

PUBLIC OPEN EVENINGS AT THE INSTITUTE OF ASTRONOMY

WEDNESDAY 17TH DECEMBER 2008

Institute of Astronomy

<http://www.ast.cam.ac.uk>

Cambridge Astronomical Association

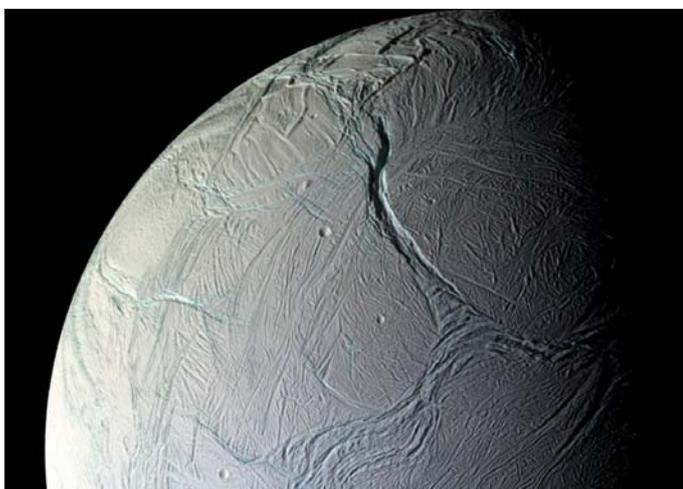
<http://www.caa-cya.org/home/index.php>

All comments, enquiries or suggestions please to **Carolyn Crawford** (csc@ast.cam.ac.uk)

Welcome to our winter season of Wednesday public open evenings. Tonight's is the last open evening of the term – we're going to take a couple of weeks off over Christmas and New Year, returning on the **7th January 2009**. We're all fervently hoping for better weather next term... The talk schedule for next term can be found at http://www.ast.cam.ac.uk/public/public_observing_0809/timetable.html

This week's talk is a special holiday treat for you – Professor Harold Kozak from New York is a NASA/JPL Solar System Ambassador and tonight he will be discussing : **Time travel: fact or fiction?**

We start at 7.15pm and this is followed by an opportunity to observe with both modern and historical telescopes *if* the weather is clear.



Even after 4 years orbiting Saturn, the **Cassini satellite** is still returning some fascinating results. In particular, by undertaking regular fly-pasts of the moons during the mission, Cassini has been able to look for detailed changes on their surfaces. This week the science teams have reported alterations in the surface of both Titan (Saturn's largest moon) and Enceladus (the ice moon). The surface of **Titan** is always obscured by thick orange methane clouds, but by using radar to penetrate the atmosphere, Cassini has detected changes to the ground from how bright and reflective it is. This could be caused by *cryo-volcanoes* spewing out a super-cooled mix of methane, water and ammonia, suggesting that the

moon is geologically active. Or, more mundanely, we can't rule out some kind of transient fogs from atmospheric activity instead. Meanwhile, the deep cracks and fissures visible on the shiny surface of **Enceladus** (see the picture left) look like they might migrate with time, suggesting the moon's surface slowly shifts and spreads out. Given that these markings contain deep fractures and vents shooting out jets of water vapour and ice, it is clear that something very active is still occurring under the icy crust.

As often happens at this time year, yet another theory for the **star of Bethlehem** emerges; but the latest has an interesting ring of possibility about it. Some Australian astronomers have mapped out the sky and the motions of the planets in detail around the period between 3BC and 1AD. They note that on both on 12 August in 3BC, and on 17 June 2BC, the bright planets Venus and Jupiter were very close together in the sky – similar to, but more spectacular to the close approach of Venus and Jupiter in our sunset skies at the start of this month. In particular, during the second conjunction in 2BC, the planets were so close that they couldn't be separated by eye and would have appeared as a single extraordinarily bright 'star', observable all over the world.

And in terms of **what you can see in the sky** over the next few weeks...

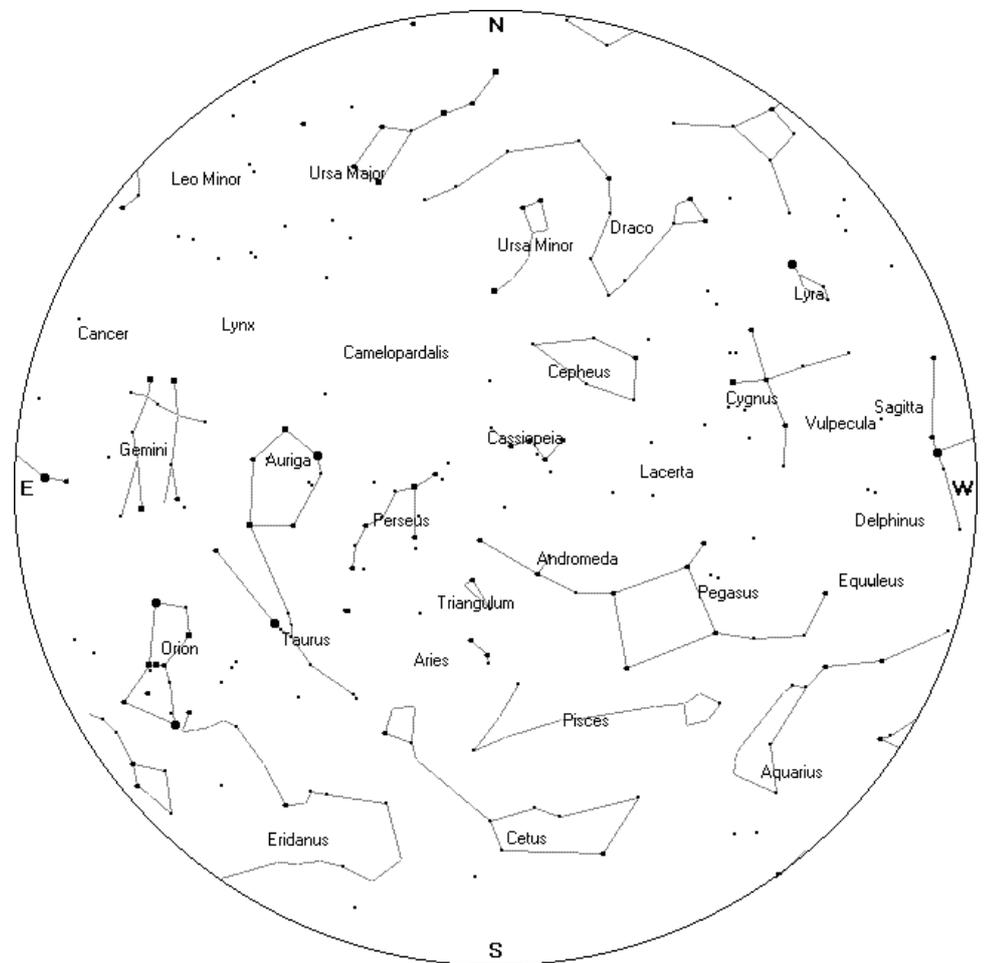
- **Saturn** is rising earlier each week, but is still only really visible after about 2am.
- I hope you've all noticed the wonderful sight of **Jupiter** and **Venus** in the early evening sky – both are currently obvious low down on the south-western horizon between about 4 – 5.30pm. Venus is the brighter of the two, with Jupiter setting earlier. Over the holidays we'll lose sight of Jupiter. Venus will stay in the night sky, but getting slowly fainter as it moves away from the sun; it's worth watching out for it next to the crescent moon after sunset on **New Year's Eve**.

- An extra challenge would be to look for the **Moon, Jupiter Mercury** all close together a couple of days earlier, on the 29 Dec, very low down in the West just after sunset.
- And if you're going away to somewhere more rural over the holiday period, don't forget to take advantage of the crisp frosty skies and lack of streetlights to look for the faint diffuse band of the **Milky Way** stretching directly overhead.

Date	Time	Altitude	Direction
17 Dec	16:31:58	27°	WNW
21 Dec	16:06:00	33°	W
21 Dec	17:27:02	27°	S
22 Dec	08:03:21	76°	NW
24 Dec	17:18:10	25°	SSW
27 Dec	17:09:19	22°	SSW
01 Jan	07:07:42	63°	NNW
02 Jan	18:08:12	33°	SSE
06 Jan	17:53:08	32°	S

There are lots of sightings of **Iridium satellites** before we meet again. I've just picked out the easiest for you in this table to the left – only the very *brightest* ones which are both high in the sky and at a reasonable time of day (though one might argue that 7am on 1 January is hardly included in this category...) For more details, and if you'll be viewing them from somewhere else than Cambridge city, please consult <http://www.heavens-above.com/> to get appropriate times for your viewing site.

THE NIGHT SKY AT 8PM ON 17TH DECEMBER 2008



To use the map, hold it above your head to match the sky...

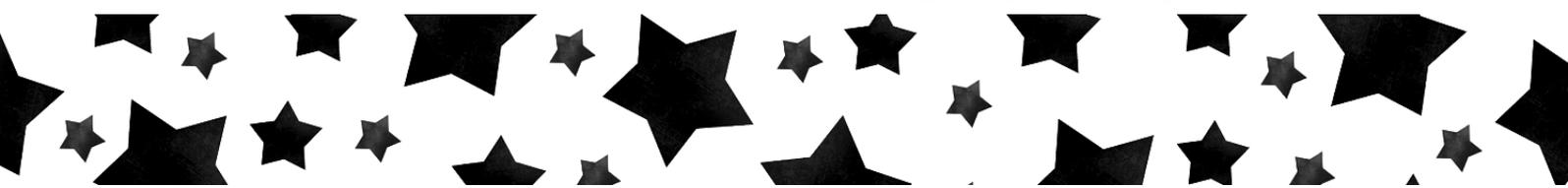
Sky map courtesy of <http://www.heavens-above.com/>

SITE SAFETY

Please be aware that we have a major construction site in our midst over the winter, while the exciting new Kavli Institute of Cosmology is added to the IoA grounds. The building work is safely fenced off, but still please don't tempt fate by exploring too far in the dark unless you know where you're going! There is also now digging in the observatory lawn which limits the space available to us outside tonight. If you need orientation, the red rope light marks out a safe path between the observing and Madingley Rise, but please ask any of the staff if you need further directions or assistance.

Many thanks to those of you who've filled out the **questionnaire** given out tonight - this is to help Vickie Curtis, a student from the Open University, with her Masters degree in Science and Society. She's doing a research project on the IoA Open Evenings, and will be around this evening – so please chat to her if you want to know more about what she's doing and why.

And finally... it just remains to me to thank you for coming along this evening, and to wish you all a



Merry Christmas, and clear skies for the New Year.

