday every month, except on the third Tuesday in November and December.

Refreshments and conversations are at 6:45pm.

Meetings begin at 7:15pm.

Where:

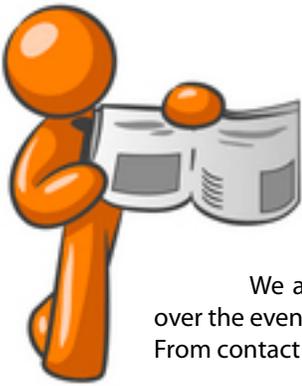
Concord Police Association Facility

5060 Avila Road, top of the hill.

Take Avila Road from Willow Pass Road.

Directions to facility:

http://nightsky.jpl.nasa.gov/club-view-directions.cfm?Address_ID=18



MDAS Meetings and Viewing Events in February 2010

We are utilizing the calendar of club events generated by the Night Sky Network. Simply run your mouse over the event (calendar entry) and click. Your computer will take you to more information about that particular event. From contact information, location maps to Clear Sky Clocks. We hope that you find this useful.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
31	1	2	3	4	5
7	7:30 PM Board Meeting	8 9:00 PM Project Astro presentatio 7:00 PM Imaging SIG Meeting	9	10	11
14 	Washington's Birthday	15	16	17	18 6:00 PM Science Night
21	22 	7:15 PM GenMtg: ExtrasolarPlanets	23	24	25
28 	1	2	3	4	5

Friday	Saturday
5 	Society Observing 6 Sunset: 5:38 PM
12	Society Observing 13 Sunset: 5:46 PM
19	20 Sunset: 5:53 PM
26	27 Sunset: 6:00 PM
5	6

Sat 2/6/2010	Society Observing (More Details)	Mount Diablo - Lower Summit Parking Lot Clayton, CA (Get directions) Sunset: 5:38
Mon 2/8/2010 7:30 PM	Board Meeting (More Details)	Marie Callendar's Restaurant Concord, CA (Get directions) Sunset: 5:40
Tue 2/9/2010 9 - 10:30 PM	Project Astro presentation (More Details)	Pleasant Hill Education Center Pleasant Hill, CA (Get directions) Sunset: 5:42
Tue 2/9/2010 7 - 9 PM	Imaging SIG Meeting (More Details)	Walnut Acres Elementary School Walnut Creek, CA (Get directions) Sunset: 5:41
Sat 2/13/2010	Society Observing (More Details)	Mount Diablo - Lower Summit Parking Lot Clayton, CA (Get directions) Sunset: 5:45
Thu 2/18/2010 6 - 8:30 PM	Science Night (More Details)	Westwood Elementary School Concord, CA (Get directions) Sunset: 5:51
Tue 2/23/2010 7:15 PM	General Meeting: Extrasolar Planets (More Details)	Concord Police Association Facility (Club Meetings) Concord, CA (Get directions) Sunset: 5:56

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