

# Smoky Mountain Astronomical Society

## S. C. R. A. P. S.

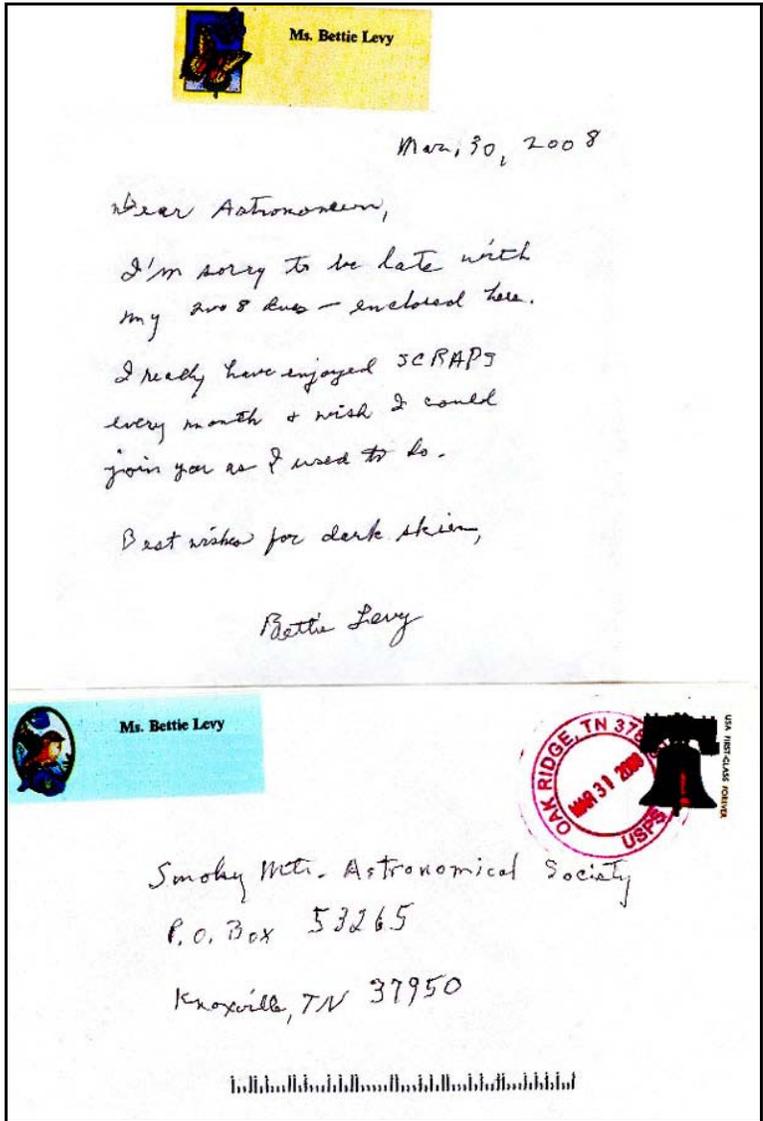
Society's **Ch**Ronological **A**stronomical **P**apers

What the caterpillar calls the end of the world, the master calls a butterfly. - Richard Bach

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## A Letter from Bettie Levy



Bettie Levy and her late husband Henri have been SMAS members longer than any active member of the club.

While she can no longer attend meetings or Star Parties, Bettie retains her membership, and remembers and relives the old times vicariously through the adventures of our current active members, and through SCRAPPS.

(She did get to attend John Dobson's SMAS visit four years ago.)

And she is setting a furious example for loyalty.

## Minutes of May 9 Meeting

By Dennis Hutcheson

The meeting was called to order by president Scott Byers.

### Announcements:

- There will be a Star Party at the Townsend Visitor Center on May 10
- There will be a Star Party at Unicoi Crest on May 31
- There will be a Star Party at Look Rock #1 on June 7
- On June 21 we will have our annual picnic at TAO
- There WILL NOT be a regular meeting at PSTCC in June
- The next PSTCC meeting will be on July 11

Brought up for discussion by Tim Hunt was the possibility of a club Astronomical Photo Calendar.

### New Business:

Motion was made and seconded for the reimbursement of \$150.00 to Michael McCulloch for reserving the Group Campsite for the Star Party at the Big South Fork. Bandy Creek E1. Following discussion, a quorum present, the motion was passed unanimously.

The main presentation was by club member Bill Burgess on the future of the amateur astronomy equipment manufacturing industry. The Chinese optical industry is now the de facto world supplier, with all famous brands outsourcing to them. Bill believes that many famous American astronomy businesses will undergo mergers and/or closures in the near future.

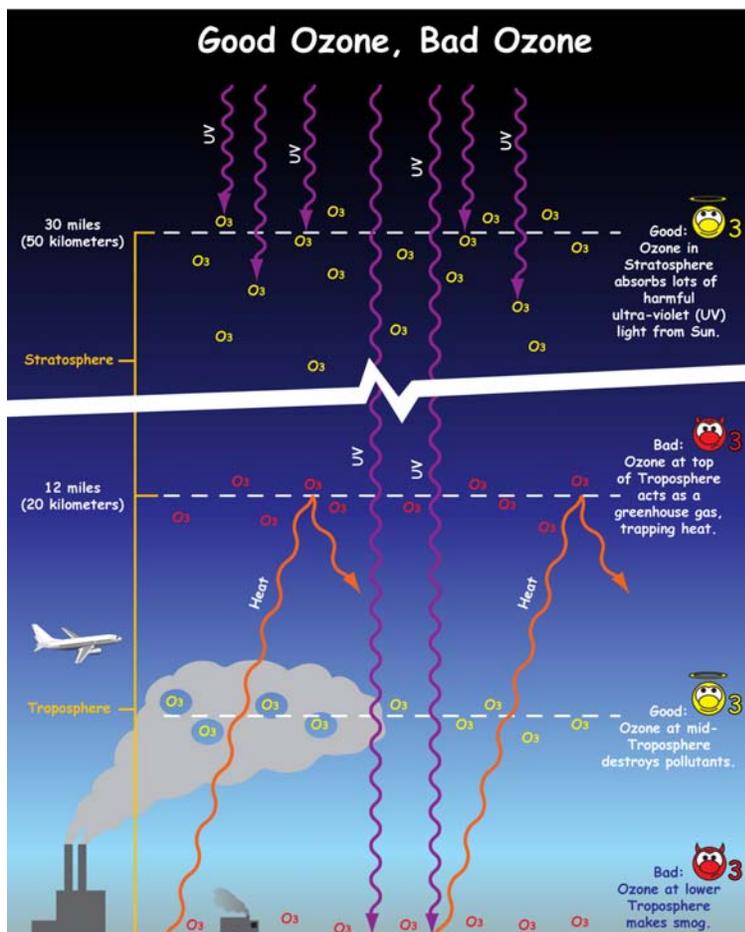
Not everything that can be counted counts, and not everything that counts can be counted. - Albert Einstein (1879-1955)

In theory, there is no difference between theory and practice. But in practice, there is. - Yogi Berra (1925- )

## Ozone, the Greenhouse Gas

We all know that ozone in the stratosphere blocks harmful ultraviolet sunlight, and perhaps some people know that ozone at the Earth's surface is itself harmful, damaging people's lungs and contributing to smog. But did you know that ozone also acts as a potent greenhouse gas?

At middle altitudes between the ground and the stratosphere, ozone captures heat much as carbon dioxide does. In fact, pound for pound, ozone is about 3000 times stronger as a greenhouse gas than CO<sub>2</sub>. So even though there's much less ozone at middle altitudes than CO<sub>2</sub>, it still packs a considerable punch. Ozone traps up to one-third as much heat as the better known culprit in climate change.



Scientists now have an unprecedented view of this mid-altitude ozone thanks to an instrument aboard NASA's Aura satellite called the Tropospheric Emission Spectrometer—"TES" for short.

Continued next page

*Ozone behaves differently at different altitudes in the atmosphere. High in the stratosphere and at mid-troposphere it has positive effects on life at the surface.*

*At the top of the troposphere ozone is a greenhouse gas and at the surface it makes smog.*

Most satellites can measure only the total amount of ozone in a vertical column of air. They can't distinguish between helpful ozone in the stratosphere, harmful ozone at the ground, and heat-trapping ozone in between. By looking sideways toward Earth's horizon, a few satellites have managed to probe the vertical distribution of ozone, but only to the bottom of the stratosphere.

Unlike the others, TES can measure the distribution of ozone all the way down to the heat-trapping middle altitudes. "We see vertical information in ozone that nobody else has measured before from space," says Annmarie Eldering, Deputy Principal Investigator for TES.

The global perspective offered by an orbiting satellite is especially important for ozone. Ozone is highly reactive. It is constantly being created and destroyed by photochemical reactions in the atmosphere and by lightning. So its concentration varies from region to region, from season to season, and as the wind blows.

Data from TES show that ozone's heat-trapping effect is greatest in the spring, when intensifying sunlight and warming temperatures fuel the reactions that generate ozone. Most of ozone's contribution to the greenhouse effect occurs within 45 degrees latitude from the equator.

Increasing industrialization, particularly in the developing world, could lead to an increase in mid-altitude ozone, Eldering says. Cars and coal-fired power plants release air pollutants that later react to produce more ozone.

"There's concern that overall background levels are slowly increasing over time," Eldering says. TES will continue to monitor these trends, she says, keeping a careful eye on ozone, the greenhouse gas.

Learn more about TES and the science of ozone at [tes.jpl.nasa.gov/](http://tes.jpl.nasa.gov/). Kids can get a great introduction to good ozone and bad ozone at

[spaceplace.nasa.gov/en/kids/tes/gases](http://spaceplace.nasa.gov/en/kids/tes/gases)

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

Townsend Visitor Center  
Star Party Report  
by Lee Erickson

On May 10, we had four astronomers turn out and about as many guests stop in at the Visitor Center who stayed and looked and enjoyed the moon and Saturn with its moons.

Due to the appearance of threatening weather in the morning, I did not run the SMAS Star Party sign out to Townsend as I was worried it might blow down or blow away. It finally got out with me as I brought the sign and my ETX in the late afternoon. I was not able to get anyone on the phone at the visitors center Saturday to remind them to tell, if possible, the visitors about the star party. Sigh....

Prior to the Star Party, Tim Hunt, Kenny Pridgen and John Mannone and I met and ate at Timbers restaurant. I can say from direct gastronomical experience the French Onion soup is wonderful.

We setup in the back (south) parking lot of the Visitor Center and then realized we could not be seen and moved to the front (north) parking lot. This was a good idea as we soon encountered some visitors who I doubt would have found us if we were in the back lot.

We saw the moon well before dark and then it clouded over just as visitors arrived. Luckily they stayed a while and it cleared, and they were hooked. I got good questions about how to measure the size of features on the moon and I described some methods. I entirely forgot about using shadows to measure the height of features as I was focused on explaining the diameter of the moon and its distance. John Mannone added the explanation about shadows.

Tim Hunt was making photos of both the moon and Saturn to the delight of the visitors ( and me too).

There are unfortunately two dusk-to-dawn street lights, one each illuminating the front and back parking lots. So although Tim and Kenny tried to find M51 they were not able to. The lights on the Visitor Center itself are also a problem. The view to the south would be quite nice if it were not for the very local light pollution.

At about 10 PM (as Clear Sky Clock predicted) it clouded over and we packed up the equipment.

## Weather iffy, May 3 Unicoi Crest slipped to May 4



Stalwarts Dennis Hutcheson, Bob Arr and Michael McCulloch, showing a lot more clothes than sense, challenged the early UC season. Note Michael's new 100mm Oberwerk binos (they worked great!)



All photos by Lee Erickson



A little hard to see in the photo, but Lee managed to capture The Teapot and Scorpius as they streaked across the sky.

In case you wondered, Yes, we did see Omega Centauri.

# June 2008

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3 New Moon	4	5	6  UTK	7 SMAS Star Party LR #1  TAO
8	9	10	11	12	13	14
15	16	17	18	19	20  Summer Begins  UTK	21 SMAS Annual Picnic at TAO 5 pm
22	23	24	25	26	27	28
29  <b>SCRAPS depends Upon its friends</b>	30  <b>Help! Help!</b>				UTK—roof of Neilson Physics Building on The Hill at UT 1st & 3rd Fridays TAO —Tamke-Allan Observatory Public Stargaze Watts Bar Lake, Roane County 1st & 3rd Saturdays	