

# diablo Moonwatch

## Mount Diablo Astronomical Society



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## MDAS November Meeting Swap Meet

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### MDAS November Meeting

Liede-Marie Haitsma

The doors open at 6:30 for sellers to set up, selling starts around 7 PM and generally lasts until 9 PM. Don't be late as the good stuff sells quickly.

If it's related to astronomy, you might find it here! Telescopes, binoculars, eyepieces, mounts, mirrors, lenses, clock drives, books, camera equipment, star charts, finders, tubes, diagonals, photographs... you name it.

You never know what goodies you can find. Check your garage and closets for anything astronomical you would like to sell. Anyone can buy and sell, it's fun and easy! Get your holiday shopping done early this year!

In order to make things easier, as in previous years we will continue with the 5% donation (it's a donation now, not a commission). Obviously this has to be on the honor system, or conscience system as the case may be; just keep in mind this event is a fund raiser for the club. So, please be generous.

Do you have only one or two items to sell? A consignment table will be there for your convenience. You can put your items there and we'll handle it for you so you can go shop at the swap and not have to sit there with just a couple of items.

### Upcoming programs:

**December 15:** Annual Members Meeting: Elections and business, followed by an introduction to the new videos and services of the Night Sky Network: Next Generation.

**January Meeting:** Bob Minor will be giving the "What's Up?" talk featuring his 2009 Solar Eclipse trip. See article in this newsletter for more Eclipse information.

## MDAS Meetings and Viewing Events in November

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Date	Event	Location	Time	Notes
November 2nd	MDAS Board Meeting	Marie Callendars (Concord)	7:30pm	See website
November 10th	Imaging SIG Meeting	Walnut Acres School (W.C.)	7:00pm	See website
November 14th	Society Night	Mount Diablo		See website
November 14th	Volunteer Appreciation Dinner for MDSP VIP's	City of Clayton Library	4 - 7:00pm	See article in this newsletter
November 17th	MDAS General Meeting & SWAP Meet	Concord		See article on front page of newsletter

## President's Corner

### Another (possible) Theory and Location as to the Extinction of the Dinosaurs 65 Million Years Ago

Liede-Marie Haitsma

For a number of years it has been believed that the dinosaurs became extinct when an asteroid impacted the west of Mexico's Yucatan Peninsula. The crater formed was called Chicxulub. The force was so strong that carbon deep in the Earth's crust liquefied, was forced skyward, and formed tiny airborne beads that blanketed the planet. These beads are called carbon cenospheres.

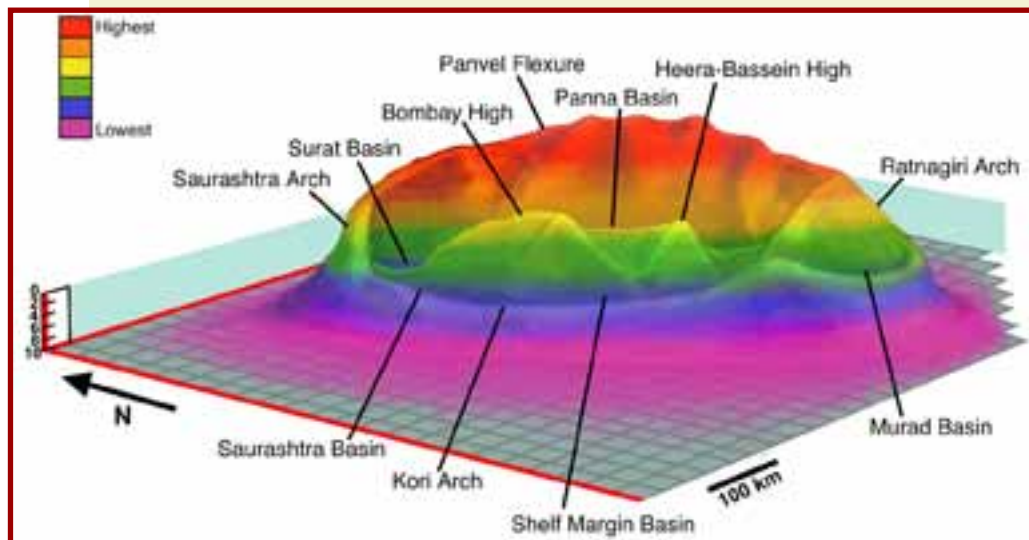
But now comes a new location as well as theory regarding the cause of the dinosaurs to become extinct. The asteroid that crashed into the Yucatan Peninsula was between 8 and 10 kilometers (5 and 6.2 miles) wide. A basin off the coast of India, the massive Shiva Basin, a submerged depression west of India, is 40 kilometers (25 miles) in diameter. This giant impact occurred 300,000 years later after the formation of the Chicxulub crater.

The India basin was inspected by Dr. Sankar Chatterjee, paleontology professor of Texas Tech University, and a team of researchers. This basin is intensely mined for its oil and gas resources.

The impact would have vaporized Earth's crust at the point of collision, leaving nothing but ultra-hot mantle material to well up in its place. Nearby Deccan Traps volcanic eruptions caused much of western India to be covered with ash and lava. It also caused the Seychelles Islands off of the Indian tectonic plate and sending them to drift towards Africa. It would have caused the "KT Extinction Event", a combination of blast effects, which killed off 70% of life on the planet.

Later this year, the research team will examine rocks drilled from the center of the crater. They are looking for iridium anomalies, breccias and shocked quartz, as these are proof of an impact.

Scientists are beginning to consider the possibility that several impacts of asteroids over time caused the extinction of the dinosaurs and not just a single impact.



For more information:

#### The Geological Society of America

[http://gsa.confex.com/gsa/2009AM/finalprogram/abstract\\_160197.htm](http://gsa.confex.com/gsa/2009AM/finalprogram/abstract_160197.htm)

#### Sankar Chatterjee

[http://www.depts.ttu.edu/gesc/Fac\\_pages/chatterjee/index.html](http://www.depts.ttu.edu/gesc/Fac_pages/chatterjee/index.html)

#### Sankar Chatterjee - Wikipedia

[http://en.wikipedia.org/wiki/Sankar\\_Chatterjee](http://en.wikipedia.org/wiki/Sankar_Chatterjee)

# Open Position for 2010

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## MDAS Publicity Position Open for 2010

Liede-Marie Haitsma

Mark Stafforini has been the MDAS Publicity Chairperson for a number of years, and his dedication to the Club and Board is appreciated. Because of work and school, Mark has decided that he will be stepping down at the end of 2009. We wish him well in his future endeavors.

Publicity for MDAS, whether in the various local newspapers (Contra Costa Times; The Concordian; and The ClaytonPioneer) and through the web (BayNature; and AANC) have brought interested people to our Public Nights and Club meetings.

This is not a difficult job but it would take some dedicated time to submit information about our events to the newspapers and websites mentioned above. Always remember that it is through these modes of information that the Club grows in membership.

This position would not require going to Board meetings but only to give reports via email. Going to a Board meeting, though, would give you an awareness of its goings on.

Please let me know if you would be interested. Thank you.



## Volunteer Appreciation Dinner for MDSP VIP's

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Carl Nielson, SPPO / Volunteer Coordinator

Hello Volunteer Leads!

The annual **Volunteer Appreciation Dinner for MDSP VIP's** is set for Saturday, November 14. I usually get a notice out in the mail to VIP's. Dan wanted me to utilize the email network to save on postage. Could you please get word out to your VIP's about this special event?

- Date: Saturday November 14, 2009
- Time: 4PM to 7PM
- Location: City of Clayton Library (6125 Clayton Road)
- Invitees: VIP and guest
- Potluck Dinner: What to Bring (by last name..)
  - A-G: Side Dish/Appetizer
  - H-M: Main Dish
  - N-S: Dessert
  - T-Z: Salad

No need to RSVP.

Any questions? Please contact: [cnielson@parks.ca.gov](mailto:cnielson@parks.ca.gov) / 925-837-6129.

Thanks!

# Our Night Sky's Bright Future

Jim Scala

During the next 25 years the East Bay is projected to grow by 1.7 million people translating to about 635,000 new homes! Contra Costa county's growth will be the lowest at 21%! That means 21% more energy use and a greater amount of light going up into the night sky. If you know any politicians ask them this simple question: "Where are you going to find 21% more water, electricity, road, garbage and classroom space? While this growth will translate to economic opportunity what does it do for folks who like the night sky? What about the amateurs that like to look at deep sky objects?

atop Mt Diablo (Dublin will grow by 69 %!) or in downtown Walnut Creek the general light level will increase. Indeed, the Night Sky association's data indicates that light pollution increases more than simple population growth. It's got to do with increased commerce, transportation, crime prevention and simply that we're an energy addicted; indeed an "energy wasteful" society. I'm not judging here, I'm just reporting. Please don't shoot the messenger.

anywhere reach the resolving power of an eight inch telescope, so planetary observing might improve because increased particulate air pollution usually steadies the sky for planetary observers. Indeed, with the bright sky background you won't need a flashlight, so it might even become more convenient. But, could deep sky observing could face hard times?

If you've been to a large star party recently you've noticed large telescopes are becoming commonplace. Indeed, several 20 inch and even 30 inch telescopes with very precise computer driven Dobsonian mounts are set. More, they're usually fast at F/4 and even F/3 isn't unusual. Imagine combining those big scopes with the chip, screen and filter technology that keeps getting better. Have you looked at Apple's latest screen technology lately?



**San Francisco at Night: In the next decades the Bay area will increase by the population equivalent of two cities the size of San Francisco. The largest growth will take place in the corridors around Mt Diablo.**

Imagine squeezing two San Francisco sized cities into the area between San Jose and Antioch. More, our average daily driving will increase from 19 to 20 miles which doesn't seem like much until you realize there's 21% more cars driving another 5%. Whether you're

**Will a brighter night sky stop amateur astronomers?**

We older MDAS members can attest that 30 years ago, from the hills of Lafayette, Danville and Concord on a clear night you could easily see the Milky Way. That view has slowly disappeared and even if there projections are half correct it will get even more difficult. However, innovations in lens making has made very good refracting telescopes commonplace for lunar, solar and planetary observing. Seldom does seeing

An astronomy club in Michigan mounts a flat screen TV on a van that's hooked up to a telescope so people can look at deep sky objects while relaxing in lawn chairs. Now, that's a star party; pass the cocktails. One minor drawback is that it calls for a few minute wait to acquire the first image of dim objects, but then one image replaces another. Deep sky bright objects such as M 13, M 31, and M 33 are up before you can get your lawn chair situated correctly. Bright objects such as the Moon, Planets and even some clusters are shown via Web Cam in real time. And with excellent pointing ability the show can go from one object to another. Now, combine that with filter technology that increases contrast and you've replaced the eyepiece.

## What about the romance of amateur astronomy?

Like many things in our society technology evolves and will modulate the apparent dilemma of a bright nighttime sky caused by population growth. Some ask however, "Is that same technology taking the "romance" out of amateur astronomy?" For example the same technology my Michigan friends use at their star parties can also bring their star parties into a school classroom and even the auditorium. Indeed, at a recent imaging conference we had M 33 projected onto a movie screen in real time. That's already commonplace worldwide.

With a small educational fee institutions can hook their computer up to a telescope in almost any time zone or hemisphere. So, students can observe remotely in a dark sky site almost on a 24-7 basis. Student can undertake most astronomy projects and even conduct useful research from their schoolroom computer. Hook the computer output to a large screen all the students can take part in real time. Remote observing has come a long way. I personally know several people who routinely acquire images from telescopes they own, but have never seen. Indeed, their scope is, set up at a remote site, possibly in another country on a "telescope farm" and they can acquire excellent images without ever leaving home. People often ask, isn't that removing the romance from amateur astronomy? Is it? Suppose you live in downtown NYC or SFO should you give up your hobby? Where is it written, "Thou shall look through an eyepiece?"

**47 Tucanae or NGC 104 taken by Jim Scala from his home computer without ever leaving his home. It was taken from a "Telescope Farm" in Southern Australia. This technology is available now and only hints at future possibilities.**

No, the romance of amateur astronomy has continuously changed. Its scope has increased with ever techno-

logical development including glass and crystal making to software innovations. Indeed, the technology that makes Apple's i-phone so versatile will improve amateur astronomy more than we can imagine. However, if you absolutely must look at deep sky objects through an eyepiece you'd better think about getting a larger, faster scope, traveling to darker sky sites and maintaining an awareness of light pollution rejection filter technology. I say that because skies will get brighter.

There's a current proposal being discussed in the astronomical community that, coupling current mirror and Altazimuth mount making technology with economies of scale it will be possible to make 2.5 meter (100 inch) telescopes available to colleges. They'd be set up on "telescope farms" for real time research using photometry, spectroscopy and even astrometry. Large-serious research grade- telescopes will be available 24-7 in both hemispheres. While that relates to college and graduate level astronomy it will impact amateur astronomy. However, even with these dramatic technological changes nothing will replace the look through an eyepiece at lunar craters, Jupiter's Moons or Saturn's rings.



For more information:

**International Dark Sky Association**  
<http://www.darksky.org/>

**Dark Sky Society**  
<http://www.darkskysociety.org/>

**Dark Skies Awareness**  
<http://www.darkskiesawareness.org/>

# 2009 Solar Eclipse From China

Bob Minor



## 50 Exposure Composite

My wife and I traveled to China in July 2009 to join an eclipse tour on the chartered cruise ship Costa Classica along with around 1000 other eclipse chasers. We observed the eclipse in the Pacific about 100 miles east of Iwo Jima in nearly perfect conditions of clear skies, and flat seas. The mobility of the ship allowed the ship to find and follow a nearly cloud free area during the entire eclipse.

Most descriptions of this year's eclipse stress the long totality - From our position totality was over 6 minutes 40 seconds - but the eclipse was really over two hours long. I am fascinated with the pace and timing of the whole eclipse, so for this image the time between exposures were varied from 10 minutes to a little over 1 minute apart to dramatize the experience of the day.

This image is a **composite of 50 separate exposures**, since the movement of the ship did not allow for a single frame multiple exposure as can be recorded from land. One image is missing - due to the passage of the one and only cloud during the otherwise clear day. It

even sprinkled light rain for a few minutes - enough to require the covering of the equipment. The partial phases were recorded through a solar filter. Totality was recorded without a solar filter, and is the composite of 9 bracketed exposures as shown in the next photo.

This **composite of totality** is made from 9 individual exposures bracketed at one stop intervals. Because of the ships movement, these were taken at high ISO and the quality is not as good as can be achieved on land. It is interesting to note that the coronal streamers normally prominent at a solar minimum eclipse were quite subdued, much less visible than during the eclipse in 2008.

The next photos are **flash spectra** taken near second and third contact. Just before and after the moon fully covers the disk of the sun the chromosphere is visible and these two flash spectra show features of the Sun not normally visible.

The images were made with a blazed diffraction grating placed between the telescope objective and the digital camera. You see a "zero order" slightly out of focus direct image of the sun flanked by two "first order" spectra. The spectrum to the left is brighter than the one to the right due to the blazing of the grating.

In the second contact image you can see the bright emission lines from the chromosphere and a background continuous spectrum from the corona. The emission lines visible include H-alpha (red), Helium (yellow), probably Fe-XIV (green), H-beta (blue) and Ca-II (dark blue). It is interesting to note that a spectrum similar to this in 1870 led to the identification of Helium as a new element. The FeXIV line (at first thought to be from "coronium") was, when identified in 1930 as an extremely energetic line of Iron, an indication of the extremely high temperatures in the corona. The flash spectrum at third contact shows similar emission lines from the chromosphere, the background spectrum of the corona but also has a bright continuum from the photosphere from Bailey's beads.

The last image shows the **polarization of the Corona**. Three sets of bracketed images were taken during mid totality, each set through a linear polarizer at a different rotation angle. Each set was combined into a single image to partly accommodate the high dynamic range of the corona. Each of the three resulting images was mapped to a single color in the final image.

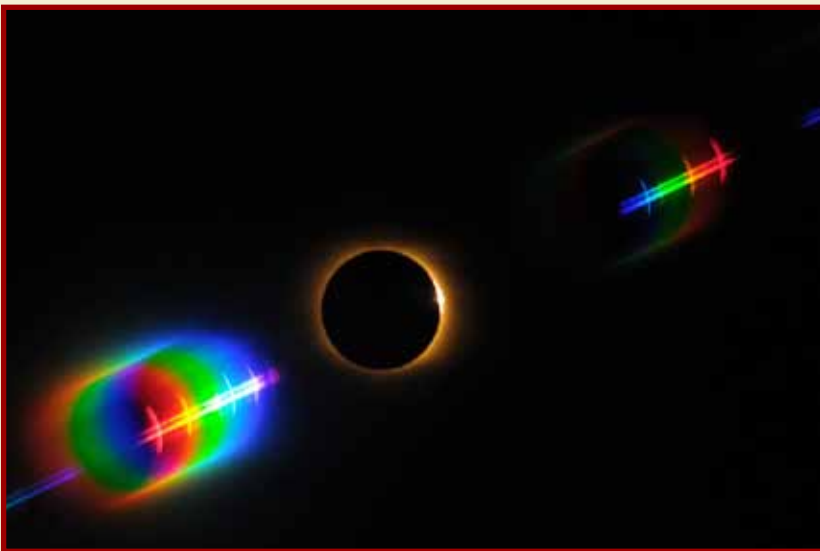
The red layer of the image represents one orientation of the polarization, the green an orientation at 120 degrees,

## Composite of Totality





**Flash Spectra**



### **Polarization of the Corona**

For more information:

**NASA Eclipse website**

<http://eclipse.gsfc.nasa.gov/eclipse.html>

**Solar Eclipses for Beginners**

<http://www.mreclipse.com/Special/SEprimer.html>

**Eclipses Online**

<http://www.eclipse.org.uk/>

**Editor's note:**

[These images in the newsletter do not do justice to the beauty and quality of Bob's work. To view them as they were intended, please go to this link. Thank you.](#)

and the blue at 240 degrees. The colors appear to show an overall radial polarization which is consistent with models of electron scattering as the source of the visible light from the corona. These images were made in the interest of learning more about the physics of the sun. Perhaps more than just nice images, but with some physics content as well.

But at the same time, I appreciate and agree with this comment from "Astrophysics of the Sun", by Zirin, "The astronomer is often disappointed by clouds or rain on the day of totality, but if the sky is clear and his instruments properly adjusted, he reaps a rich harvest of material that can be gotten in no other way. In any event, the main point of an eclipse expedition is the fun, the challenge and the exotic location, and most of the eclipse data are never analyzed or published."

**Equipment note:**

Borg 60mm ed scope

Vixen flip mirror

Orion filter wheel with Orion linear polarizers, Baader apo filter to maintain focus, Rainbow Optics diffraction grating

Nikon D300

Thanks.



# The Launch of Ares I-X...

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**The Bowshock  
Captured**

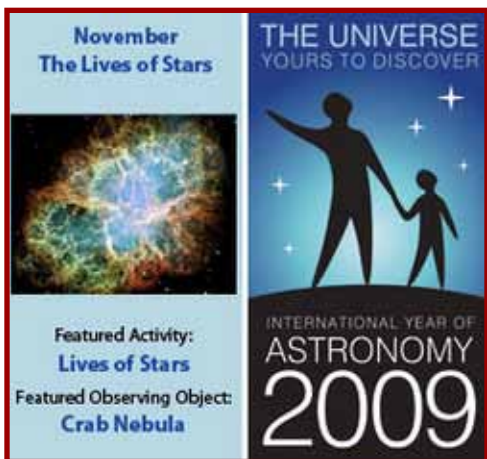


**A Passing of the Torch ?**



**The Night Before History**

# IYA 2009 in November



The IYA theme for November: **The Lives of Stars**

Use these IYA Discovery Guides to discover the excitement of the International Year of Astronomy. November's theme is The Lives of Stars. What's the difference between a supernova, a planetary nebula, and a black hole? Learn how stars are involved in each of these objects and where to find a nebula in the night sky with the Lives of Stars activity.

Enjoy a new theme, story, activity, and observing object each month in 2009!

For more information:

## Video

[View Instructional Video](#)

## November IYA Discovery Guide

[Download November 2009 IYA Discovery Guide](#)

## Activity

[Make a Supernova with this fun activity](#)

## Star Map

[Use a Star Map to see which stars will go supernova](#)

## What If?

[What would the universe be like without supernovae?](#)

## PowerPoint Presentation

[This PowerPoint explains all about the lives of stars](#)

## NASA & the IYA

[NASA is doing great things for IYA](#)

## IYA Happenings

[Find out what else is happening for IYA in the US](#)

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## Secretary:

Malinda "Moon" Trask, [metallicamoon@sbcglobal.com](mailto:metallicamoon@sbcglobal.com)

## Board members:

New Member Mentor/Member-At-Large: Steve Jacobs  
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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](http://nightsky.jpl.nasa.gov/club-view-directions.cfm?Address_ID=18)

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