

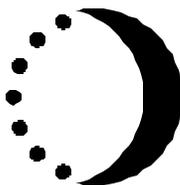
## GENERAL TOPICS

I'll cite our results stressing the satellite Io, which, as has already been remarked, experiences eclipses the most frequently and is also the satellite whose eclipses can be timed the most accurately.

As for the accuracy of timings, in the 1994/95 Apparition, the latest one analyzed and published, the standard error for Io disappearances was  $\pm 15.3$  seconds of time; that for reappearances was  $\pm 14.1$  seconds. These are for our timings as adjusted for aperture and as compared with the E-2 Ephemeris; it would be interesting to analyze our timings as compared with each other, although I haven't done so yet.

Just one other point. I may have missed it, but I don't believe that anyone explicitly stated that the conventional wisdom is that it's impossible to accurately make such timings while at sea--ships (especially sailing ships) rock too much to be able to use a telescope with the magnification necessary. If anyone can cite an instance where a successful Galilean satellite timing was made while at sea I'd like to hear of it.

Best Regards, John Westfall



From : KCStarguy@aol.com To : SOLARECLIPSES@aula.com Subject : [SE] **shadow bands** Date : Wed, 15 Aug 2001 18:40:53 EDT

Stephen and listserv members. Hello, Thanks for the replies on shadow bands.

I never really thought about viewing shadow bands and looking for them until right before the 1999 eclipse in Hungary my wife and others saw shadows bands but I could not see them no matter how hard I looked. I made sure to look for them in Zambia and saw them after 3rd contact for 4 minutes (yes that long ) with others. The first thing I told my wife in the airport when I got back was "I saw shadow bands."

Meanwhile I found this one site with sb footage from the last eclipse. I am featuring this site in my shadow bands spotlight . Try Strickling site for real nice views of the video using quicktime. Find this splendid video and some real nice photos at [http://home.t-online.de/home/Dr.Strickling/2k1\\_engl.htm](http://home.t-online.de/home/Dr.Strickling/2k1_engl.htm)

My shadow bands page will be up tonight with more info of all sorts listed (links to video, photos and accounts). Find it at <http://members.aol.com/kcstarguy/blacksun/shadowbands.htm>

Meanwhile while viewing my eclipse video and shadowbands footage with my wife, she could see faint ripples on the monitor TV and I thought I saw them too although very faint. So I did manage to capture them on video ever so faintly. A bonus.

Strickling mentioned an idea. I will try to see if I can image the footage into a photo to post. He filtered out the image of the sheet (using photoshop ?) so that the shadows could be seen better on his photo (and video?). Does anyone know how to do this? I am awaiting his reply to see if I can gain some insight into that method by him.

If anyone know how to get BBC footage or look at it online somewhere (maybe someone can convert it to show via Pal).

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## GENERAL TOPICS

I will continue to add to my page and process my video. If I can get get frames from my video I will post. Dr. Eric Flescher (KCStarguy@aol.com)

From : "Dr. Wolfgang Strickling" <Dr.Strickling@gmx.de>

Hello all, hello Eric, I did not use Photoshop, but several other software, in main GIOTTO and Picture Publisher.

In detail: 21 frames of capured video were separated into JPEG-Pictures by Main Actor video software. Those frames were added, using G. Ditties software GIOTTO (German software: <http://www.geocities.com/georgdittie/giotto.htm> ) to get a sum image. This sum image represents the Cloth, without shadow bands. Te cloth in this picture was negated (using Picture Publisher), the rest grayed out, and i added one of the other single frames with GIOTTO. All other further operations were made with Micrografx Picture puplisher, like contrast adjustments etc. I think photoshop will do so also. Perhaps it is possible to add the frames with photshop.

> so that the shadows could be seen better on his photo (and video?).

My video was not processed, except conversion from AVI to MPEG.

One member or our group said, that in video the shadow bands come more clearly, if you substract following frames. This will enhance changes in Brightness or position. (You can get this effect by video software, make a transition of 50 % between the original film and one negated, with an offset of one frame). I did not get good results, as noise is strongly increasing. But i will ma ke further experiments...

If i get time this week, i will analyze my videos and look for contrast, movement speed etc. Results will be posted to this list and my website. Regards, Wolfgang

From : KCStarguy@aol.com

Greetings, I am curious more and more about these shadow bands now that I have seen them. I would like to try the following with the help from anyone who saw them during 2001 eclipse.

I would like to plot on a map the direction the shadow bands were traveling as seen by observers from different locations. I want to see if there is any pattern or correlation between the direction and where observed and their nature.

If you or others (feel free to pass this on) can help and think it is worthwhile fill the following and send back to me - don't post on listserv. Results will be share of course with the listserv. thanks

From : "Madden.G" <iluvex@netacc.net>

I have excellent digital 8mm video of the entire sequence. Non eclipse people who have seen it are somewhat taken aback by something they have never seen before. Eclipse veterans are impressed. gjm

From : "Katherine LOW" <katherine.low@worldonline.be>

>From my 7 total eclipses I have never observed the shadow bands. In France 1999 I had a white blanket with me but due to 'clearing chasing' could not use it. This year my attention was deviated by the natural environment.

Will the 2006 eclipse be the ideal opportunity to watch the shadow bands? Is it correct to assume that on the white-yellow sand dunes of the Libyan desert one does not need a white blanket. Will the light colour of the dunes be sufficient to reveal the shadow bands? Kris Delcourte

From : "Peter Tiedt" <rigel@stars.co.za>

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Kris, In the Lower Zambezi National Park for June 21 we were on the banks of the Chongwe River, which was mostly a greyish yellow sand. Shadow bands rippling like light on the bottom of a swimming pool were seen by many in the group of 26.

From : "Madden.G" <iluvex@netacc.net>

At Fringilla I used a white bed sheet which worked very well. I was also able to see the shadow bands on the ground which was a grassy pasture.

However, my video clearly reveals the beginning of the shadow band activity for both first and third contact well before they can be seen on the grassy pasture.

I would recommend using a white (the "whitest" you can find) bed sheet IN ADDITION to observing the sand dunes. This will always be my practice henceforth.

The sheet I used was an American "queen size" which is approximately 100" x 90" I think.

From : "Dr. Wolfgang Strickling" <Dr.Strickling@gmx.de>

Hi all, hi Eric! I succeeded in analyzing my video sequence for the shadow bands.

1) Locality Our observation place was at 31° 01,45' east, 16° 24,90' south, 487 m height. Contact timing (Emapwin, local time = UT +2h) was:

	h	m	s	Pa	Zenit	Azimut	Elev
2. Cont:	15:31:31	349	309	28			
3. Cont:	15:16:40	127	308	27			

2) 2nd contact before the 2nd contact, the shadow bands were very clearly visible. They moved nearly directly towards the sun and their extend was perpendicular to that. Their wavelength decreased from ca. 0.2 m .. 0.3 m (i. e. spatial frequency 3 .. 5/m) at about 18 seconds before 2nd contact to 0.10 m .. 0.15 m (i. e. spatial frequency 6 .. 10/m) at 10 seconds before 2nd contact. Their contrast increased from about 1.2% .. 1.8 % (at -18 sec) to 2 % .. 3.5 % (at -10 sec). Speed was about 1 to 1.4 m/s in solar direction (i. e. 309 deg. azimuth). On our video they can be seen for 30 sec.

3) 3rd contact After 3rd contact they looked much more different. No one of our Group saw them, but our video shows them for about 18 sec, lasting shorter, however. Furthermore, they looked much more turbulent at remarkably lower contrast, not like the perfect bands before 2nd contact. In general they extended in north- southern direction and moving to west with appr. 1 .. 2 m/s speed. Their wavelength was 0.10 m .. 0.15 m (i. e. spatial frequency 6 .. 10/m) 7 sec after 3rd contact.

In both cases (2nd and 3rd cont.) the survival time of the single cells was in the range of about typical 0.5 sec to max 1 second.

4) Discussion: Perhaps one cause of the different appearance may be the inclination of the solar crescent to the horizon. Note the above position angles. At 2nd contact, the crescent lied nearly parallel to the horizon, and the shadow bands seemed to extend perpendicular to the solar direction, as if they are an image of a distant lens. After 3rd contact, the crescent was inclined 43 deg to the horizon, and the shadow bands were also inclined to the solar perpendicular line by appr. 50 deg.

Perhaps shadow bands are best to be seen if the solar crescent is parallel to the horizon? We should have a look on other or older reports regarding this relationship!

Sunny greetings from Germany, Wolfgang

From : KCStarguy@aol.com

Wolfgang, What a great job of analyzing the bands! Remarkable analysis - how were you able to get such exact calculations?

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Inclination to solar crescent- perhaps. If I get enough reports maybe we can see a pattern. In Karubwe where I saw them they were definitely flowing towards the sun in the northwest. What was your location (nearest town)? I can see the gps and may use that later. Congrats on a job well down.

My shadow bands links (and growing) can be found at <http://members.aol.com/kcstarguy/blacksun/shadowbands.htm>  
Thanks to those who provided me information so far about this mysterious phenomenon. If anyone has a link that can be included- please contact me.



I am still working on ways to may the bands stand out more on my video. We can see them wavering when we play the video on monitor/tv.

Meanwhile I stiched together the ring of fire 2001 and the sequence I took 1 minutes before totality in 1999. I will try to make these panorama shots a little clearer but for now they look okay. The can be both be found at <http://members.aol.com/kcstarguy/blacksun/ringoffire.htm>

If you have shadow band reports please send, (Survey below)

From Anne Marigold

Any chance of getting the video digitised and up on the web? I was so busy seeing my first non-cloudy total that when someone shouted 'shadow bands' I didn't see them! I'll have to try again next time! Cheers, Anne

From: Richard Bareford <[bareford@yahoo.com](mailto:bareford@yahoo.com)> To: <[SOLARECLIPSES@AULA.COM](mailto:SOLARECLIPSES@AULA.COM)> Sent: Saturday, August 04, 2001 9:28 PM Subject: [SE] **Comparing Predictions with Images**

I thought it might be interesting to compare predictions of contact times and position angles with my images. The results are on a new page, <http://www.geocities.com/bareford/subsun3.html>

Basically, I registered the images with a timely H-alpha coronagraph from Pic du Midi and overlay them with Espenak's limb profile diagram (Figure 8 of the 2001 eclipse bulletin). Details are on the page.

The registrations were not perfect and there may be some timing errors but the results tend to show greater predictive discrepancies at second contact than at third. I attribute this to the larger limb profile extremes encountered at second contact. We were located at the southern edge of the totality path, where small positional changes would produce wide observational variances. An analysis of images made nearer the center line might give different results. Then again, maybe the limb profile model needs some updating. Richard Bareford

From: <[JohnLX200@aol.com](mailto:JohnLX200@aol.com)>

Excellent job documenting what you saw!

The first thing I'd do to analyze the results, would be to determine the position angle of the moon's travel relative to the sun on your diagrams. The 2nd and 3rd contacts falling nearby in the same quadrant makes it very clear that the relative motion is at an angle to the E-W axis. I guess this is why there isn't an eclipse every month, so we're all sad to see this fact demonstrated so plainly!

Drawing the direction of motion of the moon relative to the sun, perhaps as a tangent to the sun between the 2nd and 3rd

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contact points, would be most helpful in visualizing what happened. To me, it would also form the basis for an easier coordinate system to do calculations from, perhaps putting (0,0) at the tangent point, with the X axis being the direction of motion and the Y axis approximately representing topography above or below the photosphere near the tangent point. The contact points would then necessarily fall on opposite sides of the Y axis, at some negative value of X and some positive value of X. I'm sure everyone will try drawing some weird geometry where this isn't true, but it is, unless you resort to truly bizarre 3-D constructions such as holes drilled through the moon aimed straight at you to delay 2nd contact, etc.

I never understood why there were ranges of position angles where the lunar profile correction is not given, so perhaps I'm misinterpreting what is actually shown on Fred's correction plot.

When near the edge of the path, you can't ignore atmospheric refraction effectively moving your location a bit. In this case, as the sun was at a modest elevation in the northwest, there is both east/west shift and north/south shift. If it had happened at local noon in Zambia, then you'd only have north/south shift.

But the true path was shifted north and west by refraction in your case, therefore shortening your totality as observed on the southern edge. Compared to any predictions made for sea level, your observed totality would also be shorter. Your "sea level position" is found by taking a ray of sunlight coming from the northwest, following it through your position, behind you and downward to the southeast. At 1300m elevation, and approximately 30 degree sun elevation, your "sea level" position is approximately 2.6km southeast of you. Namely, a place closer to the edge, with shorter totality.

So shifts in your effective location due to refraction and elevation (if your predictions didn't account for it) can cause difficulty in getting the contact angles right. The duration is very significantly affected by the north/south shift near the edge of the umbra; the time of deepest eclipse is slightly affected by the east/west shift; and the contact angles and therefore selection of local topography are strongly affected by the total (vector) shift, further adding to the difficulty.

But it's still highly deterministic in my view. You just can't get perfect predictions if you ignore factors which are less apparent on the centerline, and therefore are routinely ignored in the prediction tables. Atmospheric refraction and elevation above sea level probably being the two main ones beyond the lunar topography correction. Thankfully, geodetic shape is taken care of, if it hadn't then that would be a big factor too in some cases.

Edge predictions are essentially the same problem which Glenn Schneider was such a virtuoso at solving in 1986 at the "0 second" eclipse from the air. Namely, figure out where you have to be in order to accurately view a given point on the moon passing exactly in front of a given point on the sun. To do it, you need favorable geometry (e.g., noon, sun high in sky, etc.) or you need to either do more math or accept an approximate result.

Congratulations on acquiring some great data! It will keep people busy refining their prediction schemes for some time, I'd bet. Hopefully by 2017 our models will account for everything right down to the actual distribution of air temperatures and densities aloft, to give highly accurate predictions online requiring only a street address and bounded by the range of possible atmospheric conditions, sun diameter variation, etc. John Hopper

From: FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov>

I was intrigued by Richard Bareford's contact timings made near the southern limit of the 2001 eclipse path. He reported predicted contact timings from several sources (Bureau des Longitudes, O'Byrne, and Van Flandern) as well as his own measured timings via his digital camcorder. The results were published on his web page (above) but I will repeat them here for convenience:

Source:	2. Contact	P	3. Contact	P
Bureau des Longitudes	13:10:53.4		160	
13:12:17.2	205			
O'Byrne	13:11:05.4	163	13:12:17.4	
202				
Van Flandern	13:11:03	NA	13:12:14.0	
NA				
Observation	13:11:18	182	13:12:15	
203				

Bareford reports his coordinates as: 16° 02.969 S, 28° 51.308 E, 1300 ft (or 400 m)

Using this position, I decided to calculate contact timings using the Watt's lunar limb profile to correct the times. The results are as follows:

Source:	2. Contact	P	3. Contact	P
Observation (Bareford)	13:11:18	182	13:12:15	
203				

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Espenak (mean limb)	13:11:05.1	163	13:12:16.5
202			

Espenak (limb correct)	13:11:15.8	NA	13:12:17.2
NA			

A limb profile diagram with detailed predictions for Bareford's position is posted at:

<http://sunearth.gsfc.nasa.gov/eclipse/TSE2001/TSE2001fig/TSE2001Bareford.gif>

As you can see from the above table, the limb profile introduces corrections of +10.6 sec and +0.7 sec, respectively to the mean limb (and center of mass) predictions. Bareford quotes the observed contact times only to the nearest whole second. Still, I was pleased to see agreement to within 2 seconds between observation and prediction at a location so close to the southern limit.

Nevertheless, the differences point out the need for an improved lunar limb data base. This type of work is being carried out by David Dunham and IOTA (International Occultation Timing Association) to refine sizes and positions of features along the Moon's limb. Eclipse chasers and amateurs can make an important contribution by participating in IOTA eclipse observations near the limits: <http://www.occultations.org/> - Fred Espenak

From: Chris O'Byrne <[obyrne@iol.ie](mailto:obyrne@iol.ie)>

What an interesting experiment!

There are two notes of caution that I must point out with the predictions that Richard quotes on his page from my Javascript eclipse calculator. The first is, like Tom Van Flandern, I do not try to correct the contact angle "P" for the effects of the limb profile - it is too difficult a problem. Indeed, depending on where one is in the eclipse track, it is possible for two beads at two different locations on the limb to disappear simultaneously at the instant of 2nd contact (or reappear simultaneously at 3rd contact).

The second note of caution is that Richard happened to be in a part of the track that my calculator did not provide a second contact time correction. My corrections come from digitising the same Figure 8 from Fred's eclipse bulletin (see <http://www.chris.obyrne.com/Eclipses/2001curves.html>), and that Figure 8 does not have a time correction value for the contact angle that Richard observed (for the simple reason that the time correction - 10.6 seconds - was too large to fit on the diagram). On that note - does anyone have a good reference on how to do the corrections from "first principles" and a source for the limb data itself? I would like to be able to produce the contact diagrams myself...

I've used the same method for attempting to correct for the lunar limb profile at two eclipses now - 1999 and 2001 - and I've found it to give predictions that have appeared to agree with observation to within a second or so. Richard's observation of a 2 second difference is the largest that I've heard of. I find it to be a useful addition to the eclipse prediction software I bring with me to an eclipse. Chris.

From Richard Bareford

I've used Fred Espenak's lunar limb profile diagram for the southern edge as an overlay for my matching video frames of predicted and observed contacts. (Just second and third, that is; I've been unable to locate a white light image with the cardinal points marked to use for registering my first contact picture; and, I missed fourth contact when our tour buses left for the houseboats). See results at, <http://www.geocities.com/bareford/subsun5.html>

What's noteworthy is how close the corrected contact time predictions come to the observations. Although Fred doesn't mention the position angles they do appear on the diagram. The second contact arrow is way east of the observed contact; but the third contact arrow points very near to the first bead that appears after totality.

A user input eclipse calculator, like Chris O'Byrne's (at, <http://www.chris.obyrne.com/Eclipses/calculator.html>), which incorporates these limb corrections would be a practical addition to Fred's eclipse page. And if it could also generate a localized limb diagram it would really be slick. Richard Bareford

From Mike Simmons

Is this what you're looking for? It's the white light sunspot drawing from the Mt. Wilson Observatory 150-foot Solar Tower done at 14:00 UT on 21 June 2001. The higher latitudes of the disk are missing but the drawing covers the entire Sun within the sunspot regions (-30 to +40 degrees) and the cardinal points are marked.

<ftp://howard.astro.ucla.edu/pub/obs/drawings/dr010621.jpg>  
Mike Simmons

From Fred Espenak

Great job Richard! There is one small detail I need to point out about my predicted limb profile diagram at <http://sunearth.gsfc.nasa.gov/eclipse/TSE2001/TSE2001fig/TSE2001Bareford.gif>

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Although the limb corrected contact times for 2nd and 3rd contact appear at the bottom of the diagram, I do not list the limb corrected position angles of the contacts. The position angles shown are for the UNCORRECTED contact times. Although my software calculates the corrected position angles, I've never needed them before and have not provided them as output in the tables and diagrams.

After I finish working on the 2002 eclipse bulletin, I'll look into adding outputs for the corrected contact angles to see how they compare to Richard's observations.

A user input eclipse calculator, like Chris O'Byrne's (at, <http://www.chris.obyrne.com/Eclipses/calculator.html>), which incorporates these limb corrections would be a practical addition to Fred's eclipse page. And if it could also generate a localized limb diagram it would really be slick.

This is a great idea, but I don't have experience/knowledge/time to write a CGI to do this. Is anyone on the SEML knowledgeable about writing CGI's? If so, maybe we could work together to produce such a tool on a future NASA eclipse web page. Maybe Chris O'Byrne? - Fred Espenak

From Chris O'Byrne

Just gimme the data and/or algorithms, Fred, and I should be able to do the rest. I'm a professional web applications developer (though you might not know it from my web page!).

The algorithm I used on my web page (as you can see from the description at <http://www.chris.obyrne.com/Eclipses/2001curves.html>) was quite less than ideal - I just took Figure 8 from your eclipse bulletin and created a simplified digital version of it. If possible, it would help to get a table of contact angle vs correction for at least one instant during the eclipse. And/or if there is the lunar limb dataset and some instructions on how to read it available, I should be able to do the calculations from "first principles" myself. Regards, Chris.

From Richard Bareford

Mike, Thanks, this may do the trick. I had been looking for a full disk image made at first contact, about 11:43:55 UT for my site. The drawing is timed at 14:00 UT; but, I don't think the 2 hour 17 minute difference will have much effect at the scale I'm using.

The large sun spot group and the east/west points are present, and the drawing is probably more accurate than my video frame anyway. I'll upload the results when I finish. Last night I was busy video taping the Shuttle and ISS Alpha pass over my house (maybe the mystery object in the Mt. Wilson drawing?). Spectacular! Richard Bareford

From : KCStarguy@aol.com To : solareclipses@aula.com Subject : [SE] **eclipse sightings** Date : Mon, 13 Aug 2001 22:08:07 EDT

eclipse sightings 8/13/2001

Sky & Telescope Setp 2001 4 pics and accounts "Darkness in Dark Continent" by Dennis di Coco of the s&T eclipse experience.

Page 67- 68 In Amateur Astronomy in Russia: Past, present and future Painting rendition of the 1914 eclipse seen at the shores of the Black Sea called Shadow of the Moon Approaching by A.Vasnotsov.

Also it was mentioned that due to another eclipse , there were arguments about the eclipse (article did not say more but it was possibly due to lack of dissemination of knowledge). This led to the formation of the first astronomical club In Russia to help disseminate information about astronomy to the public. Interesting.

Meanwhile, does anyone know about a supposed eclipse connection with a General Harrison (who became President later) and an Indian chief that begins with a T (I think) in the 1800's . I have not been able to find anything to back this up.

These and others that I have collected over the last few years will be posted at <http://members.aol.com/kcstarguy/blacksun/eclipsesightings.htm>

Dr. Eric Flescher (KCStarguy@aol.com)

From : Shivapuja@aol.com

a bit of my Ohio history: The name Tecumseh means "Panther Crossing." About the time of Tecumseh's birth in 1768, there was a meteor and the Shawnee believed that Tecumseh was going to become important. Tecumseh's father was a Shawnee chief, killed in battle fighting the Americans when Tecumseh was young.

Tecumseh's famous brother, known by the Whites as the Prophet, was a different matter. Three years younger than Tecumseh, he evinced no special merit until 1805 when he underwent a spiritual awakening. He adopted the name Tenskwaatawa (Open Door) and claimed supernatural powers. He advocated a rejection of alcohol and trade goods and a return to Native American ways. His claims initially drew considerable skepticism, but after he correctly predicted an eclipse, his support grew.

By 1808, Ohio was a state and more and more Ameri-

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cans were moving into Ohio. Tecumseh, and his brother, The Prophet, left Ohio and started a town in Indiana called Prophetstown on the Tippecanoe River. Indians from the different tribes who had the same belief as Tecumseh and the Prophet came to live there. Tecumseh traveled as far away as Iowa and the Gulf of Mexico to gain the support of the Indians.

The Americans watched Prophetstown grow and were concerned that an Indian uprising was being planned. In 1811, while Tecumseh was away on a trip, General William Henry Harrison stationed his troops close to the Indians living in Prophetstown. Tecumseh had warned his brother not to fight the Americans while he was away, but his brother did not listen. The Prophet believed that he had powers that would protect warriors in battle and led the Indians against Harrison's troops. When the Indians realized that the Prophet had no special powers to protect them, they retreated into the woods. Prophetstown was left unguarded. Harrison's troops easily overran Prophetstown and burned everything.

"... the only way to stop this evil, is for all the red men to unite in claiming a common and equal right in the land as it was at first, and should be now -- for it never was divided, but belongs to all. ... Sell a country! Why not sell the air, the clouds and the great sea, as well as the earth? Did not the Great Spirit make them all for the use of his children?" - Tecumseh to William Henry Harrison 1810

From : Assoc Prof J R Huddle <huddle@usna.edu>

KCStarguy, aka Dr. Eric Flescher, wrote, in part: Meanwhile, does anyone know about a supposed eclipse connection with a General Harrison (who became President later) and an Indian chief that begins with a T (I think) in the 1800's. I have not been able to find anything to back this up.

Sure. You're thinking of Tecumseh. Here's something I wrote back in 1997 for clients of Innovations in Travel going to Aruba for the Feb. 26, 1998 Caribbean Eclipse. It is based on stories I found in Littman & Willcox, in Sky & 'Scope, and elsewhere.

Settlers surging west into America's interior introduced the Native Americans to European customs such as alcohol, which had a singularly negative impact on tribes of the Ohio Valley. The Shawnee warrior Tecumseh saw that the only way to protect native culture was for the tribes to band together. He and his brother Tenskwatawa (pronounced "Tensquaw-ta-wa"), a religious leader known as the Prophet, began attracting a following among tribes with their powerful message.

General William Harrison worried about the power implied by a confederation of tribes and tried to discredit the brothers by challenging the Prophet to perform a miracle. Unbe-

knownst to Harrison, the brothers had learned from a scientific expedition that a total solar eclipse was imminent. Before a large group assembled in Greenville, Ohio, on the morning of June 16, 1806, Tenskwatawa implored the Great Spirit to make the sun disappear, which it did. He then asked that the sun reappear, and that came to pass, too.

The "miracle" enhanced the brothers' power and strengthened the confederation, but success was short-lived. Harrison's army defeated the confederation at Tippecanoe on Nov. 11, 1811.

On the subject of Stonehenge, which has been in these pages lately, I visited that amazing, incredible, and fascinating monument last week while enroute to Totality Day, and I picked up a few books. The most current theory, apparently, and the one endorsed by English Heritage, the society that operates the site, is that Stonehenge may well indeed have been used either as a lunar calendar or to learn about the lunar motion, or both, but it was almost certainly NOT an eclipse calculator. I'll have more about this in a day or two, when I've had a chance to read a little more in the books I picked up. But eclipse calculator or not, Stonehenge is a truly fascinating sight to behold: As I drove over the hill and Stonehenge came into sight, I experienced a "blown away" emotion similar to that we experience when we see the diamond fades and the corona comes into view. Best Regards, Jim Huddle

From : KCStarguy@aol.com

Jim, thanks . I heard of this incident only recently and could not find additional info so thanks. You and Bill Kramer have given me some info I needed to tie these pieces together,

I just completed the 1.5 hours video of my trip and soon an eclipse sighting compilation page will be on my site as well. Dr. Eric Flescher (KCStarguy@aol.com)

From : Shivapuja@aol.com

at the risk of sounding unscientific or overly politically correct, i can find no reference to tecumseh's brother learning of the eclipse from others...so i question that as a somewhat eurocentric explanation.

did the great spirit tell him? i don't know. are many of the settlers accounts from the period less than flattering of the native peoples they were driving out? definitely.

a bit more for the history buffs:

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Harrison's treatment of the Indians, is a controversial issue today. Harrison was instructed to pacify the Indians and also acquire their land for American settlement. Opinions differ as to his tactics. Some see him as unscrupulously taking advantage of Native Americans by plying them with alcohol and taking advantage of their puzzlement about white culture. This may be somewhat unfair. He seems to have had a rather paternalistic attitude which included a certain respect for Native American culture. It was tempered by the realization that removal was the most likely 'solution' for the united states.

At the beginning the War of 1812, Harrison was made a brigadier general in the regular army and given command of the Army of the Northwest. The struggle between Harrison and Tecumseh continued. Tecumseh allied himself with the British since he saw this as the only option to counter the American settlement of Indian lands. The two leaders faced each other again twice at Fort Meigs, Ohio and finally at the Battle of the Thames in Canada. It was here that Tecumseh was killed.

Harrison did prevent the sale of liquor to the Indians and introduced inoculation against smallpox. He knew that the future would 'demand' either total assimilation on the part of the Tribes or removal further west. The American fear of continuing British manipulation of the Tribes cemented the public demand for removal especially after the War of 1812.

all in all, not to pretty a picture.

From : "Brian Garrett" <mgy1912@home.com>

at the risk of sounding unscientific or overly politically correct, i can find no reference to tecumseh's brother learning of the eclipse from others,...so i question that as a somewhat eurocentric explanation.

did the great spirit tell him? i don't know. are many of the settlers accounts from the period less than flattering of the native peoples they were driving out? definitely.

<snip>

If Tenskwatawa did not learn of the impending eclipse from a scientific expedition or through published sources, one is hard-pressed to determine how he did learn of it. If one chooses to believe that he was informed supernaturally, then one can only wonder (as his followers must have, after their defeat) why they were not protected by the same spiritual forces that promised them aid?

One can't fault Tenswatawa for perpetrating what might be seen as a religious fraud; he was protecting his people the only way he knew how. Even if he did learn about the eclipse

from scientists, he might have seen his inspiration to use this knowledge for his people's benefits as a sign from the Great Spirit, and hoped that his people's faith would be enough to give them victory over the white settlers.  
Brian

From : KCStarguy@aol.com

My wife handed the following to me , a calendar style notebook from January 24th (not sure which year) , from a pile of paper she was cleaning up

entitled under the heading science & development- it stated interestingly

"The first darkroom was invented late in the 11th century in Arabia for observing solar eclipses."

anyone every heard of this?

From : Richard Bareford <bareford@yahoo.com>

Sounds like a reference to the camera obscura, although the 11th century sounds rather late for its first use. Aristotle is cited as describing the principle. An illustration of the concept made in the open air (mirror projection) during the annular eclipse of May 1994 is at <http://www.geocities.com/bareford/subsun2.html> Below is an excerpt from the Encyclopedia Britannica article:

ancestor of the photographic camera. The Latin name means "dark chamber," and the earliest versions, dating to antiquity, consisted of small darkened rooms with light admitted through a single tiny hole. The result was that an inverted image of the outside scene was cast on the opposite wall, which was usually whitened. For centuries the technique was used for viewing eclipses of the Sun without endangering the eyes and, by the 16th century, as an aid to drawing; the subject was posed outside and the image reflected on a piece of drawing paper for the artist to trace. Portable versions were built, followed by smaller and even pocket models; the interior of the box was painted black and the image reflected by an angled mirror so that it could be viewed right side up. The introduction of a light-sensitive plate by J.-N. Niepce created photography.

Richard Bareford

From : Jay.M.Pasachoff@williams.edu

I ran into something similar on a plaque on the wall of the Museum of Film in London: crescents were noticed on the ground inside a tent during a partial eclipse, and

*(Continued on page 40)*

## General Topics

the 11th century seems about what I recall. I can make a plausible sequence from that to the camera obscura to the camera with lenses to photography cameras to television. So solar eclipses were at the basis of so much of our contemporary civilization! Jay Pasachoff

From : "barr deryl" <dbarr@nque.com>

Eric: The eclipse you are concerned about regarding William Henry Harrison and the Indian Chief Tecumseh occurred on 1806 June 16. Perhaps for this event more important than Tecumseh was his brother Tenskwatawa who was believed to be a shamanist or a prophet of God. Because Tecumseh with the spiritual support of Tenskwatawa was effectively for the first time uniting the Indian nations against the encroachment of white settlers, Harrison as then the governor of the Indiana territory sought to discredit Tenskwatawa by challenging him to perform a miracle to prove his divine guidance. Unfortunately for Harrison, this challenge to "cause the sun to stand still or the moon to alter its course, the rivers to cease to flow, or the dead to rise from their graves. . ." arrived shortly before the June 16 eclipse. According to Steele, whose book you recently reviewed, British Agents who sided with the Indians, had informed Tecumseh about the impending eclipse, and Tenskwatawa used this knowledge as a prophecy to prove his shamanistic credentials. As a result, Tecumseh's resistance was greatly enhanced, and was only ended with the defeat of his forces by Harrison at the battle of Tippecanoe in November of 1811. Allan Eckert in "From A Sorrow in Our Heart: A Life of Tecumseh" gives a moving if somewhat dramatic and fabricated account of Tecumseh and Tenskwatawa's receiving of Harrison's challenge, Tenskwatawa's reply, and the eclipse itself, pages 468 - 472. One fact that has puzzled scholars regarding this event is that the point of prophecy and observation by the Indians of the eclipse itself was their camp at Greenville, Ohio. But the eclipse was not total at the site fairly well established as the camp.

From : "Gerard M Foley" <gfoley@columbus.rr.com>

For a miracle, is totality necessary?

Gerry K8EF

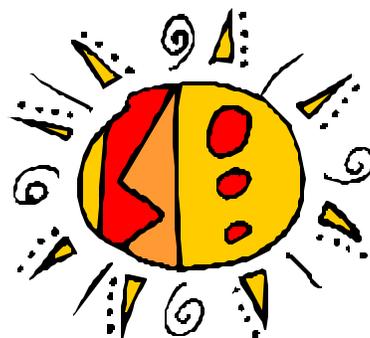
From Deryl Barr

Certainly a deep partial would be very powerful and dramatic in the context of the situation. However, if we can accurately credit Eckert's report of Tenskwatawa's prophecy, then even a deep partial would fall short of what the prophet promised. According to Eckert he declared ". . . when the sun has reached its highest point, at that moment will the Great Spirit take it into Her hand and hide it from us. The darkness of night will thereupon cover us and the stars will shine round about us." (Eckert, p 471) Certainly whatever the Indians saw

deeply impressed them and affirmed Tenskwatawa's claim as a true prophet.

From : Shivapuja@aol.com

neither totality, nor the 'information' from europeans, is necessary!



## General Topics

From : KCStarguy@aol.com To : SOLARECLIPSES@aula.com Subject : [SE] **Murphy's Law of Eclipses** Date : Tue, 21 Aug 2001 20:34:32 EDT

Murphy's Law of Eclipses

(1) No matter how sure you are about your equipment and how it works, something will always go wrong.  
 (2) Camcorder batteries will give out when you least expect it.

any more? Dr. Eric Flescher (KCStarguy@aol.com)

From Peter Tiedt

Here's one or two The degree of inaccessibility of the location of maximum eclipse is directly proportional to eclipse duration.

Something vital (from medication to film or anything else) is always left behind or unavailable at the most critical times.

Shadow bands only appear when you do not look for them. Peter Tiedt

From Grand Leffingwell

(3) All camera threads will reverse themselves during totality. (a Bill Kramer adage...) --Grant Leffingwell

From Francis Podmore

Another one. All total eclipses last eight seconds. Compare your experience with a real-time video recording and it's the video that is lying. Francis.

From Jen Winter

Has anyone ever thought to record the statistical factors of optical equipment malfunction at eclipses?

In our experience, we have seen such a remarkably high incidence of this that we call it the Murphy's Optical Law of Eclipses.

Every trip, someone has a piece of equipment malfunction in a new, unusual way. It seems as if perhaps we could create a slanderous registry of what components malfunctioned in what way so as to better warn the group against possible known error.

We could also quantify the statistical odds of the malfunction with an equation?

$M = \% \text{ likelihood of malfunction}$

$D = \text{distance equipment traveled from origin (measured in km)}$

$T = \text{duration of totality (measured in seconds)}$

$C = \text{cash spent for the new optical component which malfunctioned (measured in USD)}$

$M = (1/T \times D) ^C ?$

;-) Clear Skies, jen

From George Madden

No matter how much yellow CAUTION tape you put around your setup, someone WILL walk in front of your video at the moment of second contact. George Madden

From Pierre Arpin

About 2 minutes before totality you lose sight of the Sun and you can't bring it back in the field of view because your finder is out of alignment.

From : "Glenn Schneider @ Home" <gschneider@mac.com> To : SOLARECLIPSES@AULA.COM Subject : [SE] **The best laid plans...** Date : Sat, 18 Aug 2001 16:22:26 -0700

After 22 TSE's you might you expect to have encountered every "failure mode" you could think of? Of course not. But this one completely blind-sided me. An image goes along with this discussion, which is e-posted with it on:

[http://nicmosis.as.arizona.edu:8000/ECLIPSE\\_WEB/ECLIPSE\\_01/ECLIPSE\\_2001\\_REPORT.html](http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_01/ECLIPSE_2001_REPORT.html)

(which I just updated with this). I would really like to know if anyone else here has ever encountered this problem...

For this eclipse: An exposure sequence of 36 images was planned, with the longest (1.5s) exposures (#18 and #19) straddling mid-eclipse and of sufficient depth to almost, but not quite, saturate out to the edge of the 21mm FOV. When opened the box, returned from Kodak, which containing my High Resolution Camera roll of film, I was elated and jumping for joy up through exposure #12. But then, DISASTER, #13 was an absurdly bright bright blur, completely over-exposed and burned in. Then the remainder of the roll dark - unexposed - no photons. AAARRRRGUUHHH!

What Happened? How could that be? During the eclipse I HEARD the solenoid firing under control of

## General Topics

UMBRAPHILE for all exposures. I HEARD the motor winder working. I HEARD the shutter click open and close. After totality I SAW the computer screen which said all exposures had been executed. I SAW the exposure counter on the camera say 37! Why were only 12 images exposed???

When I again looked at the film, one side of the the film-guide sprocket holes, right after where exposure #12 had been taken, were torn and damaged! See for yourself the cause for my devastation. Clearly, after the film advanced to the position for exposure #13, the bunged-up sprocket guides must have prevented a proper seating on the wider spool and the film just sat there multiply - any finally - over exposing the rest of the sequence on a single frame. I have NEVER had this happen to me before, WHY NOW? (a rhetorical cry to the comos). One might presume a mechanical failure in the camera/winder which tore the film in this way. That was my logical inference. But, to test that hypothesis I loaded in three other rolls and ran through each of them multiple times with no problems. I configured the camera identically as during the eclipse, with solenoid shutter activation and running the same exposure sequence via UMBRAPHILE - no failures! I cannot get the \$\*&^\$# thing to fail! Was it a horribly timed, un-reproducible, transient problem? Dare I trust this camera/winder ever again? OR, could it be the unspeakable... a manufacturing defect in the film? I have no idea how many miles of 35mm film I have shot over the years and I have NEVER anything like this. (Has anyone else?)

Well, time to be prosaic (or maybe I should just take Prozac {fluoxetine hydrochloride). No use crying over spilled milk. Kodak does say: "This product will be replaced if defective in manufacture or packaging". Gee, maybe I'll get a free roll of film. Whoppie.

The GOOD news, however is two fold. First, the 12 exposure I DID get came out phenomenally well (at least I am very happy with them). Second, another couple of shots up the dynamic range would have saturated most of the image - before I got to exposure #18 (the corona was somewhat brighter than I anticipated) - and the outer extent was picked up by the "wide field" camera. The BAD news, though, is with this camera I have no pictures at or after mid-eclipse, and indeed no third contact egress/diamond ring photos. I will, however, be stoic, and appreciative that the glass is half full - not half empty. Hence I will discuss only what I did get, and not what I didn't. And after all, NO pictures can do this event justice. It is perpetually etched in my cerebral cortex. For me that is better than on silver halides. Glenn Schneider

From : "Dale Ireland" <direland@drdale.com>

Glenn, I have had a motor drive tear sprocket holes before. For this reason I always closely monitor the rewind knob on

my two F3's to make sure the film is being despoiled and is not loose, broken, or torn as you described.. bummer Dale

From : B Yen <byen00@earthlink.net>

One possibility is that it somehow got into "rewind mode", whereby there is some clutch mechanism which prevents any normal film advance...hence the torn sprocket holes. I had a used Canon F1 I bought, which had a REAL difficult time advancing the film (there was some clutch mechanism which was preventing the film from advancing)...I finally ended up tearing the film..I mean the entire film, not just sprocket holes. It happened during deep-sky in Mexico, see

<http://www.comet-track.com/deepsky/ds0600/ds0600.html>

I bought a used F2 motor drive which has a flaky clutch mechanism..it refuses to power-rewind the film, after depressing the rewind button. This goes to show you that both of my problems came from buying used-equipment. (many of the camera shows are known for sleazy vendors who will lie & deceive, to sell a camera.)

Was your camera/winder bought used?

I like the quote: "There are no desperate situations, just desperate people" -- GeneralOberst Heinz Guderian (innovator of the Blitzkrieg concept, WWII)

My problems at the last eclipse, were all self-induced. I was driving, pushing too hard.. There IS a limit to what one can do, when you hit a certain point, mistakes are made & propagate. I would look at your whole program, & see if you could find any mistakes. I was constantly doing this in Zambia, I would have "downs" (making mistakes), & ups (doing things right). I spent 10 out of 14 evenings observing/photographing all night, tearing down, traveling/running around during the day...the sleep deprivation contributed to the errors I made.

From : Glenn Schneider <gschneider@mac.com>

Bob, I will investigate this. It is unlikely in that on this camera the "rewind enable" button is in a recess under the bottom plate of the body and covered up when the winder is mounted (as it was), so it could have not been accidentally depressed - at least not externally. Perhaps a mechanical glitch did cause the rewind enable to engage and act as a clutch - that might explain it. I'll have to do some experimenting, but if this remains suspect I may

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## General Topics

have to ditch this body - at least for cases like this where I am using it in an automatic (unattended) mode. If I had been shooting manually perhaps I would have noted something was wrong as it is possible the film advance may just not have felt right. Still, the film COUNTER did advance - but perhaps this is decoupled from the film not actually moving, just counts in response to the winder doing its thing.

I did indeed buy both the camera and winder used, as I do most of my equipment. But, while I could not assert their pedigrees before purchase, both were obtained years ago and I have run them through the gamut since. I never use unproved equipment for something even less important than an eclipse, and for this eclipse the whole setup was tested in part and whole many times. Still, I will not rule out a transient failure. Unfortunately, just at the wrong time.

My goal here is to avoid this happening again, which is why I was interested to know if similar had happened to anyone else, if not at eclipse at any other time. I will have to add this to my list of "things to be paranoid about" - but being paranoid does not help - figuring out how to circumvent such a problem does.

Beautiful work, by the way, on your referenced page. Thanks for the look at it. -Glenn Schneider

From : "Harvey Wasserman" <onsite@toast.net>

Glenn, I wouldn't want to say it *\*was\** a transient failure, but for what it is worth, many years ago I experienced the same thing in a Pentax Spotmatic. Never had any other problems with it, and I assumed the film bound somehow, or jumped the sprockets, or??? Like I say, never happened again that I can recall. Harvey

From : Daniel Fischer <dfischer@astro.uni-bonn.de>

Glenn's story would sound familiar ... to a friend of mine whose camera body, which outside of eclipses works perfectly, got stuck half-way thru the 1998 eclipse and AGAIN half-way thru 2001. There is no reasonable explanation for that either.

And from my own experience I can tell that mechanical cable releases tend to just break apart immediately before or just after 2nd contact, something these sturdy devices just don't do in real life. Here I have a hypothesis at least, namely that one pushes the release just a little harder in all the excitement than normally... Daniel

From : JohnLX200@aol.com

Watching the rewind knob or winding manually would have told you "yes, the film just stopped advancing" but that some-

what defeats the purpose of all your automation, doesn't it? Your chance of doing anything about it (other than swapping another body for it) is almost nil, so prevention is key, and if you practiced, then you already covered that base. Stuff happens. Not sure if your solenoid arrangement makes body-swapping difficult or not.

In Aruba, I swapped bodies twice on my main lens, to use different film & focal length at the contacts than during totality. Messing with the film just takes too much time, so I put slower film and a 2x teleconverter on my "contact" body; faster film and no teleconverter on the "corona" body.

By the way, after 3rd contact this year, I realized I'd forgotten to put fresh batteries in 2 of my 3 cameras on eclipse day. Thankfully, they didn't go dead, or I'd have made such a simple error that I'd still be kicking myself. Once the clock starts ticking faster at first contact, all sorts of mistakes can happen. John Hopper

From : Anne Marigold <Anne.Marigold@sis.securicor.co.uk>

Reading these emails re photography problems I'm glad I didn't take all my kit to Zimbabwe as it was my first proper sighting (cloudy in France in 1998). I decided to travel light with only hand baggage. Unfortunately Mr Branson had other ideas and some stuff had to go in the hold. I was mad because I could have brought 500mm, extra bodies, tripod etc. Still I decided to enjoy the event, without worrying about photos, which proved fabulous and also 'snapped' a few shots with a Nikon FE2 and Sigma 75-300mm zoom. I was thrilled to get a goodish 1st diamond ring, a couple of reasonable coronas with red prominences and a 2nd diamond with zoom artefact (the lens is a bit light of touch) giving a pleasing effect. If I'd been really trying I'd probably have committed one of those stress errors - you know 'no film in', 'opening back before film rewound', 'wrong asa setting', 'fiddling with cable release', etc etc. A fabulous holiday - pity we weren't able to gate-crash Fred E's talk at the Kingdom, Victoria Falls though! Anne

From : "Chris O'Byrne" <o Byrne@iol.ie>

Two words - Digital Camera. Three words to describe a salient feature of such cameras - no moving parts (apart from electrons).

Derek Hatch took some great pictures with a digital camera from Morombe, Madagascar - see <http://www.clocktower.demon.co.uk/eclipse2001/Total%20Solar%20Eclipse%20%2021%20June%202001.htm>

*(Continued on page 44)*

## General Topics

Has anyone else tried this new medium at an eclipse? Chris.

From : Glenn Schneider <gschneider@mac.com>

John, Your reply prompts a solution!

Though, as you will see it exhibits the degree of my paranoia in being "success oriented"...

1) It would be relatively easy to use a Hall-effect transistor with a small magnet on the rewind lever to sense motion after a commanded exposure. I prefer this to a photodiode/photo-transistor as then you have to worry about wire wind-up on the rotation shaft (unless I use a small mirror to reflect off the winder crank).

2) The control S/W could easily determine if no motion had occurred - for "safety" probably after two commanded exposure failed. But then... what to DO about it. The whole idea is to be "hands free". So...

3) I can easily envision putting another - final - fold-flat in my optical path on a 45-degree "flip-in" stage driven by an actuator AND using two bodies oriented 90-degrees from each other. In the "normal" configuration the fold-flat is out of the optical path. If the rewind-motion sensor triggers a failure alert in the S/W, I could easily pulse the fold-flat actuator to deploy that mirror into the beam and then the second body takes over.

4) Detail. I could simply ALWAYS have both cameras taking going through the motions - but then I would have to worry more about vibration isolation. I prefer to have only one running. That means a toggle after failure of the prime camera to de-activate it's shutter activation and enable the backup-camera, but that too should be pretty straight-forward.

5) Alternatively, I could see not using a fold-flat but rather an optically-flat beam-splitter and ALWAYS imaging with two cameras simultaneously (again, vibration to deal with) and just doubling the exposure times to compensate. Hmm... that might be the easiest way of all!

"Stuff happens" - But once anticipated, something should be done to circumvent it happening again!

No doubt the above will evolve. I hadn't thought about a "redundant" UMBRAPHILE system before... but the idea is cooking. -Glenn Schneider

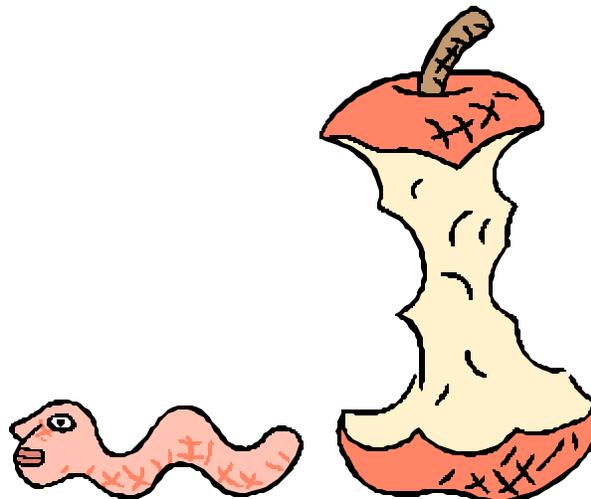
From : Glenn Schneider <gschneider@mac.com>

Chris, Respectfully, pairs of two words: TRADE OFFS:

- 1) Modulation Transfer
- 2) Data Density
- 3) Image Latency
- 4) Intrapixel Response
- 5) Dark Current
- 7) Dynamic Range
- 6) etc., etc.

I \*KNOW\* this will open up a whole new can-o-worms for this group, but even the best commercial grade CCDs available today cannot achieve what film still can. Yes, many effects are calibratable, and yes, film has its problems as well - but purely from the standpoint of both data density and sampling high MTF (fine grain) films win.

I may revise my opinion in a few years, but without spending large \$\$\$ for science grade arrays and read-out electronics they are just not as good as good old film.



## General Topics

From : "Patrick Poitevin" <patrick\_poitevin@hotmail.com>  
 To : "SE Mailing List" <SOLARECLIPSES@AULA.COM>  
 Subject : [SE] **To all SEML subscribers** Date : Thu, 23 Aug 2001 23:57:07 +0100

Dear All, I have been away for nearly the whole week and I got tears in my eyes reading the amount of messages on the SEML at this time. Isn't there enough violence and war in the world? Cannot we get on together? We only live once, be happy! We all saw the poor people in Africa and we are acting like this.....?...

To those suffering of the amount and the contents of the messages, my truly apologise. I hope I did not let you down completely. To those expecting some corrective action from my side earlier, my apologise too. I try to read mails (and run the SEML) when I am on business, but it is not always possible when I am working for over 16 hours a day.

Running the SEML is hard work anyway. Since the beginning, December 1997, I have been called all possible names. As the SEML Owner I am not that popular. Behind the screens a lot of mails happen (and will continue to happen). To those who I offended in the past, sorry, but all of them have been given amnesty and are back on the list as full subscribers and readers. We all have to forgive in live...

Sometimes I have to make decisions to keep the SEML the standard I want it is. For those who can not accept the rules and the decisions, sorry, but it is my list and everybody is free to unsubscribe and join other lists. Though, I listen to all your voices. Private of course, no discussions and finger pointing on the SEML.

Please keep the messages solar eclipse related. If messages are not relevant, commercial or not solar eclipse related in your opinion, send me a private mail I will give you a private answer. Do send messages about it over the entire SEML. As anyone else you are a SEML user and you do not know if I have discussed matters with an subscriber before.

Please stop this current discussion now and for all. Do not send messages about it anymore, and do not reply on such kind of messages anymore. Thank you. Forgive to those you have to forgive. Discuss the matter in peace. Maybe you will meet in the next central path.

If you have grieves over the SEML, remarks or anything, please let me know and send me a private mail. Thank you for your understanding.

And ... keep those solar eclipse related messages coming ...

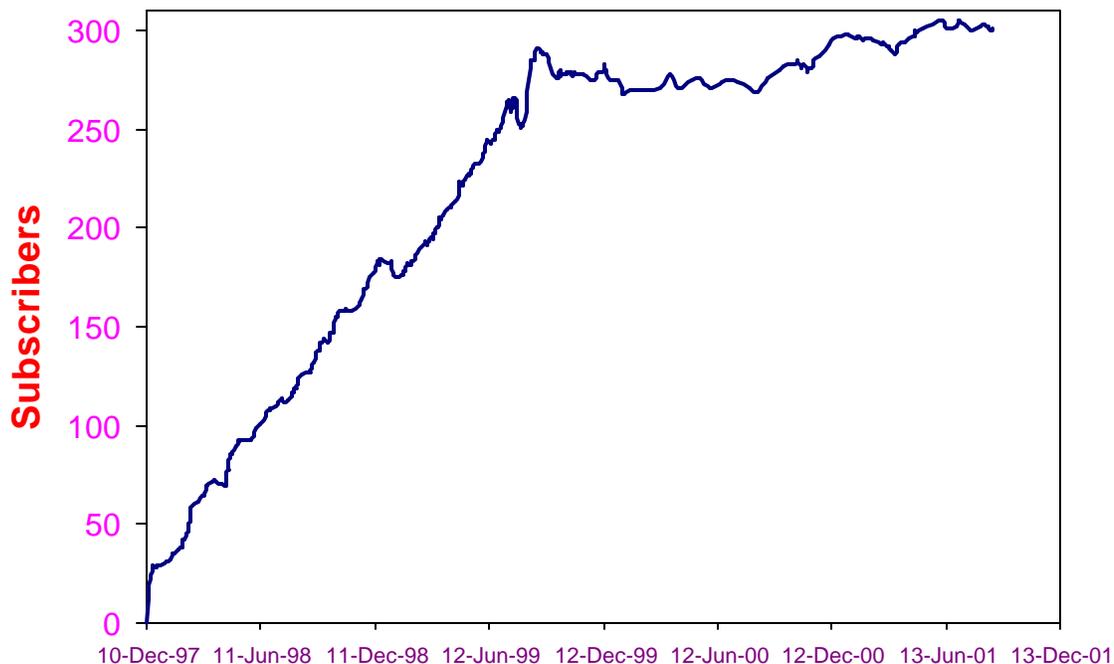
Best regards, Patrick

Guido Gubbels (Belgium) did send us this picture of the Bar Pizzeria Nuit d'Eclipse. He took this picture during his holidays in France



## General Topics

### Solar Eclipse Mailing List



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Switzerland	4	Russia	1
Austria	3	Sri Lanka	1
Sweden	3		
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Venezuela	3		
Colombia	2		
Czech Republic	2		
Ireland	2		
Poland	2		
Thailand	2		

From : Jay.M.Pasachoff@williams.edu  
To : Patrick\_Poitevin@Hotmail.Com  
Subject : **scientific results** Date : Thu,  
09 Aug 2001 17:03:16 -0400

Good luck with your meeting on Saturday. I am sorry I can't be with you again. Please give everyone my best regards.

I just got a note from the British High Commissioner in Lusaka asking if there is someplace on the Web with a survey of scientific results. I don't know of any such, though it is still premature to have results. Still, if you could mention to all the scientists to send me a few sentences of summary, or if you could put on the Web a summary of all scientific results, I'd be glad to refer him and eventually others to it.

Thanks. Jay Pasachoff

From : Michael Gill <eclipsechaser@yahoo.com> To :  
" S O L A R E C L I P S E S @ A U L A . C O M "  
<SOLARECLIPSES@AULA.COM> Subject : [SE] **Scarcity of  
Mozambique Eclipse Reports** Date : Sun, 12 Aug 2001  
04:18:11 -0700 (PDT)

There are a large number of links to 2001 eclipse reports via the websites of Fred Espenak, Peter Tiedt, <http://www.sofi01.de> and others.

Although there are reports from most countries along the track (even Angola) it seems there is a scarcity of reports from Mozambique (and the extreme south of Malawi).

Since the 2002 eclipse track also crosses Mozambique, I am curious to know the impressions of any visitors who went there for the 2001 event.

Does anyone have any URLs of Mozambique eclipse expeditions or the post eclipse reports of independent travellers to that country? Michael Gill.

From : christian viladrich <viladric@club-internet.fr>  
To : SE Mailing List <SOLARECLIPSES@AULA.COM>  
Subject : [SE] **Eclipse in Angola** Date : Tue,  
14 Aug 2001 15:34:45 +0100

You will find preliminary results of Astrophysical Institute of Paris expedition to Angola at the following address : [www.iap.fr](http://www.iap.fr)

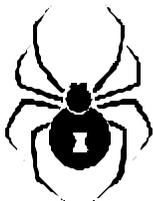
I was in charge of CCD imaging with a green (FeIV) filter. My experiment was semi-automatic, so I had plenty of time to observe the corona with the naked eyes and through a Canon stabilized binocular.

The sky was crystal clear for a 4mn35s eclipse.

Shadow bands appeared 3 mn before 2e contact and were very conspicuous 2 mn before 2e contact.

30 s before 2e contact, and up to 15 s after 3e contact, the corona could be seen when I extended my arm to occulted the sun with my thumb. I saw the corona as pure white (through binocular) with no trace of color. The transparency of the corona reminds me of Orion Nebula seen with an 20 cm telescope.

Best regards, Christian Viladrich,  
<http://perso.club-internet.fr/viladric/>



From : Glenn Schneider <gschneider@mac.com> To :  
SOLARECLIPSES@AULA.COM Subject : [SE] NEW  
(Prelim) **Photographic Report from LZNP, Zambia**  
Date : Wed, 15 Aug 2001 14:02:29 -0700

Believe it or not, I have only just seen the results from my photographic program from the 21 June 2001 eclipse last night!

From that I have put together a PRELIMINARY summary of that, with accompanying images which can be seen at: [http://nicmosis.as.arizona.edu:8000/ECLIPSE\\_WEB/ECLIPSE\\_01/ECLIPSE\\_2001\\_REPORT.html](http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_01/ECLIPSE_2001_REPORT.html)

Post-processing is yet to happen, but the I am quite happy with the "raw" material.

I have received off-line e-mail and phone-mail from many on this list over the past month. I can assure you I did not drop off the face of the Earth, but I was on extended travel (after returning home for a short while after the eclipse) - and {horrors} out of email contact. I am paying for that now, with huge amounts of correspondence to sort through - so I ask your indulgence until I catch up. If you did send me a message (or more) I will respond (but do resend if I don't in a few days in case it got buried).

I also see I have a great deal to absorb from this very busy SEML expbder. Now, back, in the world, Glenn Schneider

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From: FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov> To: <SOLARECLIPSES@AULA.COM>; <eclipse@hydra.carleton.ca> Cc: <fespenak@aol.com> Sent: Friday, August 03, 2001 6:13 PM Subject: [SE] **total eclipse via the "man in the street"**

Steve Hyslop is not an Eclipse Chaser. He's not even an amateur astronomer. But something told this South Africa "man in the street" that the total eclipse of June 21st was something not to be missed. Steve recently shared his eclipse experience with me via email. With his permission, I have posted his story on my 2001 eclipse reports web site: <http://www.MrEclipse.com/TSE01reports/TSE01reports.html>

The direct URL to Steve's report is:

<http://www.MrEclipse.com/TSE01reports/TSE01Hyslop.html>

Steve's refreshing, down-to-earth eclipse narrative captures all the excitement, awe and wonder of seeing his first eclipse. I hope that you enjoy it as much as I did!

- Fred Espenak

PS - If you know of any links to other good 2001 eclipse web sites, please let me know. And if you have an interesting or unusual eclipse report which you'd like to share via the internet, send it to me. If I agree with you, I'll post it on my 2001 eclipse reports web site. Thanks.

From : "McCann, Stephen" <stephen.mccann@roke.co.uk>  
To : "'SOLARECLIPSES@AULA.COM'" <SOLARECLIPSES@AULA.COM> Subject : [SE] **Pre and post totality corona observations** Date : Wed, 15 Aug 2001 15:44:42 +0100

Congratulations to Christian and the French teams who produced some wonderful results in Angola (and indeed went to Angola !)

I've now heard three accounts of corona observations outside of totality, either just before or afterwards. Christian mentioned several seconds, but I recall one chap from Sky & Telescope mentioned several minutes.

Is this new ? Is this possible ? Has this ever been recorded prior to the June eclipse, as I've never heard about it before.

The next question is; can the corona be seen during an annular ? (e.g. in December)

Kind regards, Stephen McCann, Southampton

From : Kidinvs@aol.com

Actually, what magnitude of eclipse must we observe to see the corona? Is an annular of mag. .99999 considered total for observation purposes? I would think that a .99999 eclipse would show BailysBeads with 1 very bright spot. I am sure that I have seen the corona while seeing BailysBeads. Eric Brown

From : Marc Weihrauch <marc.weihrauch@student.uni-halle.de>

Hi Stephen,

> I've now heard three accounts of corona observations outside of totality, either just before or afterwards. Christian mentioned several seconds, but I recall one chap from Sky & Telescope mentioned several minutes.

Here in the list I read about "early corona" observation by covering the slim, shrinking crescent sun just before totality. I gave it a try in Zambia, and it does work. The problem is to cover up the remaining sickle, my hand wasn't calm enough, so I managed it only a few seconds before totality. But as soon as I had managed it I saw the corona - for the first time in my life :)))

Of course, only the inner corona was visible, so it's very little compared to the sight during totality. Yet alone the point that I saw the corona outside totality is exciting to me.

Using a modern video camera it's not a problem at all. My good friend Alexander Birkner simply let his camera record the sun without filter for a while after third contact. Inner corona and prominences are easily visible half a minute or so after the end of totality. (Alexander, how long exactly did you leave it open?)

> The next question is; can the corona be seen during an annular ? (e.g. in December)

I don't know. Visually, I wouldn't risk it. If you have a chance to photograph it, I guess only around the inner contacts and near the path limits. I'd love to hear the experts on this question. Best wishes, Marc

From : Evan Zucker <ez@AbacusTotality.com>

Stephen wrote: The next question is; can the corona be seen during an annular ? (e.g. in December)

It depends upon the magnitude of the eclipse. In one extreme example, observers at the nearly total 30 May

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84 eclipse could easily see the corona by manually covering the photosphere. This photo gives you an idea of what it was like, although you can't really see much of the corona: <http://dias.aueb.gr/~p3960029/3009.htm>

Here's a discussion of this issue on this TSE list from 1999: <http://www.mreclipse.com/SENL/SENL9901/SENL901as.htm> Evan H. Zucker

From Derryl Barr

According to reports from the Langley expedition to Pikes Peak to observe the 1878 July 29 eclipse, the corona remained visible for 4 full minutes following the end of totality.

From Dietmar Staps

For an article published in the german journal SONNE about the 1984 annular eclipse I browsed through the eclipse literature of 1842 - 1900 and got the following results: the inner solar corona can be observed about 3 to 4 minutes before and after eclipse, prominences up to 8 minutes. Waldmeier and others even got photographs with corona details at the 66 and 84 eclipse. With this knowledge I have extended my eclipse observation time a little bit, in Madagascar from 2 minutes 20 secs to 6 minutes. Solar observation outside totality is extremely dangerous! greetings, Dietmar Staps

From Gerry Foley

The inner corona is clearly visible in the pictures of both diamond rings at the eclipse of 1970 on

<http://home.columbus.rr.com/gfoley/eclipse.html>

As more of the photosphere becomes visible the more distant parts of the corona fade out. Gerry K8EF

From Tim Karhula

On my video recording of the recent eclipse, I can still see the chromosphere about ten seconds after totality. The big prominence at "three o'clock" and inner corona could still be seen 1 minute 12 seconds after 3rd contact when I put on the solar filter. These details could certainly have been recorded even longer but I did not want to risk damage to the video camera. /Timo



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From: Hole in the Sky Tours To: solareclipses@Aula.com Sent: Wednesday, August 01, 2001 4:13 PM Subject: [SE] a question of heavenly bodies

Dear group, There continues to be an ongoing discussion about which stars and planets were visible during the last eclipse. Here is my 'drawing' of what we saw from Lusaka Zambia. The numbers refer to the order in which they became visible (or at least when we observed them!) My vote is for Jupiter, Mars, Saturn and Sirius. Other ideas?, confirmation? Also, just for fun, the Hole in the Sky web page [www.holeinthesky.com](http://www.holeinthesky.com) has a number of pictures and a couple of essays from the last eclipse. I will continue to add pictures and stories through the end of August, the deadline for our contest. If any of you have terrific stuff you wish to share, send it (them) to me via email, or the address on the web page.

Jerry, Hole in the Sky Tours, [eclipse98@earthlink.net](mailto:eclipse98@earthlink.net)

\* #4 (almost directly overhead)

\* #2

ecilpse

\* #3

\* #1

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From: Marc Weihrauch <[marc.weihrauch@student.uni-halle.de](mailto:marc.weihrauch@student.uni-halle.de)>

Hello Jerry, surely you haven't seen Mars during totality. The red planet was in opposition on June 13, only eight days before the eclipse. So, still standing opposite the sun in the sky, it was below the horizon during the event.

If I got your sketch right these are the objects you observed:

- #1 - Jupiter
- #2 - Canopus
- #3 - Rigel
- #4 - Sirius

However, I might have misinterpreted your sketch. Beside these I could spot Procyon, Betelgeuze and Alnilam, the brightest and middle of the belt stars of Orion. Best regards, Marc

From: <[timo.karhula@se.abb.com](mailto:timo.karhula@se.abb.com)>

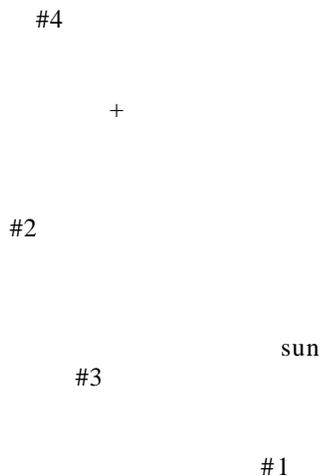
(Continued on page 51)

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Based on that #1, 3 and 2 are in a straight line and the order in which they were seen, it seems to me that #1 = Jupiter, #2 = Sirius, #3 = Betelgeuze and #4 = Procyon. Procyon was the 1st magnitude star closest to zenith (altitude 61 degrees) as seen from Lusaka. Mars was below the horizon and Saturn was below Jupiter. /Timo

From: Hole in the Sky Tours

I have been accused of being a poor artist (guilty as charged!), so I have redraw the sky as I believe it was from Lusaka, everything was to the Left of the sun if one faced directly towards it. #2, 3 and 1 formed a fairly straight line. Number 4 was a fair distance from the other objects and was seen last. This is probably because of its distance from the sun, rather than its relative brightness. + = zeinith



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I have received a number of suggestions and the current thinking is: #1 Jupiter (everyone seems to agree on this!), #3 Betelgeuse, #2 Sirius and #4 Canopus (it was 'beyond' the zeinith (+)). Others have suggested that Rigel or perhaps Procyon were seen. I would also appreciate your suggestions as to which software programs you use to help you with the night (and every 18months or so, the day!) sky. Jerry

From: FRED ESPENAK <u32fe@lepvox.gsfc.nasa.gov>

You might compare your diagram with Figure 15 published in the NASA 2001 eclipse bulletin. That figure is online at:

<http://sunearth.gsfc.nasa.gov/eclipse/TSE2001/TSE2001fig/TSE2001fig15.GIF>

Hint: rotate figure 15 about 120 degrees clockwise so that North-West is at the bottom. This is the sky orientation as you faced the eclipsed Sun in Zambia.

My own 'guesses' of object identification are as follows:

- 1) Jupiter (no question!)
- 2) Betelgeuse

(Continued on page 52)

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- 2) Sirius
- 4) Canopus

Personally, I only saw Jupiter, but then again I didn't spend any time looking for stars since I was pretty busy watching/photographing the corona! - Fred Espenak

From: Olivier "Klipsi" Staiger <olivier.staiger@span.ch>

I had put up a page with "sky at totality" images as seen from Lusaka , made with Cybersky ( www.cybersky.com ) at <http://eclipse.span.ch/sky210601.htm> . Check it out, maybe this helps ?

From: FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov>

Oops! Sorry for the typo. That should read:

- 1) Jupiter (no question!)
- 3) Betelgeuse
- 2) Sirius
- 4) Canopus

- Fred Espenak

From: <KCStarguy@aol.com>

Greetings, I have posted an image of totality which is a screen freeze from my simulation of the June 21 eclipse made with Starry Night Pro. It is posted at <http://members.aol.com/kcstarguy/blacksun/2001eclipse.htm> This image even shows the asteroids, satellite and comets that were in the sky at the time as well as the planets and stars. If you would like a copy of the larger image of it, contact me by my direct email (do not on this listserve) and I will send it to you. It makes a great desktop screen.

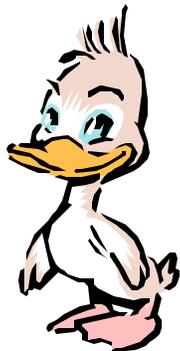
My picture taken during totality of somewhat the same scene is below that. This is a much lesser quality of the original pic so that it downloads more quickly. It shows Jupiter below but there are 1 or more objects (light orange or so color) seen while examining the original and bigger tiff picture, to the left of Jupiter, possibly either Saturn or Mercury or Orion stars. I will examine further. Dr. Eric Flescher (KCStarguy@aol.com)

From: Anne Marigold <Anne.Marigold@sis.securicor.co.uk>

Although very much an amateur I'm pretty sure of Jupiter, Betelgeuse and Sirius from Zimbabwe. Cheers, Anne

From: Daniel Fischer <dfischer@astro.uni-bonn.de> To: <SOLARECLIPSES@AULA.COM> Sent: Friday, August 03, 2001 6:42 PM Subject: [SE] "Effects of the 2001 t.s.e. on African wildlife"

This is the title of a one-page paper by Paul Murdin in the August issue of Astronomy & Geophysics (A&G Vol. 42, p. 4.4) - this British astronomer was involved in a major observing campaign in the Mana Pools NP in Zimbabwe. There is also a website mentioned - [www.zimwild.co.zw](http://www.zimwild.co.zw) - where more detailed results are to be published, but I couldn't access it today. Daniel



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From : "ccmlt" <ccmlt@wanadoo.fr> To : <SOLARECLIPSES@AULA.COM> Subject : [SE] Eclipse photos from Saint Albert's Mission, Zimbabwe ! Date : Sat, 25 Aug 2001 12:30:16 +0200

Hi friends ! This is the first time I send an Email to the list since many month, you know I can't really write in good english, but I'm a avid reader of your messages. I just finished to put a "big" new eclipse webpage.

We were in Saint Albert's Mission on the Zambezi Escarpment, 900 m above the Zambezi valley, a few km away from Muzarabani, north of Harare in Zim with some friends, amateur astronomers from Astronomical Society of Southern Africa (ASSA). They were so kindly people ... As you know, the sky was incredibly blue and totality was a great moment !

I put more than 50 images of this wonderful event : people, observation site, eclipse and Jupiter at various focale from 24 mm to 1250 mm both with 2 classical 24X36 camera, and taken with a mini DV sony camcorder mounted on a 80 mm FD5 refractor and used with afocal method behind a 40 mm eyepiece. Results were pretty good ...

I hope you will enjoy this photos, as I enjoy them ! Some where taken a dozen of second before totality and some others up to 45 seconds after totality. One can see clearly proeminences and corona ...

I still have to add soundtracks and video, and ask to my sister to translate the original text in english (she lives in London), but, maybe you should have a look now ...

Home page will be found at : <http://www.astrosurf.com/carnets-astronomie>

Please follow the link "Le récit complet et les images ..." located just above the third contact photo in the home page. I will be pleased to answer if you have any questions ...  
Christophe, France



From : "Vic & Jen Winter, ICSTARS Inc." <webmaster@icstars.com> To : SOLARECLIPSES@AULA.COM Subject : Re: [SE] slit defraction Date : Sat, 25 Aug 2001 12:48:19 -0500

We have been doing some detail work on our images from the Eclipse. We found a very interesting detail in one of our images where Baily's beads were beginning. The slit effect seems to have caused an interesting defraction. I posted some medium resolution images with this detail for the group at: <http://www.icstars.com/Mad/slit.html> please examine and consider.

I could be mistaken about the cause, but the effect is clear. Clear Skies, jen

From Richard Bareford

Looks like the chromosphere to me. Could you describe more precisely what phenomenon you are referring to? Adding an arrow pointing to the diffraction effect in the image would be helpful, too. Richard Bareford

From Glenn Schneider

What you are seeing is apparently ghosting from an internal reflection in your lens/optical system. The spatial scale is completely wrong for edge diffraction due to the moon. One Fresnel zone at a slit distance of about 230,000km, at 5000 Angstroms from a geometrical edge is on the order of 10 meters. That corresponds to an angular scale of 0.5", which is 1/3600 of the Moon's angular diameter - MUCH smaller than what you have in your images. Very nice images by the way, despite the ghosts. Glenn Schneider

From Jay Pasachoff

That's a very beautiful photo with high resolution of prominences. I also don't see what phenomenon you are asking about. I don't see any signs of diffraction (note spelling). I see chromosphere, including a few chromospheric spicules, to the sides of the Baily's beads. Please remind me what telescope setup you took the image with? It is gorgeous. Jay Pasachoff

From Glenn Schneider

I believe the artifact Vic & Jen are referring to are two low-contrast arcs above and below the photospheric crescent which are slightly orange, with a darker (bluer) concentric band between each of them and the photospheric sliver.

My earlier comment was that this was likely image ghosting. Alternatively, as I examine it more closely, it \*MAY\* more likely be chromatic aberration, as I see how the colors separate. In either case it is not curved-edge diffraction - or a linear combination of edge and point-source diffraction.

Finally, I don't think I emphasized myself what wonderful images there are - excellent resolution with spectacular detail. I echo Jay's

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request - can you briefly summarize here (or point to) a description of the instrumental system used? Glenn Schneider

From Archer Sully

I was set up right next to it, so I can comment ;-).

The instrument is an older Vixen 102 Fluorite with a negative lens (something telecentric, IIRC). It was rebuilt with a nice cell, nice stainless steel tube and AP focuser. It is a very, very nice instrument, and got its share of visual use on the beach, too. Archer Sully

From Jen Winter

Thanks Jay and Glenn for the compliments. I was just packaging our digital files to send over to Tony Halas and noticed an unusual chromatic aberration. What I saw was a slight spectral diffraction displayed as Glenn described above and below the photospheric crescent. At high resolution, a spectral range may be more distinct. I see green to the center, then yellow, orange, and red to the outermost edge. I see no blue in the spectrum other than the scattered light surrounding the crescent. I also see this aberration following the contour and width of the crescent. - particularly to the left side where the crescent begins breaking into beads.

The only images I had ever seen of slit diffraction had the aberration appear at a great distance from the Sun and Moon, nearly the same angle as a 'Sundog'. I only saw them at a glance and wasn't able to examine them closely. That is why I posted these to this group, in hopes to discuss their possible origin.

The equipment we used to image was a very simple 4" Fluorite Refractor. F-8 with a 2x telecentric barlow. The instrument was designed and assembled by our close friend, an optical engineer by the name of Curtis Hruska. The tube was enlarged to a 6" diameter for convection heating and cooling control, but that's the only thing special about this instrument. I had originally doubted the internal reflection or ghosting idea because of the design of the instrument (Curtis usually runs a professional scale ray-trace on the instruments he designs). However, I am not above the idea that it could have been internally produced.

We only have one photo of the 'scope scanned in now at: [http://www.icstars.com/Mad/Chasers/pages/Mad\\_eclipse\\_chasers\\_09.htm](http://www.icstars.com/Mad/Chasers/pages/Mad_eclipse_chasers_09.htm)

- It is NOT our white scope on the right which Jay Anderson is looking through for Halpha observing. It is the silver tube to the left.

We shot the Prominences with the 4" instrument at a final focal length of approximately 1800mm on 35mm Fuji color negative film Nikon F4 at prime focus.

We shot the Corona with the 5" instrument (F/8) at approximately 1000mm with a Mamiya 645 - Fuji color negative asa 400 negative film.

Another point of interest about the images acquired is that we scan all images directly from negative on 42bit scanner with no color correction on initial scan. This requires scanning the negative as a positive and inverting the file to prevent unwanted gamma corrections by the scanner software. We have found that this detail makes an enormous amount of difference in having an unadulterated tone curve to begin corrections from. I also don't use the sharpen tool to gain detail. My method for adjusting tones includes ONE adjustment pulling d-min and d-max to a uniform outer edge of the captured tone curve in each component color to maintain accuracy in hue. With this method, I doubt the spectral effect was computer generated either.

Thanks for the kuddos from those who appreciate our work. Every one of us understands the effort involved. Clear Skies, jen



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From PP RE: **Solar Eclipse Gallery** Dear All, Those whom have seen some of Juan Carlos' pictures on Totality Day 2001, or from previous solar eclipse trips, or his presentation at SEC2000 in Antwerp:

From: "SKYLOOK.NET" <jccasado@skylook.net>  
To: "Patrick Poitevin" <patrick\_poitevin@hotmail.com> Subject: June 21, 2001 Total Solar Eclipse Gallery Date: Tue, 28 Aug 2001 22:48:45 +0200

Dear Patrick, I have just placed my images of the June 21, 2001 total solar eclipse in the website:

<http://www.skylook.net/eclipses/eobser/es0601/obs/princi.htm> (english)

<http://www.skylook.net/eclipses/eobser/es0601/obs/princ.htm> (spanish)

The images are classified in three sections: Landscape and panoramic, phases and contact, prominences and corona.

Please, give to know them to SEL. .../...

Best regards, Juan Carlos Casado [www.skylook.net](http://www.skylook.net)

From Eric Flescher Juan's pictures are just superb. I send him congrats as they are truly nice work and quite a variety as well .

I also like that he photographed the landscape during totality as I did. But his wide angle lens gives another view which is real nice. He even imaged stars in his landscape pics (I have Jupiter in mine but will see if I have more). I have posted my ring of fire panorama pic of 2001 and pre ring of fire 1999 together at

<http://members.aol.com/kcstarguy/blacksun/ringoffire.htm>  
They are interesting comparison. I will also post a link to this site and other sites with great pictures and videos of eclipses and landscapes at <http://members.aol.com/kcstarguy/blacksun/astrocam.htm>

If you have some nice ones you'd like me to consider , send me the link. Once again great job Juan. Dr. Eric Flescher (KCStarguy@aol.com)

From : Peter Tiedt <Peter.Tiedt@npc-eagle.co.za>  
To : "Solar Eclipse Mailing List (E-mail)" <solareclipses@aula.com> Subject : [SE] **Enquiry from South Africa - Video footage of totality**  
Date : Thu, 23 Aug 2001 14:32:10 +0200

The attached e-mail was received recently. if any members of the list can help - please contact Sheila directly.

Thanks, Peter Tiedt

I am writing from Aland Pictures in Cape Town. We are making a documentary titled "Cosmic Africa". We are now in full production. We are filming on High Definition (HD) video (NTSC). We have completed about 80% of our principal photography and I am now starting to focus on our stock footage requirements for the film.

For the June 21 eclipse our team was in Namibia and filmed the partial eclipse. I am writing to ask if you know of any film or video footage on any of the solar eclipses (preferably total), or whom I could contact in this regard.

Thank you for your time and I look forward to your reply. Best Regards Sheila van Zyl Production Manager Cosmic Africa Aland Pictures Loft 102, Gate 1, Victoria Junction Green Point, Cape Town, 8005 Tel: ++27 21 425 1777 Fax: ++27 21 425 1778 email: [alandpictures@mweb.co.za](mailto:alandpictures@mweb.co.za)



From : "F.Podmore" <podmore@science.uz.ac.zw> To : solareclipses@aula.com Subject : [SE] **Any Zimbabwe dollars needing a home?** Date : Thu, 21 Jun 2001 04:44:00 +0200 (CAT)

Quite a number of you may have come to Zim for the eclipse (or knows someone that did) and have returned home with some Zim dollars which are now surplus to your requirements, and may only have value as pretty souvenirs. This is just to let you know that IF you have more than you know what to do with, so that it is just cluttering up your drawer, then as I am coming to England for teh Totality Day, you could pas on any surplus to me.

This could either be in person, or send by post to me at 59 BERWICK ROAD, LITTLE SUTTON, WIRRAL CHESHIRE ENGLAND CH66 4PW

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Any amount, however small, will be welcome, and will go towards expenses incurred in all the public eclipse education we did here - and that was lots of \$\$\$ - e.g. in petrol and photocopying of maps, etc.

Unless of course you are planning to come here for 4 Dec 2002, in which case you can come and spend it (except that by then it will probably be only worth half its present value, the way prices are escalating here..).

My UK phone number, from tomorrow until 18 August is 0151-339-2282 but i won't be there all the time. Clear skies, Francis



## COSTA RICA 2001

From : FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov> To : SOLARECLIPSES@AULA.COM Subject : [SE] 2001 Annular Eclipse in Costa Rica Date : Wed, 22 Aug 2001 10:51:08 -0500

It's already two months since the total eclipse in Zambia and only three and a half months until the annular eclipse in Costa Rica. A number of people on this mailing list have expressed interest in the 2001 annular eclipse.

I'm organizing a 4 day eclipse trip to the Guanacaste Peninsula which lies along the Pacific coast of Costa Rica. As the driest region in the country, Guanacaste promises excellent prospects for a clear sky on eclipse day. We've selected a lovely hotel near the eclipse center line. The beach is a just short walk from the hotel and offers an unobstructed view of the eclipse which occurs in the late afternoon.

The annular phase of the eclipse will last 3 minutes 19 seconds with the Sun just 11 degrees above the southwestern horizon. As an added bonus, the Sun will still be 25% eclipsed as it sets over the Pacific Ocean! This will be a great photo opportunity (See: <http://www.mreclipse.com/SEphoto/PSE2000Jul30.html>). Furthermore, we hope to be able to see the 'Green Flash' from the two horns of the eclipsed Sun just before it disappears below the horizon! The details for trip are available via Spears Travel (<http://www.spearstravel.com/costarica01.htm>).

There's still space available but we have a September 10 deadline. If you are interested in the trip, please contact me or Spears Travel (800-688-8031). Clear skies, Fred Espenak

From Vic and Jen Winter

ICSTARS and Astronomical Tours also have plans to observe the December 14th annular eclipse from Costa Rica.

Our plans, however, like Dr. David Dunham of the International Occultation Timing Association, are to observe this event from the Path Edge. This provides for a striking display of much longer bailey's beads in comparison to a centerline observation. We have selected a location in the San Jose area where weather prospects for rain are still only 2.5 cm as a monthly average. Our duration will be approximately 3m 17s at 8 degrees.

We will be at the Residencias de Golf, with a full 18-hole golf course. This allows us a wide variety of viewing locations with wide, unobstructed horizon and interesting foreground objects. Our program begins at the observing location where we can make a full inspection and make any special arrangements, but also includes the Arenal Volcano where we stay at the Arenal Paraiso Lodge at the foot of the Volcano for nighttime photography, and time at the Monteverde Lodge in the Costa Rican cloud forest before returning to the observing site for poolside Geminid observing the night before the eclipse.

We still have space remaining, and will close our registrations on October 15th. If you have questions about this program you can call us at (913) 432-4636 or visit our web page at: <http://www.AstronomicalTours.net>

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With luck, we will bring our next series prototype .4 angstrom Halpha Filter we're manufacturing along for some tests. Vic & Jen Winter

From : "Hole in the Sky Tours" <eclipse98@earthlink.net> To : <patrick\_poitevin@hotmail.com> Subject : HITS knus Date : Fri, 24 Aug 2001 22:37:03 -0700

Dear Eclipse-o-phile, Just a quick reminder from Hole in the Sky Tours that registration for our fabulous Costa Rica Annular Eclipse trip December 10-16, 2001 closes on August 31st. Details about the tour can be found on our web-site [www.holeinthesky.com](http://www.holeinthesky.com)

We hope to have information about the December 4, 2002 eclipse tours to Africa or Australia in the next few weeks and will post on the web as soon as we can.

Finally, if you haven't seen all of the terrific pictures or read the stories from the last eclipse, go to the web page and click on Photo1 or Photo2 or Writing. Enjoy!

Clear Skies, Jerry Hole in the Sky Tours [eclipse98@earthlink.net](mailto:eclipse98@earthlink.net) [www.holeninthesky.com](http://www.holeninthesky.com)

From : Daniel Fischer <dfischer@astro.uni-bonn.de> To : SOLARECLIPSES@AULA.COM Subject : [SE] A real eclipse-related message (regarding the next one) Date : Sat, 25 Aug 2001 13:31:33 +0200 (MET DST)

Right now I'm putting together a small tour to Costa Rica, for watching the annular eclipse and some of the natural highlights of this country - today I've learned that there are still plenty of seats available on the daily Iberia flights from Germany via Madrid to San Jose.

Already local amateur astronomers are offering us (we are 5 so far) ample support in the country, but I'd like to get more opinions from others who will go to CR in small self-organized tours or completely on their own: Let's swap insights about the best places to observe, local transportation (we will go only by bus this time) and other sights to see in a 7 to 10 day time frame! Daniel Fischer

From Olivier Staiger

Guten Tag Daniel, and for those going to Costa Rica from Europe: I had looked at Iberia, too. >From Geneva Switzerland to Costa Rica there is not much choice. But I prefer KLM as I earn frequent flyer miles with flying dutchman. So I was going to fly Geneva-Amsterdam-Houston TX (nonstop) with KLM, and next day Houston-Costa Rica with another airline. But then my travel agent found Martinair [www.martinair.com](http://www.martinair.com). An airline associated with KLM, so I think they're serious, "charter" but actually flying regularly to sunny beaches and ocean resorts. similar to Condor/Lufthansa in Germany. They fly out of Amsterdam, at interesting rates. Flight stops in Miami FL, but no aircraft change, and onward to Costa Rica. Cheaper than Iberia, and if you got the bucks, their businessclass is quite affordable, too (treat yourself to upgrade, nice Christmas gift :-). Check it out. Olivier "Klipsi" Staiger, Geneva Switzerland

From : "Hole in the Sky Tours" <eclipse98@earthlink.net>

Hole in the Sky Tours has extended the registration for its Costa Rica tour to see the annular eclipse at sunset from the beach! The itinerary is

Dec 10: Fly to San Jose, Costa Rica

Dec 11: Tour the Rain Forest, San Jose city

Dec 12: White Water rafting on the Sarapiquí or Pacuare River.

Dec 13: Tour Cano Negro Wildlife Refuge, visit Tabacon Hot Springs and Spa, view Arenal Volcano.

Dec 14: View annular eclipse from the beach in the Guanacaste area

Dec 15: Playa Conchal beach day

Dec 16: Return to San Jose and home



If you are interested in learning more, please visit the web page! [www.holeinthesky.com](http://www.holeinthesky.com) Jerry

**ECLIPSE SAFARIS 2002****WILD FRONTIERS AND GECKOS**

After our amazingly successful trips to Zambia and Zimbabwe in June 2001, we've decided we just HAVE to see the next one. Our experience of these trips and the assistance of various experts such as Peter Tiedt, have allowed us to design the perfect trips to view the next "African Eclipse". We've chosen two specific areas here – the Chobe National Park in Botswana, and near the Matopos in Zimbabwe. These both should offer excellent observing of the eclipse, and above all should be away from the crowds – such a magical experience should not be marred by thousands of other people. We've also arranged some great game viewing etc. en route to the observation sites and after the eclipse. Recce work has been done, and positioning of the EXACT viewing point is in hand, taking into account the myriad factors that we now know make all the difference. Two styles of trip are offered – a camping operation run by our Geckos safaris operation, small groups, good tents / vehicles / equipment / cooks / food etc, and another more luxurious safari style trip using lodges and hotels. All trips are limited to 14 guests, and some will be accompanied by experts – enquire for full details.

Precis of the itineraries

**TRIP ONE – 9 DAYS – CAMPING.**

Departing from Johannesburg, we spend three nights camping in our private campsite in the Tuli Reserve, where we enjoy open game drives and walks with professional guides before we continue up to camp in a private site adjacent to the Matopos. We are here for THREE nights, and will take a full day in open vehicles to explore the park itself, famous for its population of Rhino. After the Eclipse, we'll return to Johannesburg via the Great Zimbabwe Ruins.

Dates: – 29 NOV – 7 DEC 2002 . Cost – approx USD 1150 per person sharing.

**TRIP TWO – 13 DAYS – CAMPING.**

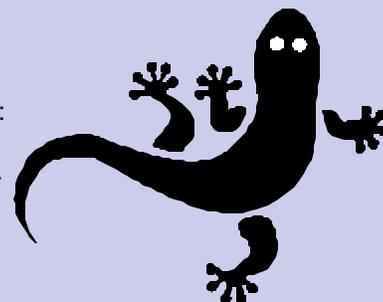
Departing from Johannesburg, we head north via the Tuli Reserve where we undertake day and night drives looking for elephant, lion and leopard. We then view the famous Makgadigadi Pans en route to Chobe National Park where we enjoy cruises on the river and game drives in open vehicles. We are here for three nights – and our accommodation will be in a private pre-erected camp in the park, close to the Centreline. A few days camping at Victoria Falls follows the eclipse - time to enjoy the multitude of optional adventure activities here, before we return back to SA with a few days game viewing in Hwange National Park and Matopos en route completing the circuit. Guests have the option of flying out after the Victoria Falls section.

Dates – 29 NOV – 11 DEC 2002. Cost – approx USD 1700 per person sharing.

**TRIP THREE – 9 DAYS ACOMMODATED.**

Trip follows the same route as TRIP ONE, but is accommodated in lodges and tented camps or hotels. Dates as per TRIP ONE. Costs – approx USD 1800 per person sharing. Please enquire for detailed itineraries and costs, inclusions, local payments, maps of locations, and exact locations and details of eclipse durations at each site etc.

Contact: Wild Frontiers (Pty) Ltd, P.O. Box 844, Halfway House 1685, South Africa, Tel: (27-11) 702 2035, Fax: (27-11) 468 1655, Members of SATOA & SATSA, Email: wildfront@icon.co.za, Website: <http://www.wildfrontiers.com>, Also visit the Africlipse Website: <http://www.eclipse.za.net>, Africlipse 2002 Tours Page: [http://www.eclipse.za.net/html/2002\\_tours.html](http://www.eclipse.za.net/html/2002_tours.html)



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From B Yen <byen00@earthlink.net> To : SOLARECLIPSES@AULA.COM Subject : [SE] **Lonely Planet** 8/9/01  
Date : Thu, 09 Aug 2001 11:27:38 -0700

today's episode 8/9/01: Africa: Victoria Falls and Zimbabwe; Botswana: Chobe National Park; Namibia

should be good for background, next years Dec 2002 eclipse. Goes thru Chobe Park/Botswana.

Should be good, for remembering this year's eclipse.

From : "Peter Tiedt" <rigel@stars.co.za> To : "Solar Eclipse Mailing List" <SOLARECLIPSES@AULA.COM> Subject : [SE] **GPS Co-ordinates for 2002** Date : Sun, 26 Aug 2001 21:22:51 +0200

I have uploaded GPS Co-ordinates for the African Land path for 2002 Dec 4.

The centreline and N & S Limits of totality at 0/25 deg intervals in Garmin Format, Waypoint+ format and as an Excel Spreadsheet can be found on the Africlipse website - [www.eclipse.za.net](http://www.eclipse.za.net)

The above three files can be downloaded in zipped format.

The direct page reference is [www.eclipse.za.net/html/2002\\_maps.html](http://www.eclipse.za.net/html/2002_maps.html) Peter Tiedt

From Richard Monk Thanks Peter for the GPS data - you were ahead of me there.

If anyone is interested in Encarta Atlas pushpin sets for the same - I have generated sets for the more interesting TSE up to 2030 (by which time I'll be pushing up daisies!) - let me know and I will do something about putting them on my website. Rgds, Richard Monk

From: Peter Tiedt <rigel@stars.co.za> To: Solar Eclipse Mailing List <SOLARECLIPSES@AULA.COM> Sent: Monday, August 06, 2001 8:09 PM Subject: [SE] **Correction - Africlipse**

The page containing local circumstances is [www.eclipse.za.net/html/2002\\_towns.htm](http://www.eclipse.za.net/html/2002_towns.htm) Sorry about the error. Peter Tiedt

From: Peter Tiedt <rigel@stars.co.za>

The Africlipse site - [www.eclipse.za.net](http://www.eclipse.za.net) has received a major update.

New maps have been posted for 2002 and also for 2006 March 29.

[www.eclipse.za.net/html/2002\\_maps.html](http://www.eclipse.za.net/html/2002_maps.html)

[www.eclipse.za.net/html/2006\\_maps.html](http://www.eclipse.za.net/html/2006_maps.html)

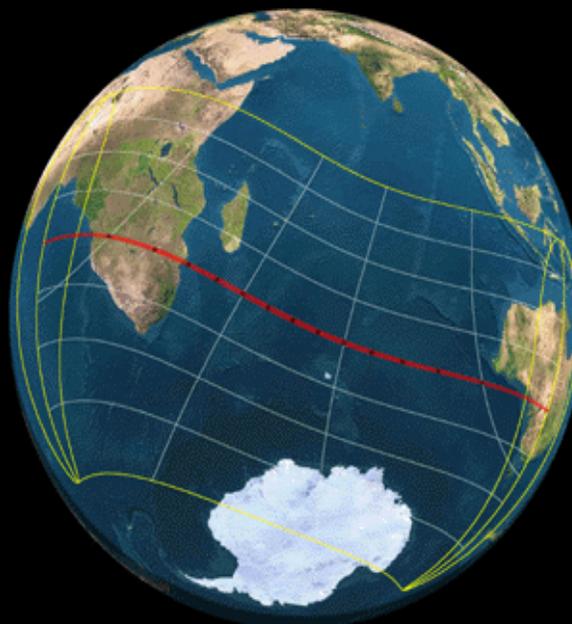
Local Circumstances for southern Africa has also been given new treatment

[www.eclipse.za.net/html/2002\\_towns.html](http://www.eclipse.za.net/html/2002_towns.html)

Some more tours have been put up on the 2002 tours page

[www.eclipse.za.net/html/2002\\_tours.html](http://www.eclipse.za.net/html/2002_tours.html) Peter Tiedt

## Total Solar Eclipse 2002 December 04



Magnitude = 1.0244

Gamma = -0.3020

Saros 142

Duration = 02m 04s

Courtesy of [www.MrEclipse.com](http://www.MrEclipse.com)

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From : "Peter Tiedt" <rigel@stars.co.za>

Once again there have been some changes and additions to the Africlipse website. [www.eclipse.za.net](http://www.eclipse.za.net)

I have added a whole bunch of new tours being offered by WildLife Adventures (I have no commercial connection with them) who put on a good package. See [www.eclipse.za.net/html/wla.html](http://www.eclipse.za.net/html/wla.html)

For more 2002 tours see [www.eclipse.za.net/html/wild\\_frontiers.html](http://www.eclipse.za.net/html/wild_frontiers.html)

Wild Frontiers is also a highly reputable operator/

There are also some new links to 2001 trip reports.

[www.eclipse.za.net/html/2001\\_links.html](http://www.eclipse.za.net/html/2001_links.html)

The 2002 and 2006 map pages have also been updated with references to the source of my maps (Mapstudio) who have granted permission for me to use excerpts from their atlases.

[www.eclipse.za.net/html/2002\\_maps.html](http://www.eclipse.za.net/html/2002_maps.html)

[www.eclipse.za.net/html/2006\\_maps.html](http://www.eclipse.za.net/html/2006_maps.html)

Following requests (mainly here in SA, I will shortly be putting up pages for 2013 and 2030) Peter Tiedt rigel@stars.co.za Visit my website at <http://www.eclipse.za.net>



From : FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov> To : SOLARECLIPSES@AULA.COM, eclipse@hydra.carleton.ca  
Subject : [SE] **NASA 2002 Bulletin and mailing list** Date : Wed, 29 Aug 2001 13:50:23 -0500

I have just finished the manuscript for the NASA 2002 eclipse bulletin. It will be known officially as NASA Technical Publication 2001-209990. It will take a few weeks to get the requisite approvals for publication as well as page set-up of the manuscript through Goddard's publication office. Add a few more weeks to get the bulletins printed and we're looking at a delivery date of around October 1. I expect to have much of it (or all of it) on the web before then.

If you have already sent me a self addressed and stamped envelope, then you will receive your hard copy of the bulletin sometime in mid-October. If you have not yet pre-ordered a copy, you can find information and instructions at: <http://sunearth.gsfc.nasa.gov/eclipse/SEpubs/bulletin.html>

The actual request/order form is at: <http://sunearth.gsfc.nasa.gov/eclipse/SEpubs/RPrequest.html>

I will be updating my "quasi-permanent" mailing list for the bulletins during the next week. This list is for institutions, professional eclipse researchers and serious eclipse amateurs.

If you are not already on this list and you have traveled to at least three solar eclipses in the past ten years and would like to be added to the mailing list, please email me at [espenak@gsfc.nasa.gov](mailto:espenak@gsfc.nasa.gov). Include your complete postal address and a list of the eclipses you have traveled to. Thanks, Fred Espenak

From Antony Michell I would like to be put on your mailing list for eclipse bulletins please. I have been to total eclipses in Finland, Hawaii, Mongolia, Cornwall and Zimbabwe and might be considered to be "a serious amateur".

Antony Michell, Daisy Lodge, The Slade, Lamberhurst, Kent, England. TN£ 8HH. Tel. 01892 891 320. With many thanks Tony

From Chris Malicki Hi Fred, Although I did not go to Zambia, I will definitely go to the eclipse of 2002. Please keep me on your mailing list and send me your Dec. 4, 2002 bulletin. Thanking you in advance, Chris Malicki 858 Bexhill Rd., Mississauga, Ont. L5H 3L1 Canada

# TSE 2002

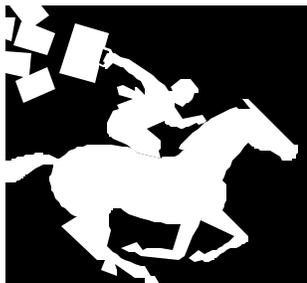
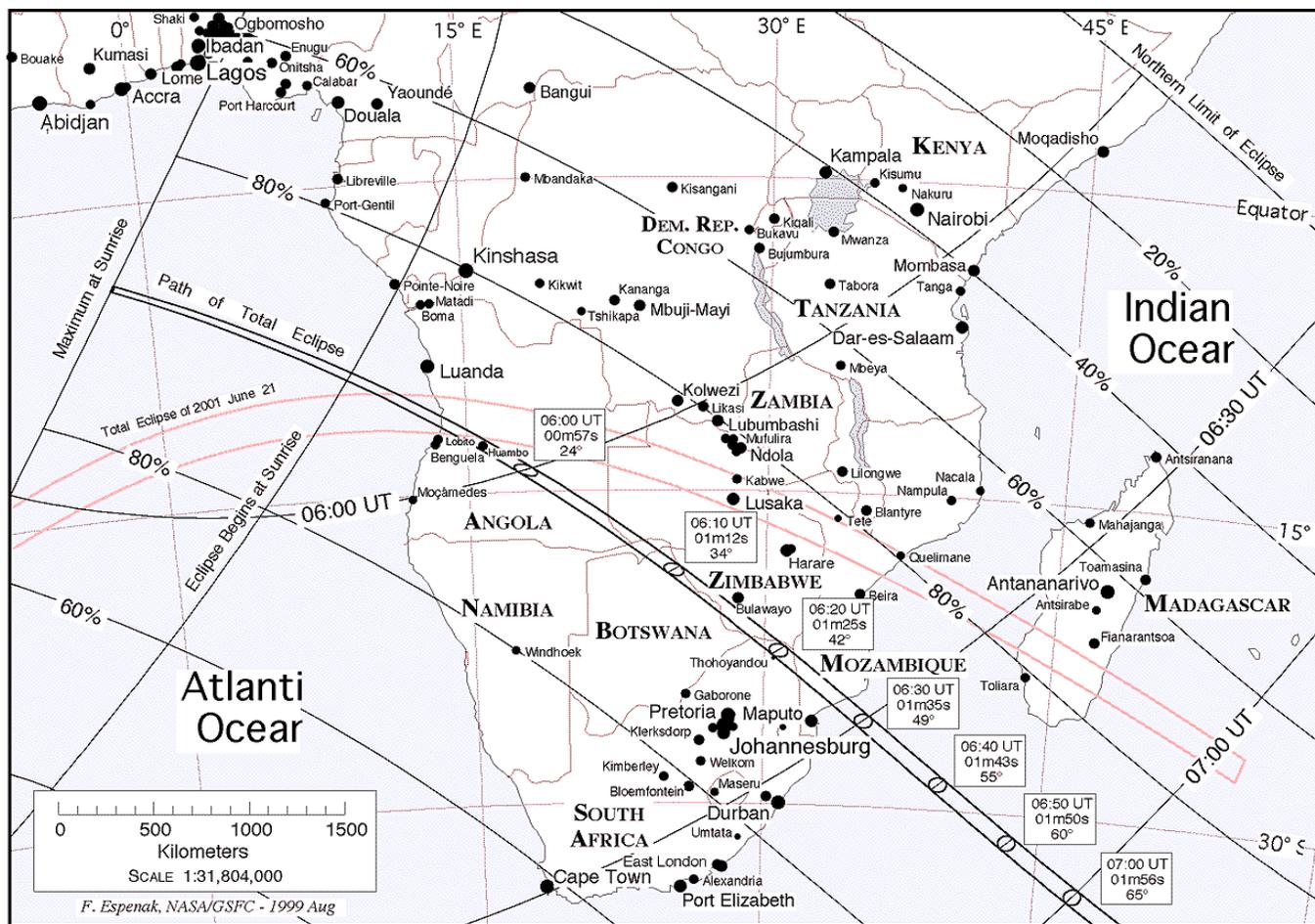
From Roger Van Haelewyn To Fred ESPENAK. Dear Fred, I would like to be on your mailing list for the NASA Bulletin on Solar Eclipses. I was present at following solar eclipses:

- Thailand, 24 October 1995
- Curacao, 26 February 1998
- Turkey, 11 August 1999

My postal address is: ROGER VAN HAELEWYN ASBERG 7 B 2400 MOL BELGIUM Thanks and best regards, Roger

## Total Solar Eclipse of 2002 December 04

FIGURE 17: THE ECLIPSE PATH THROUGH AFRICA

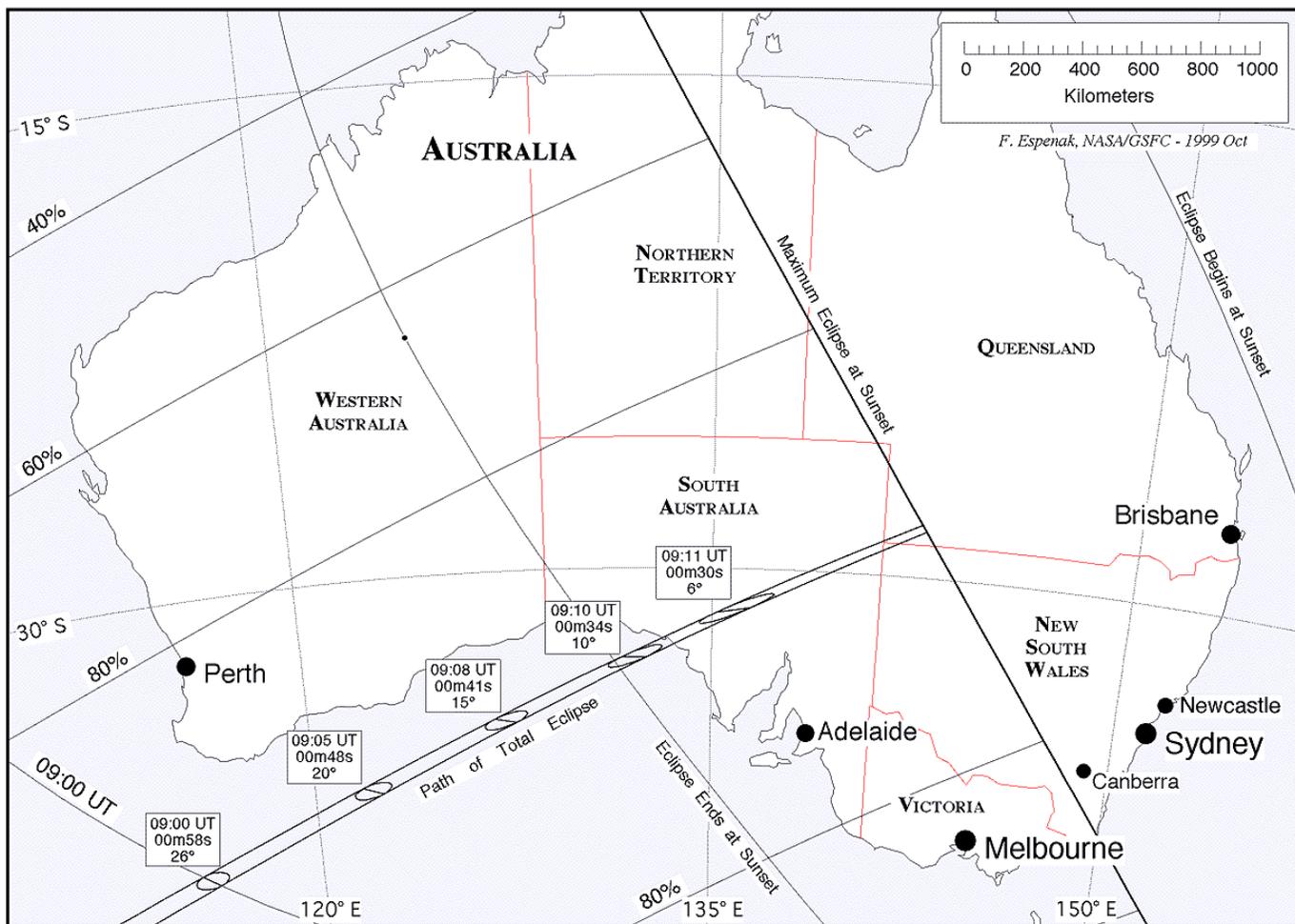


NASA TP 1999-209484, "Total Solar Eclipse of 2001 June 21"  
by Fred Espenak & Jay Anderson

# TSE 2002

## Total Solar Eclipse of 2002 December 04

FIGURE 18: THE ECLIPSE PATH THROUGH AUSTRALIA



NASA TP 1999-209484, "Total Solar Eclipse of 2001 June 21"  
by Fred Espenak & Jay Anderson

From : FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov> To : SOLARECLIPSES@AULA.COM Subject : [SE] Web links for 2002 weather & satellite images Date : Mon, 27 Aug 2001 11:15:16 -0500

I'm almost finished with the 2002 eclipse bulletin. One thing I'd like to do is update the list of links to weather and satellite images for the 2002 eclipse. Below are the links Anderson and I listed in the 2001 eclipse bulletin. Any corrections or new recommendations? Thanks, Fred Espenak

From Eric Pauer

I'd recommend: Accuweather.com <http://www.accuweather.com> For the 2001 TSE, they had forecasts for about 30 cities in or

(Continued on page 63)

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very near the path of totality, and they also had hourly forecasts (see <http://www.bit-net.com/~pauer/eclipse01/weather.htm>).

Weather Underground <http://www.weatherunderground.com> Another good site for weather forecasts with decent coverage of Africa and Australia. Regards, Eric

From Peter Tiedt

Fred, The SA weather service is now at <http://www.weathersa.co.za/>

Drop the "cirrus" address - that is no longer in use AFAIK. Posting on the list as this may be of general interest .... Peter Tiedt

From Jerry Levy

For those interested in Australia, here is one of the best meteorology sites I have ever seen: <http://www.bom.gov.au/> and if its maps ye seek try this: <http://www.auslig.gov.au/> Jerry Levy

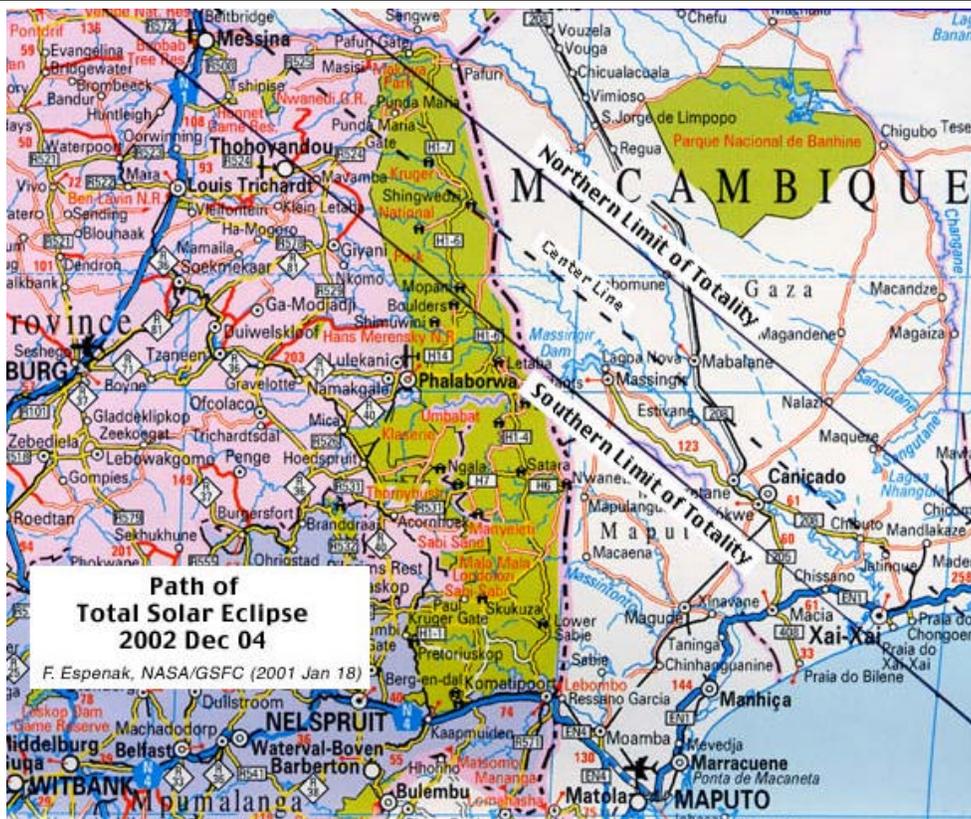
From Odille Esmonde Morgan

Some more South Australian sites for those interested in visiting Ceduna for the eclipse. I have also emailed to find out where 1:25,000 (and hopefully 1:10,000) scale topographic maps can be purchased, I will pass on the link or snail mail address when I have it. Odille Esmonde-Morgan Canberra, Australia

From Odille Esmonde Morgan

The site for South Australian Mapland, an agency of the Department for Environment and Heritage

<http://www.environment.sa.gov.au/mapland/index.html> Odille E-M, Canberra





Joanne & Patrick

*Solar Eclipse Mailing List*



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THE SOLAR ECLIPSE NEWSLETTER IS FREE OF CHARGE, BUT IS NOT AVAILABLE IN HARD COPY.

**Memories of Africa 2001**

