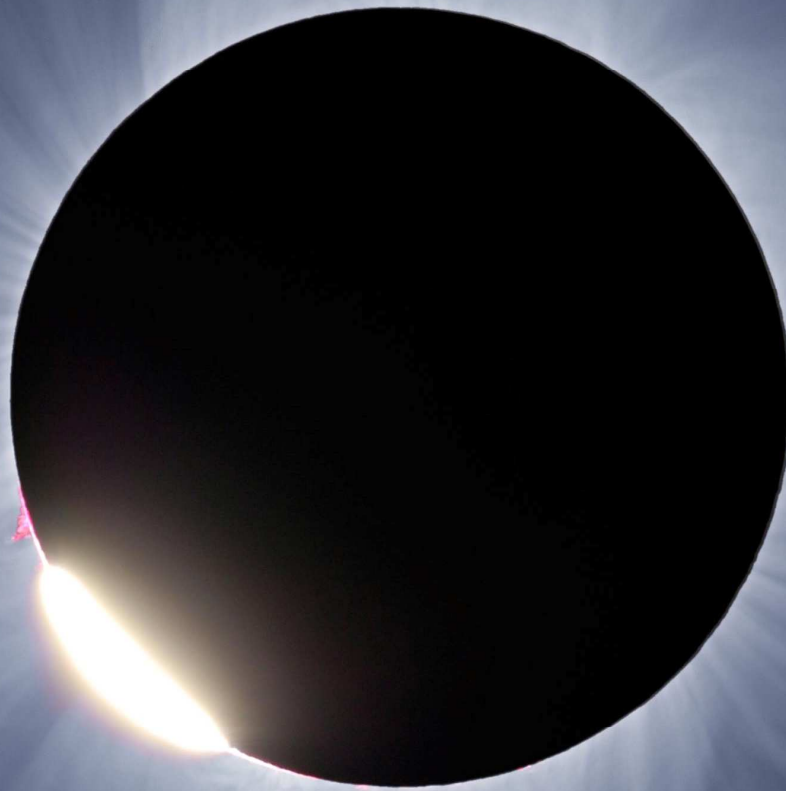


# **Solar Eclipse Conference**

## **SEC2007**



**Griffith Observatory**  
**Los Angeles, USA**  
**2007 August 24 - 26**

2006 Eclipse from Libya, ©2006 by Fred Espenak, [www.MrEclipse.com](http://www.MrEclipse.com)

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# PROGRAM

## Friday 24 August 2007

16h00	Pick up @ Hilton Glendale – Group I	To Mt Wilson
17h00	Guide Tour & possible Solar observation @ Mt Wilson Observatory	@ Mt Wilson
18h30	Reception commences @ Mt Wilson Observatory	@ Mt Wilson
18h00	Pick up @ Hilton Glendale – Group II	To Mt Wilson
19h30	Join reception Group I @ Mt Wilson Observatory	@ Mt Wilson
20h30	"A Century of Solar Observing at Mount Wilson Observatory" "Astronomers Without Borders"	Mike Simmons
21h15	"Adventure eclipse – When the shadow of the moon determines where one has to go"	Gernot Meiser & Pascale Demi
22h00	Leave Mt Wilson Observatory – Group I + II	To Hilton Glendale
23h00	Arrival Hilton Glendale	@ Hilton Glendale

## Saturday 25 August 2007

07h30	Pick up @ Hilton Glendale	To Griffith Observatory
08h30	Arrival and Registration @ Griffith Observatory	@ Griffith Observatory
09h15	Opening SEC2007	Patrick Poitevin
09h30	The Quest for the Perfect Pearls"	Daniel Fischer
10h00	"A 20-Year Barrage of Transits: 1999-2019"	John Westfall
10h30	Break	
11h00	"Solar Eclipse in the Space: A dream that might come true"	Hamid D. Khodashenas
11h30	"New image processing techniques in eclipse photography"	Hanna Druckmuller
12h00	"Eclipsing the Observatory"	Ed C. Krupp
12h30	Lunch	
13h30	"The intersection point and immediate area of the figure-8 loops for such solar eclipses"	Ray Brooks
14h00	"Eclipses as Inspiration: Using the eclipse experience to inspire an interest in astronomy"	David Levy
14h45	"Enigmatic 2006 corona"	Voyto Rusin
15h15	"Modelling and predicting the solar corona"	Zoran Mikic

15h45	Break	
16h15	"Five Millennium Canon of Solar Eclipses: -1999 to +3000"	Fred Espenak
17h00	"Solar radius variations determined from observations near the edges of central eclipse paths"	David Dunham
17h30	"Sailing to Tahiti on board the Goodwill: The American-French Eclipse Expedition of 1965"	William Livingston
18h00	End of Day I SEC2007	Patrick Poitevin
18h30	Pick up @ Griffith Observatory	To Hilton Glendale
19h30	Arrival @ Hilton Glendale	@ Hilton Glendale
20h30	SEC2007 Dinner @ Glendale Hilton	@ Hilton Glendale

### **Sunday 26 August 2007**

07h30	Pick up @ Hilton Glendale	To Griffith Observatory
08h30	Arrival @ Griffith Observatory	@ Griffith Observatory
08h50	Opening Day II SEC2007	Patrick Poitevin
09h00	"In the Shadow of the Moon: The Lick Observatory Eclipse Expeditions"	Tony Misch
09h45	"Dynamic of polar streamers during 2006 eclipse" "Dynamic of coronal structures from numerical processed total solar eclipse pictures"	Marcel Belik
10h15	"Weather and Where: Eclipse Weather for 2008, 2009, and 2010"	Jay Anderson
10h45	Break	
11h00	"Eclipse eye safety update"	Ralph Chou
11h30	"The 2005 and 2006 total and annular eclipses and the 2006 transit of Mercury"	Jay Pasachoff
12h00	"Solar Eclipse Mapping & Predictions - On and Off the Web"	Xavier Jubier
12h30	Lunch	
13h30	"EurAstro and the pro-am collaboration at eclipses"	Jean Luc Dighaye
13h45	"The search for Vulcanoid Asteroids"	Landon Curt Noll
14h00	"Three Decades of Chasing the Shadow - A Personal	Joel Harris

	Perspective"	
14h45	"Progress on high resolution imaging and spectroscopy during the last total eclipses"	Serge Koutchmy
15h15	"Solar eclipse pictures and the solar wind"	Richard Woo
15h45	Break	
16h05	"The best observation site for the 2009 total solar eclipse in Eastern China"	Lin Lan
16h15	"Choosing and Viewing: A Thinking Observer's Guide to Eclipse Site Selection and Observations"	Steve Edberg
17h00	"Up, up, and away - Chasing the Umbra into the Stratosphere (and Beyond)"	Glenn Schneider
17h30	"Why Copernicus was an Eclipse Chaser"	Dava Sobel
18h00	End of SEC2007	Joanne Poitevin
18h30	Pick up @ Griffith Observatory	To Hilton Glendale
19h30	Arrival @ Hilton Glendale	@ Hilton Glendale

## ABSTRACTS & BIOGRAPHIES

### Daniel Fischer (Germany)

"The Quest for the Perfect Pearls"



In the last few years the author has developed a special interest in the fleeting optical phenomena seen at the 2nd and 3rd contacts of total and especially annular eclipses: the chromospheric arc and embedded Baily's Beads of photospheric light. These phenomena are not only of substantial scientific importance as tools for measuring the solar radius (see David Dunham's paper) but also pose an exciting astrophotographical challenge, given the high dynamic range of the features involved.

When located on the central line of a typical eclipse, total or annular, the chromosphere and beads are visible only for a few seconds, but this can be stretched to a minute and more by moving close to the edge of the zones of totality or annularity. For total eclipses this leads to a substantial loss of 'umbral time', a sacrifice few are willing to

make. But with annular eclipses going to the edge has only advantages: the best place seems to be a kilometer or so inside the zone.

In this paper results from the 1999, 2005 and 2006 annular and 2005 hybrid eclipses are shown that demonstrate the different outcomes when geometrical constraints and varying photographic techniques come together. It *is* possible to capture an arc of chromosphere with many Baily's Beads sitting on it: the German expression "Perlschnurphänomen" (string of pearls phenomenon) finally captured on film. Going for the chromosphere and beads at annular eclipses is much more challenging than at total eclipses and involves somewhat risky techniques, such as aiming telescopes and cameras into the Sun without any filtering. Follow my example at your own risk ...

Daniel Fischer, 42, from Königswinter, Germany, is a science writer (mainly for German astronomy Journals and electronic newsletters) who by chance has developed key interests in all kinds of astronomy beginning with "co" in English: cosmology, comets – and the corona. After 13 total and 8 annular eclipses, his interests are gradually shifting towards unusual viewing geometries and rare optical phenomena, esp. at low elevation; the 2006 annular eclipse in French Guyana was just perfect in this regard.

## **Dava Sobel (USA)**

"Why Copernicus was an Eclipse Chaser"



"As the year belongs to the Sun," Copernicus wrote in Book IV of *De Revolutionibus*, "so the month belongs to the moon." Although Copernicus couldn't travel to see the Sun and Moon meet in totality, he witnessed several partial solar eclipses, as well as lunar eclipses, and used his observations of them to bolster his heliocentric theory."

Dava Sobel, a former *New York Times* science reporter, is the author of *Longitude* (Walker 1995 and 2005, Penguin 1996), *Galileo's Daughter* (Walker 1999, Penguin 2000) and *The Planets* (Viking, 2005). In her thirty years as a science journalist she has written for many magazines, including *Audubon*, *Discover*, *Life* and *The New Yorker*, served as a contributing editor to *Harvard Magazine* and *Omni*, and co-authored five books, including *Is Anyone Out There?* with astronomer Frank Drake.

Ms. Sobel received the 2001 Individual Public Service Award from the National Science Board "for fostering awareness of science and technology among broad segments of the general public." Also in 2001, the Boston Museum of Science gave her its prestigious Bradford Washburn Award for her "outstanding contribution toward public understanding of science, appreciation of its fascination, and the vital role it plays in all our lives." In October 2004, in London, Ms. Sobel received the Harrison Medal from the Worshipful Company of Clockmakers, in recognition of her contribution to increasing awareness of the science of horology by the general public, through her writing and lecturing.

From January through March 2006, Ms. Sobel served as the Robert Vare Nonfiction Writer in Residence at the University of Chicago, where she taught a seminar in science writing while pursuing research on her new project—a stage play about sixteenth-century astronomer Nicolaus Copernicus.

*Longitude* went through twenty-nine hardcover printings before being re-issued in October 2005 in a special tenth-anniversary edition with a foreword by astronaut Neil Armstrong. Soon after its original publication in 1995, the book was translated into two dozen foreign languages and became a national and international bestseller, much to Ms. Sobel's surprise. It won several literary prizes, including the Harold D. Vursell Memorial Award from the American Academy of Arts and Letters and "Book of the Year" in England. Together with William J. H. Andrewes, who introduced her to the subject of longitude, Ms. Sobel co-authored *The Illustrated Longitude* (Walker 1998 and 2003).

She based her book *Galileo's Daughter* on 124 surviving letters to Galileo from his eldest child. Ms. Sobel translated the letters from the original Italian and used them to elucidate Galileo's life work. *Galileo's Daughter* won the 1999 *Los Angeles Times* Book Prize for science and technology, a 2000 Christopher Award, and was a finalist for the 2000 Pulitzer Prize in biography. The paperback edition enjoyed five consecutive weeks as the #1 *New York Times* nonfiction bestseller. A sequel, *Letters to Father*, containing the full text of Galileo's daughter's correspondence in both English and Italian, was published by Walker in 2001. An English-only edition, a Penguin "Classic," followed in 2003.

The PBS science program "NOVA" produced a television documentary called "Lost At Sea — The Search for Longitude," which was based on Ms. Sobel's book. Granada Films of England created a dramatic version of the story, "Longitude," starring Jeremy Irons and Michael Gambon, which aired on A&E as a four-hour made-for-TV movie. A two-hour "NOVA" documentary based on *Galileo's Daughter*, called "Galileo's Battle for the Heavens," first aired on public television in October 2002, and won an Emmy in the category of historical programming. A "NOVA" adaptation of *The Planets* is currently being planned.

Lecture engagements have taken Ms. Sobel to speak at The Smithsonian Institution, The Explorers' Club, NASA's Goddard Space Flight Center, The Folger Shakespeare Library, The New York Public Library, The Hayden Planetarium, and The Royal Geographical Society (London). She has been a frequent guest on National Public Radio programs, including "All Things Considered," "Fresh Air," "The Connection" with Christopher Lydon, and "The Diane Rheem Show." Her television appearances include C-SPAN's "Booknotes" and "TODAY" on NBC.

A 1964 graduate of the Bronx High School of Science, Ms. Sobel attended Antioch College and the City College of New York before receiving her bachelor of arts degree from the State University of New York at Binghamton in 1969. She holds honorary doctor of letters degrees from the University of Bath, in England, and Middlebury College, Vermont, both awarded in 2002.

A play based on *Galileo's Daughter*, written by Timberlake Wertenbaker and directed by Sir Peter Hall, premiered in Bath, England, in July 2004. In October 2005, a play by Arnold Wesker, based on *Longitude*, directed by Fiona Laird, enjoyed a successful limited engagement at the Greenwich Theatre near London. Ms. Sobel is the editor of the collection *Best American Science Writing 2004*, published by Ecco Press.

From [http://davasobel.com/about\\_bio.php](http://davasobel.com/about_bio.php)

### **David Dunham (USA)**

"Solar radius variations determined from observations near the edges of central eclipse paths"



For over 30 years, members of the International Occultation Timing Association have been observing solar eclipses from locations usually 1 to 3 kilometres inside the edges of total and annular solar eclipse paths. At these locations, due to the circular geometry, one still sees a total or annular eclipse from 1/4th to 1/3rd the central line duration, but sees all of the dynamic edge phenomena, including shadow bands, chromosphere visibility, and Baily's beads, prolonged by a factor of 10 or more over what is seen near the central line. We have analyzed these timings made at several eclipses to try to measure small variations in the radius of the Sun. The results quickly ruled out significant secular changes of the solar radius.



During some of the more recent eclipses, two or more video observations were made near each limit, allowing comparisons. The differences were found to be larger than the formal errors of the individual observations and nearly as large as the small variations that we had found previously. This apparently is due to the difficulty of defining the edge of the Sun precisely. The latest results, including best estimates of the true errors, will be presented, including some new results of photographic and visual observations of early 20th century and possibly 19th century eclipses.

Dr. Dunham obtained his BA degree at the University of California, Berkeley in 1964 and a PhD at Yale University, Astronomy Department in 1971. He has been a Senior Staff Member at the Johns Hopkins University Applied Physics Laboratory in Maryland since September 1992. His research has included the fields of Celestial Mechanics, Astronautics, Solar Eclipse Prediction, Observation and Analysis, Lunar and Asteroidal Occultations and Star Catalogs. After writing the first computer programs for lunar grazing occultations, David established the worldwide network of observers for grazes starting in 1962. This was formalized in 1975 with the founding of the International Occultation Timing Association (IOTA), of which he has been president since it was established. In 1986, the asteroid 3123 Dunham was named in his honor for his work with IOTA. In recent years, David has devoted more effort to predicting, observing, and analyzing asteroidal occultations, having timed over 65 of these events including several from 2 or more widely separated stations. David coordinated and video recorded the first confirmed lunar meteor impacts during the Leonid storm that hit the Moon on November 18, 1999. In his job of spacecraft trajectory design, David led the effort to calculate the recovery path for the Near Earth Asteroid Rendezvous (NEAR) spacecraft after its aborted attempt to orbit 433 Eros in 1998, resulting in the first successful insertion into orbit about any small solar system body on February 14, 2000. In 1982, he led the effort to calculate the extended mission double lunar swingby trajectory for the ISEE-3 spacecraft, resulting in the first encounter with a comet (Giacobini-Zinner) on September 11, 1985. David was born at Pasadena, California in 1942. He is married to Dr. Joan Bixby Dunham and has a son William Dunham.

### **David H. Levy (USA)**

“Eclipses as Inspiration: Using the eclipse experience to inspire an interest in astronomy”

By themselves, eclipses are natural tools to inspire a lifelong interest in the sky. This personal and illustrated talk will review the excitement of my eclipse-watching career over half a century, which has spanned more than 70 eclipses, from total solar to penumbral lunar.

Perhaps the most important was the partial eclipse of the sun in June 2002, which inspired me to go back to when that event took place in 1605 and helped inspire King Lear, Shakespeare's greatest play.

David H. Levy is tied for fourth place as one of the most successful comet discoverers in history. He has discovered 22 comets, eight of them using his own backyard telescopes, the most recent in October 2006. With Eugene and Carolyn Shoemaker at the Palomar Observatory in California he discovered Shoemaker-Levy 9, the comet that collided with Jupiter in 1994. That episode produced the most spectacular explosions ever witnessed in the solar system.



Levy is president of the National Sharing the Sky Foundation, dedicated to inspiring young people to be inspired by the night sky, and he is currently involved with the Jarnac Comet Survey, which is based at the Jarnac Observatory in Vail, Arizona but which has telescopes planned for locations around the world.

Levy is the author or editor of 35 books and other products. He won an Emmy in 1998 as part of the writing team for the Discovery Channel documentary, "Three Minutes to Impact." As the Science Editor for *Parade* Magazine, he is able to reach more than 78 million readers, almost a quarter of the population of the United States. A contributing editor for *Sky and Telescope* Magazine, he writes its monthly "Star Trails" column, and his "Nightfall" feature appears in each issue of the Canadian Magazine *Skynews*.

David Levy has given more than 1000 lectures and major interviews, and has appeared on many television programs, such as the Today show (4 times), Good Morning America (twice), the National Geographic special "Asteroids: Deadly Impact", and ABC's World News Tonight, where he and the Shoemakers were named Persons of the Week for July 22, 1994. Also, Levy has done nationally broadcast testimonials for PBS (1995-present), and for the Muscular Dystrophy Association Telethon (1998-1999). He and his wife Wendee host a weekly radio show available worldwide at [www.letstalkstars.com](http://www.letstalkstars.com). In 2004 he was the Senator John Rhodes Chair in Public Policy and American Institutions at Arizona State University. He has been awarded four honorary doctorates, and asteroid 3673 (Levy) was named in his honor. Levy resides in Vail, Arizona, with his wife, Wendee. After teaching Physical Education in the Las Cruces school district for

26 years, in 1996 Wendee became the manager of Jarnac Observatory, and was promoted to Director in 2004. Wendee is an integral part of our Jarnac Comet Survey, helping to organize the program and scan the images.

## **Ed C. Krupp (USA)**

“Eclipsing the Observatory”



Griffith Observatory’s recent \$93-million renovation and expansion included the development, design, fabrication, and installation of the first comprehensive, integrated, and cohesive exhibit program since the Observatory first opened in 1935. In fact, more than 65 new and precedent-shattering exhibits have been introduced into the historic building and into the new underground expansion. The exhibit program, like all Griffith Observatory programming, is rooted in the mission of transforming visitors into observers of nature and the sky, and it relies on the physical impact of instruments, models, mechanisms, and monumental displays. They create one-of-a-kind concrete experiences. They inform through demonstration and revelation. They offer vivid reference points for better understanding of astronomical objects and processes. The ground level historic building approaches astronomy from the ground-based perspective that prevailed for most of astronomy’s history, while the Gunther Depths of Space underground expansion emphasizes the transformations of perspective that have occurred only recently, since our entry into space. The Hall of the Sky, like the rest of the original building, leverages the view from platform earth and dedicates its six historic exhibit alcoves to six fundamental phenomena we observe from the earth’s surface. Each of these—diurnal rotation, the daily paths of the sun and stars, seasons, phases of the moon, tides, and eclipses—involve the interaction of the sun, moon and earth. To demonstrate the effects of their interactions and how they occur, most of the alcoves combine the action of a dynamic three-dimensional model with a coordinated animation that shows what’s changing. Supplemental support information, in accessibly simple diagrams, illustrative photographs, and rigorously distilled text, is included on conventional waysides. In each case, information was prioritized to support a primary message. Although a variety of messages for an eclipse exhibit can be imagined, the Griffith Observatory exhibit team determined the essential distinction of eclipses for the average visitor should be their periodicity and infrequency. Geometry shows the configurations required for eclipses but does not demonstrate how constrained

eclipse geometry is. Showing how of the behavior of the sun, moon, and earth conspire to produce eclipses in a physical model imposed unusual challenges. Eclipses are notoriously infrequent and short, but when time, distance, and size must be scaled in a model that illustrates what the shadow must do in an eclipse, the elusive nature of eclipses becomes evident. At Griffith Observatory, the result is a simple and truly interactive exhibit that requires a visitor to observe and understand. It is not an exhibit promoted as "interactive" simply because it provides a menu on a computer screen.

E.C. Krupp, Ph.D, is an astronomer and the Director of Griffith Observatory in Los Angeles. Recognized as an expert on ancient, prehistoric, and traditional astronomy, he has visited nearly 1800 ancient and prehistoric sites throughout the world. Dr. Krupp is the author of *Skywatchers, Shamans & Kings: Astronomy and the Archaeology of Power*, *Beyond the Blue Horizon: Myths and Legends of the Sun, Moon, Stars, and Planets*, and *Echoes of the Ancient Skies*. He is also editor and co-author of *In Search of Ancient Astronomies* and *Archaeoastronomy and the Roots of Science*. His books for children include *The Comet and You*, *The Moon and You*, *The Big Dipper and You*, and *The Rainbow and You*. Since 1993, as Contributing Editor for *Sky and Telescope* magazine, he has written a monthly column on astronomy and culture. He attended the first International Solar Eclipse Conference in Belgium and has traveled to 11 total eclipses of the sun and to 3 annular solar eclipses. He has observed two transits of Mercury, one transit of Venus, one worthy Leonid storm, six world-class comets, and too many lunar eclipses to count.

### **Fred Espenak (USA)**

"Five Millennium Canon of Solar Eclipses: -1999 to +3000"



During the 5,000-year period from -1999 to +3000 (2000 BCE to 3000 CE), Earth will experience 11,898 eclipses of the Sun. The recently published NASA "Five Millennium Canon of Solar Eclipses" (2006 October) contains global maps for each eclipse over this time span. The maps illustrate the geographic regions of visibility for both the penumbral (partial) and umbral or antumbral (total, annular, or hybrid) phases of every eclipse. Modern political borders are plotted to assist in the determination of eclipse visibility. The uncertainty in Earth's rotational period expressed in the parameter Delta-T and its impact on the geographic visibility of eclipses in

the past and future is examined. Eclipse types and eclipse combinations is presented, along with a detailed analysis of the Saros cycle and other important eclipse periods.

Over the past 120 years, a number of solar eclipses canons have been published, each with increasing detail and accuracy. Espenak will discuss the history of the canons and the confluence of events that brought him together with the world renowned astronomical computations expert Jean Meeus to produce the new canon.

Fred Espenak is an astrophysicist at NASA's Goddard Space Flight Center in Greenbelt, Maryland where he has conducted research in planetary atmospheres using infrared spectroscopy. However, he is best known for his eclipse predictions and publications. The "Fifty Year Canon of Solar Eclipses: 1986 - 2035" and "Fifty Year Canon of Lunar Eclipses: 1986 - 2035" have become standard references on the subject. Espenak (and Jay Anderson) also publishes the NASA bulletins for each major solar eclipse that provide detailed predictions and maps. Along with Mark Littmann and Ken Willcox, he co-authored the popular-level book "Totality: Eclipses of the Sun." Espenak has participated in over twenty eclipse expeditions around the world. He is the web master of NASA's official eclipse web site ( <http://sunearth.gsfc.nasa.gov/eclipse/> ) as well a personal web site on eclipse photography ( [www.MrEclipse.com](http://www.MrEclipse.com) ). In 2003, the International Astronomical Union honored Espenak by naming asteroid 14120 after him.

### **Gernot Meiser & Pascale Demy (Germany)**

"Adventure eclipse – When the shadow of the moon determines where one has to go"



G. Meiser & P. Demy show in their audiovisual presentation photographs and impressions of their expeditions all over the world and tell about "Adventure eclipse", about meeting local people on the way and at the spot; They tell you about the reason why they have, without any possible resistance, to follow over and over again the shadow of the moon.

Illustrated by their long expedition straight through Africa, they want to show that travelling to eclipses is more than only collecting such events.

G. Meiser & P. Demy work together in their own company. They produce multimedia presentations, documentary films and reports.

G. Meiser observed 1972 for the first time a partial eclipse at home in Germany. He was just 12 years old and started after that to swept away by enthusiasm for Astronomy and particularly for solar eclipses. Since that time he became film & photo designer.

He passes on his fervour for Astronomy through lectures at colleges of further education, through conferences, workshops, exhibitions and special activities at observatories, schools and elsewhere. In his quality as President of the Astronomy Association Cassiopeia Saarlouis, he organizes public observing / sidewalk astronomy and coordinates festivities with foreign guests around astronomical themes and events in order to promote international cultural exchange.

P. Demy was born in France and lives since 16 years in Germany. She studied Foreign languages and journalism. She observed and documented her first solar eclipse 1994 in Bolivia. Bringing Astronomy to local people wherever solar eclipses are occurring in the world is a wonderful way for her to dip in foreign cultures and a very exciting stuff for reports.

### **Glenn Schneider (USA)**

"Up, up, and away - Chasing the Umbra into the Stratosphere (and Beyond)"



We have been graced by the fortuitous coincidence of having a naturally occurring near-spherical, opaque, Earth-orbital occulter (the Moon) with an angular diameter  $\sim 1/400$ th Sun's at an average geocentric distance of  $1/400$  solar diameters. Thus, at infrequent and fleeting moments the solar photosphere is obscured as seen by Earth-bound observers at the "right" place and time during a Total Solar Eclipse. Majestically, the solar chromosphere and corona are unveiled with the advent of a dark "sunless" daytime sky -- unless clouds get in the way of those circum-solar photons in their last 0.000007%

of their travels! To mitigate the risk of such an unwanted occurrence, eclipse observers have taken to the skies to locate themselves in the rarefied layers of the Earth's atmosphere above offending, optically thick, clouds. High-flying "umbraphiles" have done so not only obviate concerns of cloud cover, but to prolong the obtainable duration of totality (and in one extremely marginal case to create an otherwise elusive "totality") while exploiting the significantly darker than ground-level sky background thereby greatly enhancing coronal-to-sky contrast. Other factors beyond the near-guarantee of clear skies such as exceptional infra-red transparency, greatly reduced atmospheric turbidity, extremely low aerosol scattering from airborne particulates along the line-of sight to the Sun, and improved natural "seeing" have motivated airborne eclipse chasing. This talk highlights nearly a century of airborne eclipse chasing from the historical, scientific, and (more recent) personal perspective of the presenter. From bi-planes to Concordes, in pressure suits and with fine-dining in first class, chasing the lunar umbral shadow has taken new dimensions of challenges when perused into the stratosphere and beyond for science, for esthetic wonderment, and -- just for the fun of it.

Dr. Glenn Schneider is an Associate Astronomer at University of Arizona's Steward Observatory where, since 1994, he has served as the Project Instrument Scientist for the Hubble Space Telescope's Near Infra-red Camera and Multi-Object Spectrometer. His research and instrumental interests are primarily centered on the formation, evolution, and characterization of extrasolar planetary systems, and high contrast space-based (coronagraphic) imaging systems. His studies have focused on the direct detection of sub-stellar and planetary mass companions to young and near-by stars and the circumstellar environments from which such systems may arise and interact. In concert with his scientific investigations of circumstellar dust and debris disks and co-orbital bodies they may harbor, he has played a leading role in the development of very high contrast space-based coronagraphic and near-infrared imaging systems and techniques with HST, leading to spatially resolved scattered light images the birthplaces of planetary systems. Dr. Schneider is a member of the International Astronomical Union's Working Group on Solar Eclipses with expertise in the high-precision numerical calculation of eclipse circumstances and the application of those computations in planning and carrying out observations of total solar eclipses. For more than three decades, Dr. Schneider has lead expeditionary groups and conducted such observations on land, sea and air of twenty-six total solar eclipses occurring since 7 March 1970 from remote locations across the globe conducting direct, polarimetric, and spectrophotometric imaging programs. Additionally, he has executed three, and planned seven, high-altitude eclipse intercepts with jet aircraft and is now preparing for his next stratospheric eclipse flight, for TSE2008, at 82 degrees North latitude. Additional information on his background and research interests may be found at:  
<http://nicmosis.as.arizona.edu:8000/>

## Hamid Djodeiri Khodashenas (Iran)

"Solar Eclipse in the Space: A dream that might come true"



Humans, these intelligent creatures of the world with their dream-like imaginations and thoughts, have led to the emerging of science and technology during the time. Astronomy was not an exception in this process. From the ancient era, people have had different observations and perceptions from the sky and astronomical events. These perceptions have been getting more complete by the new innovations and theories. Also among the astronomical events, Solar Eclipse is one of the most impressive and challenging ones. This phenomenon attracts many enthusiast people around the world to its path. It is

being observed in different points of the earth time by time. The main purpose of this lecture is to evaluate the possibility of seeing it in the space. We are going to set up the primary calculation for the observation of the event in 2009. Our project includes: picturing, filming and data collecting during the event in the space. The main questions here are: How does the eclipse look like in the space? Does seeing it from the space give us any additional or even different information about that? For answering these questions we're going to call for contributions among the participants of the conference.

Hamid Djodeiri Khodashenas was born in 1963 in Tehran Iran. He is a Lawyer and has been an active eclipse chaser since 1999. His deep passion for observing eclipse of the sun let him to found the first Iranian eclipse chasing group called Sayeh. Sayeh (Shadow in Farsi), is set to be a place to promote interest in solar eclipse observation and other astronomical activities among Iranian amateur astronomers. His group aims to research solar eclipse effects on the earth and its creatures and also to establish professional observatory and laboratory for astronomical research in Iran.

He observed the 1999 totality from remote Lake of Gahar in Iran, the 2001 totality from Zimbabwe, the 2003 totality from Antarctica, the 2005 totality from the Pacific Ocean and the 2006 totality from Niger, Sahara.

Going on these trips and experiencing nature in different parts of the world has made him an avid nature photographer. His photos have been shown in several exhibitions in Iran. He has taken over 10000 solar eclipse and nature photos in



his expeditions to Antarctica, Pacific Ocean and Sahara. With these activities he has tried to bring science and art together.

### **Hana Druckmüllerová (Czech Republic)**

“New image processing techniques in eclipse photography”

Total eclipse photography is one of the most difficult tasks of astrophotography. The main reason is the extreme contrast which is over the ability of both classical and digital photography. Composing techniques developed in last decades made significant progress in last several years because new fast computers enabled to use mathematical tools which were impossible to implement several years ago. New methods of eclipse images registration, composing and visualization will be presented - especially new a method of faint coronal structures visualization based on nonlinear adaptive filters. All image processing techniques will be applied on data obtained on March 2006 eclipse. First results of the Shadow-tracking Expedition project will be presented too, including an animation showing significant changes in solar corona in 25 minute interval.

Hana Druckmüllerová, born 3rd September 1985 in Brno, Czech Republic



Hana Druckmüllerová is a student of Mathematical Engineering at Brno University of Technology, Faculty of Mechanical Engineering. She observed her first total solar eclipse in 1999 in Hungary. Since 2002, she cooperates with her father, Miloslav Druckmüller, to develop methods and software for solar corona image processing and to process sets of images from eclipses. She created the first version of the Corona software for coronal structures visualization. With her work on that program, she reached 3rd place in the national round of Students' Professional Activities in 2003 and 4th place in the national round of Expo-science AMAVET in 2004 (both Czech high-school students' scientific contests). She was also sent to represent the Czech Republic at Intel Science and Engineering Fair (ISEF) in Portland, OR, USA in 2004. In 2005, she travelled to Panama to observe the annular solar eclipse. In 2006, she was the organizer of the Shadow-tracking Expedition project prepared at Brno University of Technology by Miloslav Druckmüller. The project was successful and data covering one hour of coronal structure development were obtained. She also participated on the project as an observer in Cappadocia, Turkey having recorded a valuable set of high-resolution images.

Apart from image processing, Hana's interests are programming, botany and trekking and cycling.

### **Jay Anderson (Canada)**

“Weather and Where: Eclipse Weather for 2008, 2009, and 2010”



Three exciting eclipses are on the way, one of which presents an opportunity for the longest duration of totality in our lifetime. The big question: where do we have the best chances of success?

This presentation will examine the weather prospects for the 2008, 2009, and 2010 eclipses — both total and annular — and make recommendations for travel and site selection. The presentation will include images taken during site inspections of potential eclipse sites for 2008 and

2009 in northern Canada, Russia, and China, and an assessment of local influences that may affect the choice of a site.

Jay Anderson has been looking at eclipses and eclipse climatology for nearly 30 years, helping to make the shadow experience more rewarding (and more certain) for those inclined to stand within the umbra. He is co-author of the NASA eclipse circulars with Fred Espenak, a meteorologist, an astrophotographer, a tornado-chaser, and a research associate in an Arctic climate change program. Jay's weather studies help expeditions find the area with the best weather prospects, though it has caused his hair to turn prematurely grey and fall out.

### **Jay M. Pasachoff (USA)**

“The 2005 and 2006 total and annular eclipses and the 2006 transit of Mercury”

I will describe observations of the 2005 totality from mid-Pacific; the 2006 totality from our site at Kastellorizo, Greece, with coordinated space observations; and the 2006 transit of Mercury from Haleakala (Hawaii), Sacramento Peak (New Mexico), and space satellites.

Jay M. Pasachoff is Field Memorial Professor of Astronomy at Williams College, where he teaches the astronomy survey courses as well as advanced seminars



and works with undergraduate students on a variety of astronomical research projects, including one studying the atmosphere of Pluto. He is also Director of the Hopkins Observatory and Chair of the Astronomy Department there. Pasachoff received the 2003 Education Prize of the American Astronomical Society.

Pasachoff has observed 43 solar eclipses. He is Chair of the Working Group on Eclipses of the International Astronomical Union. His research is currently sponsored by the National Science Foundation, NASA, and the National Geographic Society. His studies of the sun also include ground-based and space-based observations of the solar chromosphere. In addition, he is collaborating with colleagues to observe occultations of stars by Pluto, Charon, and other objects in the outer parts of the solar system. With Glenn Schneider, he is studying transits of Venus and Mercury. Further, he works in radio astronomy of the interstellar medium, concentrating on deuterium and its cosmological consequences.

At the time of the fateful General Assembly of the International Astronomical Union at which Pluto was placed in a new category called dwarf planet, he was president of its Commission on Education and Development. He is co-editor of *Teaching and Learning Astronomy: Effective Strategies for Educators Worldwide* (2005).

Pasachoff is co-author of *The Cosmos: Astronomy in the New Millennium*, 3rd Edition (2007), and author of the *Peterson Field Guide to the Stars and Planets*, 4th edition (updated 2006), as well as author of *Astronomy: From the Earth to the Universe*, 6th edition (2002). His books about the sun include *Nearest Star: The Exciting Science of Our Sun* and *The Solar Corona*, both with Leon Golub as co-author; and *The Complete Idiot's Guide to the Sun*. See [HYPERLINK http://www.solarcorona.com](http://www.solarcorona.com)

### **Jean-Luc Dighaye (Germany)**

“EurAstro and the pro-am collaboration at eclipses”

In 1991, a group of former astronomers and aerospace engineers founded a small astronomy club at the European Patent Office in Munich, Germany. During early eclipse and planetary transit trips, interest arose for a collaboration using the synergy resulting from the complementary strength of the professionals (knowledge, elaborate fixed equipment) and of the amateurs (mobile equipment,



flexible budget). When this astronomy club turned into the EurAstro Association – now with about 400 subscribers – in 1998, this collaboration was expanded, for instance with the University of Lusaka in 2001, the Williams College in 2003 and the European Southern Observatory in 2004. Our scouting trip to Libya around ASE'05 and our participation to the SPSE symposium at the same place in Libya, coinciding with TSE'06, allowed us to take images capable of showing the light bending effect first measured with the Eddington experiment in 1919. The data reduction, however, is tedious and beyond the scope of EurAstro, hence we are seeking academic partners. Further educational and scientific projects are developed,

this year in Mali, and at TSE'08 which we intend to observe from China.

Central Chairman, EurAstro Association, Germany

1960 Born in Liege, Belgium

1967 First telescope

1972 First camera

1975 First lecture on astrophotography

1978 National First Prize: astrophotography presentation

1983 University degree (Liege): Ingénieur Civil Physicien – Plus grande distinction

1984 University degree (Paris): DEA d'Optique – Mention très bien

1984 Military service: infrared & night vision devices

1985-88 Assistant, University of Liege

1986 Presents Halley Comet's picture to King Baudouin of Belgium

1988-91 Secretary general, PromOptica c/o Ministry of New Technologies

1988-90 Principal Engineer, Spacebel Instrumentation, Liege

1990-2006 Examiner, European Patent Office, Munich

1991-? Founding Chairman, Astro Club EPO Munich

1993-97 Astro Club missions: Australia, Arizona, Rajasthan, Canary Islands

1998-2004 Founding Chairman, EurAstro Association

1998-2004 EurAstro missions: Latin America, Southern Africa, Australia, Antarctica

2003 Private observatory 'POR' opens in Munich

2004-? Central Chairman, EurAstro Association

2004 Observatory 'LAC' opens near Spa, Belgium

2004-2006 EurAstro missions: Crete, South Pacific, Libya

2006-? Chief Examiner, European Patent Office

2007? Lectures on eclipses/astrophotography, mission to Mali?

## **Joel K. Harris (USA)**

“Three Decades of Chasing the Shadow - A Personal Perspective”

The phenomena of total solar eclipses have been known to man since the beginnings of recorded history. Indeed, the Bible itself contains passages that invoke eclipses, and the [theological] meaning of them. Since the late 19th century, with a fuller comprehension of solar eclipses, the relevant celestial mechanics surrounding them and even the prediction of such events, people have sought out --- rather than assiduously avoided --- total solar eclipses. Given the advent of modern optical methods that effectively recreate total eclipses, and the robust body of scientific knowledge regarding the astrophysical mechanisms driving the phenomena seen during totality, why do humans still voluntarily expend considerable time and resources to personally observe eclipses? This presentation will address that question, from the purview of one observer who has spent the past 34 years “Chasing the Shadow” of our Moon.



Joel K. Harris earned his Bachelor of Science degree in Electrical Engineering Technology at DeVry University in Long Beach, California in October 1997, graduating with Magna Cum Laude honors. Prior to becoming an engineer, Joel received both his Bachelors of Science and MBA degrees in Finance and Entrepreneurship respectively, from the University of Southern California (USC). Now a fourth year graduate

student at Loyola Marymount University in Westminster, California, Joel is pursuing a Master of Science degree in Systems Engineering, with an expected graduation date in the Summer of 2008.

Joel is currently a Senior Systems Engineer at Raytheon Space and Airborne Systems in El Segundo, California. He serves the DoD Space Department as risk manager, systems engineer, and provides support for proposal responses to customer RFPs.

Joel has pursued total solar eclipses as his primary avocation for over 30 years, since his first eclipse experience in June 1973 in the Sahara Desert, as part of a team of science investigators from Harvard Observatory situated in the nation of Mauritania in Western Africa. Since then, Joel has seen 12 other total eclipses in

venues including the Turkish Mediterranean Coast (2006), the Australian Outback (2002), Kenya's Tsavo East National Park (1980), Chisamba, Zambia (2001), Bangka Island Indonesia (1988), the Bolivian Altiplano (1994), Turkey (1999), Baja Mexico (1991), Canada (1979), the Coral Sea (1984), airborne at 41,000 feet West of Kauai, Hawaii (1981), and Uruguay (1992). Joel has also observed two annular eclipses in 1984 and 1994, and a Transit of Venus in Chisamba, Zambia in June, 2004

Joel is a past Trustee, Vice President, and Secretary of the Orange County Astronomers, and has been a member of the club since 1989. Joel has written approximately 20 feature articles on eclipse observation, international observatory facilities, and eclipse travel logistics for both *Astronomy* and *Sky and Telescope* magazines. His first book, *Chasing the Shadow* written with co-author Richard Talcott, appeared in 1994, from Kalmbach Publishers in Waukesha, WI.

Joel lives in Westlake Village, CA with his wife Patti, their step daughter Kelly, and their menagerie of pets --- Joel's two feline "children" Cassiopeia and Tabitha, and Patti's Jack Russell Terrorist, "BJ".

### **John E. Westfall (USA)**

"A 20-Year Barrage of Transits: 1999-2019"



The period 1999-2019 sees five transits of Mercury and two transits of Venus; a total rate over twice the long-term average. The talk explains the circumstances and terrestrial areas of visibility of the Mercury transits of 1999, 2003, 2006, 2016 and 2019, and of the Venus transits of 2004 and 2012. Types of observation are described along with the instrumentation and supporting information needed for them.

Dr. Westfall is the coordinator of the Association of Lunar and Planetary Observers Mercury/Venus Transit Section. A Professor Emeritus of Geography at San Francisco State University, he is the author of the *Atlas of the Lunar Terminator* and co-author, with William Sheehan, of *Transits of Venus*.

## Landon Curt Noll (USA)

“The search for Vulcanoid Asteroids”

The innermost region of our solar system is known as the Vulcanoid zone, and it has remained largely unexplored. Discovering Vulcanoid asteroids with a mean distance to the Sun less than that of Mercury would greatly add to our understanding of the birth and evolution of our solar system — not to mention those of other Sun-like stars in the Milky Way. We present methods and results of the most recent Vulcanoid search during the March 2006 eclipse and plans for the next search August 2008 eclipse search. Ideas for more advanced Vulcanoid searches will be given.

Landon Curt Noll ( [www.isthe.com/chongo/bio.html](http://www.isthe.com/chongo/bio.html) ) is a Cryptographer for NeoScale by day and an Astronomer by night. He enjoys giving talks at Fremont Peak Observatory ([www.fpoa.net](http://www.fpoa.net)) and adding new observations to his astronomy page ( [www.isthe.com/astro.html](http://www.isthe.com/astro.html) ).



Landon Curt Noll is the co-author of the SMail mail transport system and is the 'N' in the widely used FNV hash. He is also the founder and judge of the International Obfuscated C Code Contest. He was an active member of working group that developed the initial drafts of the IEEE POSIX P1003.1 and P1003.2 standards. He serves as a Co-operative Computing Award advisor to the Electronic

Frontier Foundation and has been a key contributor to Usenet.

Landon has significant experience in Number Theory, Cryptography, and Cryptology including PKI design, secure protocol development, and key management. He is also co-inventor of lavarand: a method of cryptographically strong seeding pseudo-random number generators using chaotic systems. Landon has developed or co-developed several high speed computational methods. In addition to his publications, Landon has held or co-held 8 world records related to the discovery of large prime numbers.

His current area of astronomical research focuses on the Vulcanoid zone deep inside our solar system. Landon uses the time during total solar eclipses to search of Vulcanoid asteroids. In between eclipses he is designing, testing and calibrating equipment for use during the next eclipse.

Landon graduated from Linfield College with a BA in Math/Physics. He is a member of the American Mathematical Society. He is a Certified Information Security Manager (CISM) and is a certified Linux Engineer (RedHat Certified Engineer - RHCE). Landon is an associate member of the American Astronomical Society.

### **Lan Lin (China)**

“In The best observation site for the 2009 total solar eclipse in Eastern China”



The total solar Eclipse of 2009 July 22 will be observed in a large region of China. The circumstance conditions are very complex. I will give some information from my investigating and experience. It includes the local weather data, traffic conditions, the views, population and hotel conditions. I will analyze variational weather and various landform. It is difficult to say which site is best. But I will provide some idea to choose an excellent observation site for the 2009 total solar eclipse in Eastern China.

Lan Lin is an advanced teacher working in Hangzhou High School, China. As an Astronomy and Geography teacher, Lan Lin also directs an Astronomical Team which is outstanding and famous in China. Meanwhile, Lan Lin is a deputy

general-secretary of Zhejiang Astronomy Amateur Association and Hangzhou Geography Association.

Lan Lin gained the 2004 Science Prize by Hangzhou government and the 2005 Education Prize of the Zhejian Science Association. She was on expedition with her students to the 2004 Venus transit and to the March 29, 2006 total solar eclipse. She observes sun spots, meteor showers, planets, comets, and asteroids with her students.

### **Marcel Belik (Czech Republic)**

“Dynamic of polar streamers during 2006 eclipse” by Markova, E., Belik, M., Druckmuller, M.





Very faint details of coronal structures on the pictures obtained during 2006 total solar eclipse allow us to study the fast dynamic of polar coronal streamers. These formations are studied on the pictures obtained on one observation place as well as from the pictures obtained on long observational base. Some results are presented.

“Dynamic of coronal structures from numerical processed total solar eclipse pictures” by Belik, M., Markova, E., Druckmuller, M.

Total solar eclipses observed on the long baseline allow us to obtain the pictures of white-light solar corona with the long temporal distance. New mathematical methods of coronal picture processing allow visualization of very faint coronal structures and enable to compare their position in corona with very high accuracy. We can detect the moving of these faint structures by comparing of pictures obtained on the different places during the same total solar eclipse. Some techniques and results are described in this paper.

Born: 1966 in Jaromer, Czech Republic

Study: - The Institute of Chemical Technology, Department of Computing and Control Engineering, Prague (1984-1989)

- PhD student on Faculty of Mechanical Engineering of the Brno University of Technology, theme: Numerical methods of identification and interpretation of coronal structures, (present time)

Employment: Observatory Úpice, Czech Republic

Total solar eclipse expeditions - 1994 (Brazil), 1995 (India), 1997 (Siberia), 1998 (Venezuela), 1999 (France), 2001 (Angola), 2002 (South Africa), 2006 (Egypt)

Total solar eclipse picture processing, study of solar corona

### **Mike Simmons (USA)**

“Astronomers Without Borders”

Bound by a shared passion for chasing the Moon’s shadow, eclipse-chasers have formed a close-knit and supportive community. On SEML and other venues, umbraphiles stay in contact during the long periods between eclipses, with SEC ensuring meetings will take place at least annually. Reunions with far-flung colleagues are an important part of each eclipse adventure.



Wherever the hunt for the umbra may take them, eclipse chasers befriend locals and share their passion and views of the sky. And just as a total solar eclipse is an experience that anyone can appreciate, astronomy in general holds a fascination for anyone who gazes at the nighttime sky. Regardless of cultural differences or language barriers, the sky becomes a meeting ground. Astronomy is itself the common language something that is understood and appreciated throughout the world. In these interactions, both guest and host become ambassadors of their own culture, each learning

from the other. On occasion lasting bonds are created.

It is this inherent interest in astronomy that Astronomers Without Borders seeks to take advantage of by extending such contacts to the larger astronomical community and beyond. The expansion of the Internet to the world's most remote locations has allowed unprecedented communication among all the world's citizens. Astronomers Without Borders will expedite these contacts through a virtual community of affiliated organizations, cooperative international and intercultural projects, resource sharing, educational material and more.

Science is often said to transcend political, ethnic and religious differences but in practice problems often still arise. Astronomy is the oldest and most universal of the sciences we all see the same sky. Just as the Earth reveals no artificial boundaries when viewed from space, the sky is seen as an unbroken continuum of stars from anywhere on the planet. The Moon's shadow rushes onward with similar disdain for whatever borders we place in its path. The awe inspired within darkness both night and day has the same unifying effect on Earth's inhabitants. It is something eclipse chasers have understood for centuries, and that Astronomers Without Borders will use to bring more of us together.

"A Century of Solar Observing at Mount Wilson Observatory"

Founded as the Mount Wilson Solar Observatory in 1904, the installation of the Snow Solar Telescope began an unprecedented period of investigation and innovation in solar research at the observatory. The three greatest solar telescopes of the time were built on Mount Wilson during the observatory's first 10 years. Groundbreaking discoveries in solar research continued long after the stellar program became more famous with the world's largest telescopes and the extragalactic studies of Edwin Hubble. Solar research continues on two

telescopes at Mount Wilson today, while the Snow Telescope has recently been refurbished and upgraded for use in an annual educational program.

Mike Simmons was the founding president of the Mount Wilson Observatory Association (MWOA) in 1982 and has served as its president several times since. He has served on MWOA's Board of Trustees for the past 25 years and is currently MWOA's vice president. He has written several articles on the early history of Mount Wilson Observatory, regularly lectures on the observatory's work, conducts tours, directs observing sessions and manages the observatory's web site. He is also a past president of the Los Angeles Astronomical Society, eclipse tour leader, author and photographer. He is the founder and president of Astronomers Without Borders, a newly-formed organization dedicated to international relations through astronomy.

### **Ralph Chou (Canada)**

"Eclipse eye safety update"

Technical specifications for solar filters are reviewed and compared to spectral transmittance characteristics of an unsafe filter collected in Tunisia after the 2005 annular solar eclipse. Optical coherence tomography findings associated with solar retinopathy are reviewed.



Ralph Chou, MSc, OD, FAAO, Associate Professor, School of Optometry, University of Waterloo, Waterloo, Ontario, Canada

Dr. B. Ralph Chou is Associate Professor of Optometry at the University of Waterloo School of Optometry in Waterloo, Ontario, Canada. His research interests are industrial and environmental eye protection, particularly from impact and optical radiation hazards. He has been a consultant to industry and the Government of Canada on eye protection against ultraviolet radiation. He serves on several standards technical committees of the Canadian Standards Association, the International Standards Organization, and the World Council of Optometry, and as a member of the Eclipse Information Committee of IAU Commission 46. He has been a contributor to the NASA eclipse bulletins since 1997. Dr. Chou will observe his 16th total solar eclipse when he leads his tenth expedition for the Toronto Centre of the Royal Astronomical Society of Canada in 2008.

## Raymond Brooks (USA)

"The intersection point and immediate area of the figure-8 loops for such solar eclipses"



### Introduction

Understanding the dynamics and experiences of an observer positioned near the intersection points of the figure eight loop for central eclipses.

### Hypothesis

The point commonly shown to share the intersection of the lines labeled "Eclipse begins at Sunrise, at Sunset...Ends at Sunrise, at Sunset" cannot experience all four things simultaneously.

### Method

Using planetarium programs to view what occurs at various times during an eclipse, one can understand what really happens near the poles as an eclipse transitions from the morning half of Earth to the evening half.

### Results

There are really three intersection points involved; the middle of the figure eight and the two points where the maximum-eclipse-line crosses the convex sides of the figure eight.

### Discussion

The transition from "Eclipse Ends at Sunrise" to "Eclipse Ends at Sunset" and transition also for the "Begins" lines do not occur at any of the three intersection points.

### Conclusion

The very successful figure eight loops, if expanded, would reveal a more interesting tale of local midnight and local noon effects and sunrise/sunset transition locations.

Born in New York city in 1948. Received schooling at Fordham University Preparatory and Manhattan College for Nuclear Engineering, receiving a degree in 1970.

My interest in eclipses began at age seven at a typical family dinner hearing about a predicted lunar eclipse that night. I wondered how anyone could predict such a thing.

In 1978 I decided to write my own prediction program to see if I could lead a party to the correct location. This evolved into a highly accurate eclipse program not commercially available.

As a result, I have witnessed 27 eclipses. All except 5 were solar eclipses and of these 11 were total solar eclipses.

Led 160 people to Turkey for the March 2006 TSE and contributing astronomer for TravelQuest TSE Africa 2001.

Now residing in Arizona Sky Village with my wife, Dori, and am building a new observatory.

### **Richard Woo (USA)**

"Solar eclipse pictures and the solar wind"



Since the existence of the solar wind was confirmed in the 1960s, the heliosphere has been extensively explored by interplanetary spacecraft. Because spacecraft have yet to venture closer than 0.3 AU of the Sun, we have had to rely on remote sensing measurements for information on the source region of the solar wind, with solar eclipse pictures of density structure playing a major role. In this talk, I will explain

how for three decades incorrect interpretation of solar eclipse pictures has led to misconception of the origin and evolution of the solar wind. I will also summarize what the often intricate and perplexing density structure revealed by solar eclipse pictures tells us about the solar wind and the coronal magnetic field.

Richard Woo is a Senior Research Scientist at JPL, where during the past 43 years he has taken advantage of spacecraft radio signals to remotely sense planetary atmospheres and the solar corona. He has twice received the NASA Medal for Exceptional Scientific Achievement (1979 and 1998).

### **Serge Koutchmy (France)**

"Progress on high resolution imaging, polarimetry and spectroscopy during the last total eclipses"



We review some of the remarkable results which were deduced from several experiments ran by our teams in Egypt, mainly during the last 2006 total eclipse, to study both the plasma corona and the dusty F-corona. In addition EUV and XR space-born images are used to interpret the data. We successively comment on:

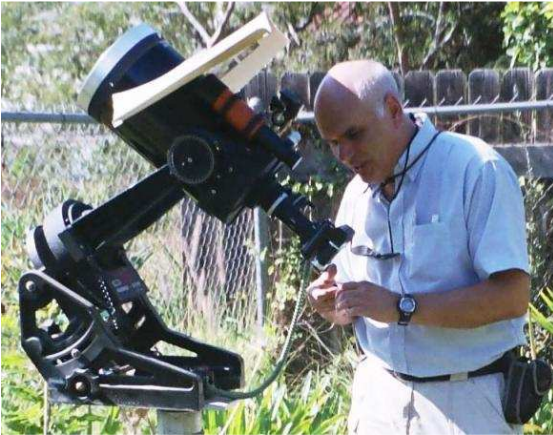
- W-L high resolution imaging of the general plasma structure to compare with the extrapolated magnetic fields;
- Fine polar jets produced by highly energetic particles in beams;
- Monochromatic images in different emission lines to show temperature effects;
- Fast slit-less spectra to deduce the variation of the emission measure of the HeII transition line at very high spatial resolution;
- Deep sky spectra to study the variations of the green line of FeXIV;
- The discovery of neutral points in the linear polarisation maps of eclipse images.
- The absolute photometry of the corona, based on the use of star images as flux standards of intensity calibration.

From the Marquis "Who'sWho in the Word" , 21st century Editions, 2003, p. 1314

Koutchmy, Serge, astrophysics scientist; b. Le Creusot, Burgundy, France, June 26, 1940; s. Leonid and Anne (Le Loarer) K.; m. Olga Belianina, Apr. 2 1961; children: Nathalie, Valery. Grad. State U. Moscow, Russia, 1963, U. Orsat, Paris, 1968; PhD U. Paris, 1972. Jr. rschr. Ctr. Nat. Sci. Rsch., Paris, 1968-76, rsch., 1978-86, rsch. Dir., 1989 -; assoc. rschr. NSF-Air Force Cambridge Labs., Sunspot, N. Mex., 1976-77; sr. scientist NSF-Air Force, Sacramento Peak, 1986-88. Cons. French Space Rsch. Agy., Paris. 1979-82. Co-author: Illustrated Solar Glossary, 1977, The Observer's Guide to Astronomy, 1987-94, Solar Interior and Atmosphere, 1991, Total Eclipses, 1999; contbr. More than 400 articles to sci. publs. Recipient medal of Crt. Nat. d'Etudes Spatiales, French Space Agy., Paris, 1983, medal J. Janssen French Acad. Scies., Paris, 1994, 98. Mem.: Internat. Astron. Union. Soc. Astronomique de France (J. Janssen prize 1998), French Optical Soc. Achievements include observation of more than 12 total solar eclipses. Avocation: tennis. Office: Inst. Astrophysique de Paris-CNRS 98 Bis Bd Arago 75014, Paris France. E-mail Koutchmy@iap.fr

## **Stephen J. Edberg (USA)**

“Choosing and Viewing: A Thinking Observer's Guide to Eclipse Site Selection and Observations”



For most observers, choosing an observing site is often a matter of finding the best weather on the eclipse path and standing on the center line. For the maximum duration of totality and coronal viewing, this strategy is fine. But observers who have observed totality several times may want to, and observers who have interests in specific phenomena should, take advantage of the circumstances of the eclipse and of its path to maximize

their opportunities to study selected phenomena. In this presentation site selection criteria for a variety of phenomena are presented. Observers, both new and experienced, will learn to plan their viewing in a whole new light.

Stephen J. Edberg has been an active amateur astronomer continuously since 1966, though his earliest (partial) eclipse recollections date to 1960 and 1963. His eclipse experience and expedition leadership to date include total solar eclipses on five continents, in the air and on the sea, in 1974, 1977, 1979, 1980, 1981, 1983, 1988, 1991, 1994, 1995, 1998, 1999, 2001, 2002, and 2006 and annular eclipses in 1984, 1992, 1994, and 2002. He has led several other astronomical expeditions to observe comets, meteors, and lunar occultations of stars and planets and asteroidal occultations of stars.

He began his professional astronomical career after high school in 1970, working mostly in solar physics through college, graduate school, and his first job, at San Fernando Observatory. His move to NASA'S Jet Propulsion Laboratory in 1979 led to flight experience with the Galileo Project and Cassini Program. He is presently System Scientist on the Space Interferometry Mission (SIM) PlanetQuest. He served as Coordinator for Amateur Observations for the International Halley Watch from 1982 - 1989.

His photography, research, instruments, and writing have appeared in professional journals, in popular periodicals, and in several books.

He has been honored by NASA with an Exceptional Service medal and by the

International Astronomical Union with the naming of a minor planet, 3672 Stevedberg.

### **Tony Misch (USA)**

“In the Shadow of the Moon: The Lick Observatory Eclipse Expeditions”



In 1889, newly-founded Lick Observatory sent an eclipse party to nearby Bartlett Springs, initiating a practice that would span forty years and send seventeen expeditions to fifteen eclipses on five continents. The observatory's archive holds a nearly forgotten and largely unpublished collection of glass plate negatives constituting a pictorial record of these expeditions. The images, enriched by written records, are the subject of this primarily pictorial presentation.

Tony Misch studied fine art, stumbling into astronomy in 1982 as an observer at Mount Wilson. Since 1987 he has been a support astronomer with the University of California's Lick Observatory.

### **Vojtech Rusin (Slovakia)**

“Enigmatic 2006 corona” by V. Rušin<sup>1</sup>, M. Druckmüller<sup>2</sup> and H. Druckmüllerová<sup>2</sup>



<sup>1</sup> Astronomical Institute, Slovak Academy of Sciences, 059 60 Tatranská Lomnica, Slovakia

<sup>2</sup> Institute of Mathematics, Brno Technical University, Brno, The Czech Republic

The inner white-light solar corona (to 2 solar radii) can be seen only during total solar eclipses, at present. New mathematical methods of the corona image processing and digital photo

cameras or CCD cameras allow us to detect very faint structures in this part of the corona, even with small telescopes (1-2 meters in the focal length). In the present paper we will discuss very faint structures as observed during last solar



eclipses, mainly in 2005 and 2006. Obtained results show that the white-light corona is highly structured not only in the sense of different types of its classical structure, e.g., polar plumes, helmet streamers, threadlike streamers, etc, but in helmet streamers as well. Voids, loops and other undefined dark structures are seen in these streamers. It seems that classical hydrostatic distribution of density and temperature of the white-light solar corona is over, and magnetic forces are the 'main engine' for this type of the corona, which is very similar to that of the EUV corona.

Name:           Vojtech R U Š I N  
Birth Date:     January 7, 1942  
Birth Place:    Spišské Hanušovce, Slovakia

Marital Status: Married to Anna Koščáková (1961)

Children:       Vojtech (1962), Jan (1965)

Office Address: Astronomical Institute  
                  Slovak Academy of Sciences  
                  059 60 Tatranská Lomnica  
                  Slovakia  
                  Phone: + 421-52-78 791 64  
                  Fax:    +421-52-4467 656  
                  Email:vrusin@ta3.sk

Home Address:  059 60 Tatranská Lomnica 135  
                  Slovakia  
                  Phone: +421-52- 4467 609

Education:

1964-1970: Comenius University, Bratislava  
1975: RNDr., Charles University at Prague  
1978: PhD., Slovak Academy of Sciences, Bratislava  
1994: DrSc., Slovak Academy of Sciences, Bratislava

Present Position: Senior astronomer, solar physicist at Astronomical Institute, where I am working for all time (since 1959). Member of the Presidium of the Slovak Academy of Sciences (for 3 terms: 1995-1998, 1998-2001, 2001-2005). Chairman for the PhD. degree in 'Astrophysics' in Slovakia. Vice-director of the Astronomical Institute in 1994-1997.

Field of Research: solar physics: long-term observations at Lomnický Štít coronal station. Study of dynamics, time-latitudinal development and distribution of solar prominences and both the emission and white-light corona over solar cycles, short-term oscillations in the solar emission corona, coronal index of solar

activity. Total solar eclipses: I participated in 15 eclipse expeditions of the Astronomical Institute of the Slovak Academy of Sciences to abroad since 1973. Target: study of physical properties, structural and morphological studies of the white-light corona. Member of several scientific committee meetings (domestic and international), 4 Ph.D. students.

Publication Activity: of about 200 scientific papers (author and co-author), 70 talks in domestic and international meetings, 3 books, co-editor of 2 Proceedings (1994 and 1999), co-author of 1 translated book (English to Slovak), SCI citations: more than 250; public presentations (Slovakia and abroad): more as 1000 lectures, hundred of papers for public accompanied with slides and photos.

Memberships: International Astronomical Union (IAU), American Geophysical Union, European Astronomical Society, Czech Astronomical Society, Slovak Astronomical Society (Chairman in 1992-1995 and 1995-1999, maximum two terms), Slovak Physical Society, Central European Academy of Sciences and Art (from 1999). Member of the IAU working group "Solar Eclipses", member of "Kozmos" (1990-1994), "Říše hvězd" (1994-2000) and "Pokroky matematiky, fyziky a astronómie (from 2000) editorial boards.

Awards (the highest):

1982 – Slovak Academy of Sciences award for popularization of science,

1989 – Slovak Academy of Sciences award for science,

2002 – Technical University, Košice, Slovakia.

2002 – IAU: Asteroid 26390 named "RUŠIN"

2006 – Literarny fond Award

Hobby: Photography

Tatranská Lomnica, January 31, 2007

### **William C. Livingston (USA)**

"Sailing to Tahiti on board the Goodwill: The American-French Eclipse Expedition of 1965"

Thanks to a recent memoir of Charles Slaughter we can revisit those activities. How AURA, Inc. leased a four masted schooner to transport scientists to a small moray eel infested atoll called Motu One (see Google Earth); how we were pressed by the French to observe and get out because of pending atomic tests; how the Tahitians muscled a full size refrigerator through a roaring surf for IR physicist Ed Ney (it contained invaluable martini mixings); how eclipse day was clear except for contrails laid down by a NASA research jet; how the Goodwill



(formerly confined to LA to Honolulu racing) was ravaged by a post eclipse storm and everyone had to be rescued by the French Navy; Scientific results were meager but many bizarre happenings are recollected from this past era.

Date of Birth: September 13, 1927

Place of Birth: Santa Ana, California

Citizenship: USA

Home Address: 1400 E. Lester, Tucson, Arizona, 85719, USA

Institution: NOAO/National Solar Observatory

Address:

P.O. Box 26732

Tucson, Arizona 85726-6732, USA

(520) 318 8374

Education:

1959 Ph.D., University of California, Berkeley, California, Astronomy

1953 A.B., University of California, Los Angeles, California, Physics – Astronomy

Positions:

1994-Present: Astronomer/Emeritus, National Solar Observatory

1983-1994: Astronomer, National Solar Observatory

1969-1983: Astronomer, Solar System Program, Kitt Peak National Observatory

1966-1969: Associate Astronomer, Kitt Peak National Observatory

1965-1966: Associate Astronomer, Kitt Peak National Observatory

1960-1965: Assistant Astronomer, Kitt Peak National Observatory

1959-1960: Junior Astronomer, Kitt Peak National Observatory

1957-1958: Observing Assistant, Mount Wilson and Palomar Observatories

Professional Societies/Awards:

1984: Foreign Member Norwegian Academy of Science and Letters

1982-85: President, IAU Commission 9 (Instruments)

1980-82: Chairman, Working Group on Detectors, IAU Comm. 9 Astronomical Society of India

COSPAR Society for Scientific Exploration

1965: International Astronomical Union

1964: Soc. Motion Picture and Television Eng. Award for Camera Design

1959: American Astronomical Society

NASA Programs:

Guest Investigator ATM Sky Lab

Co-Investigator, Space Lab II  
Co-Investigator, Solar Orbiting Telescope

Books:

The Solar Interior and Atmosphere, w/ Cox, A. and Matthews, M. (Eds),  
University of Arizona Press, 1988  
Instrumentation in Astronomy, SPIE Milestone Series MS 87, 1993  
Color and Light in Nature, Cambridge University Press, 1995  
Mirror Substrate Alternatives, w/ Rozelot, J.P., Cerga, 1996  
The Last Total Solar Eclipse of the Millenium in Turkey w/ A. Ozguc ASP Conf.  
Series, 2000  
Fundamental Solar Astronomy, w/ A. Bhatnagar World Scientific (in preparation),  
2004

MY SOLAR CAREER

In 1950 I got a job as an observing assistant at the Snow Telescope on Mt Wilson in California. The University of Michigan was conducting a visitor project to map the IR solar spectrum photometrically using the new lead-sulfide detectors developed during WWII. While I was there, Keith Pierce came out and spent several months conducting his pioneering observations of the spectral distribution of the sun. As his helper I learned much about laboratory procedures involving black body light sources such as the King furnace, arc lamps, the use of cryogenic detectors, etc. In my spare time I went to UCLA and got a B.A. in Physics/Astronomy.

A tradition of Mt Wilson were meals at the 'Monastery'. The 100-inch observer sat at the head of the table, the 60-inch to his left (both had napkin rings engraved with their names), while the visiting solar man sat at the foot of the table with a clothespin napkin clip. There were no women of course. At these occasions I met many famous astronomers. Among these was Otto Struve who suggested I apply for graduate school at Berkeley. I did, and got my Ph.D. under Gery Kron at Lick Observatory. My thesis involved the application of an image-orthicon camera for stellar photometry. I also met my future wife 'Tootie', and we were married in her home in Berkeley. But before departing Berkeley, I took a two year leave to work for Horace Babcock at Mt Wilson perfecting his solar magnetograph. Although his instrument worked fine at the Hale Lab in Pasadena, RF interference from the TV stations on Mt Wilson was a problem which I was charged to fix.

While in residence at Mt Wilson I got an offer from Keith Pierce to come to Tucson and help develop the control system for the future McMath Telescope. I accepted. The only complication was this awkward PhD I had gotten. After some

hesitancy they accepted this and I became the first staff astronomer (everyone else were directors!).

My first decade at KPNO was mainly devoted to image tube work. CCDs had not yet been developed but it was clear that photographic emulsions would soon be obsolete. Roger Lynds and I had a lot of fun pursuing various devices (image orthicons, multistage intensifier tubes, etc.) with what would be considered now unlimited funds. [An AURA board member later remonstrated us for using the term 'fun'.] However, at some point Nick Mayall, Director, called me into his office and said I must start doing astronomy, and write suitable papers, or be fired. So I began a certain amount of 'pure' astronomical research. Using the fiber-optic 40-channel magnetograph, Jack Harvey and I discovered a new regime of solar magnetism which we called 'weak' fields not seen by others.

At the time of Skylab, Leo Goldberg, who was now Director and had close ties to NASA, backed our proposal to build a synoptic Vacuum Telescope. In contrast to present ways, there was no time wasted on finding community support or peer reviews. Dale Shrage, our in-house engineer, just designed and built the telescope in one year. Jack Harvey perfected the 512 magnetograph which employed Reticon arrays. Ten years ago Harry Jones converted to CCD arrays. It produced full disk magnetograms from Oct 1973 until Oct 2003. The Vacuum Telescope building will now house a modern instrument called SOLIS.

Communist China had long been estranged from world astronomy. Leo was anxious to remedy the situation. When an initial contingent arrived in Tucson he asked who and what they wished to see. They replied they wanted only to meet Dr Livingston! I am certain Leo was chagrined. The background was that some years before Engvold and I had written a paper on solar prominences in which we praised some work at Purple Mountain Observatory. After this VIP visit I had a supply of Chinese assistants for more than a decade. These were their best people and they helped my research greatly.

Over the years I have been fortunate to have many valuable foreign collaborators. Pierre Lena and Elizabeth Ribes from France were rich experiences. Oddbjorn Engvold from Norway another one. From my Mt Wilson days I had friendship with Vainu Bappu. He was a movie buff and we went to the Academy Awards in Hollywood together. On my several trips to India under what was called the 'rupee fund' I smuggled various needed equipment into India. That most durable Russian astronomer Severny was another. I took a year course in Russian, applied for and received an academy exchange position and went to the Crimea for a month in 1969. My Russian ties continue up to the present.

Ref. Extract from the NOAO/National Solar Observatory WebPages.

## **Xavier Jubier (France)**

“Solar Eclipse Mapping & Predictions - On and Off the Web”

Location is one of the most important factors in selecting a viewing site for a solar eclipse and careful planning is required to increase the chances of success. Having good and flexible mapping tools is in this regard very important.

Since the 2004 Solar Eclipse Conference, stunning new applications - Google Maps, Google Earth and NASA World Wind - have become available.

Solar Eclipse tracks and weather data can be overlaid onto the imagery of these free applications and they have become a key tool for solar eclipse enthusiasts. Quality eclipse maps can also be produced using Geographic Information Systems (GIS) with readily available satellite imagery and geographical digital data.

This presentation will review the available data, its accuracy and the accuracy of displayed eclipse track calculations.

Xavier will then demonstrate his use of "on-the-web" Google Maps and Google Earth to provide interactive local circumstances calculations and will share his current developments and plans for his web-site. The presentation will then cover maps and eclipse tracks on GPS, mapping errors, available eclipse mapping software, use of a GIS to draw maps and finally John will demonstrate a range of "off-the-web" mapping function using his and Luca Quaglia's program "Solar Eclipse Explorer"



Xavier Jubier is an engineer and currently works as an IT Manager in a multinational French company outside of Paris. He started to get involved with solar eclipses in the early 90's and now tries to combine three of his passions: solar eclipses, travel and photography. He maintains a website related to eclipses ( <http://xjubier.free.fr/> ) and also works as an Associate at Eclipse-City ( <http://www.eclipse-city.com/> ). The successful midnight sun Antarctic total eclipse of 2003, observed from the ground by less than a hundred people near the Novolazarevskaya Russian research station, was the start of a new adventure

when he joined two friends to form Eclipse-City, a new company dedicated to offer eclipse enthusiasts the best view of any solar eclipse, regardless of the

location on our beautiful planet without abstaining from basic or even luxury comfort and nevertheless taking all ecological factors into consideration. Eclipse-City's motto is "nothing is impossible".

### **Zoran Mikic (USA)**

"Modelling and predicting the solar corona"



We describe how three-dimensional magnetohydrodynamic (MHD) models can be used to predict the structure of the solar corona. The calculations use the observed photospheric radial magnetic field as a boundary condition. Such models make it possible to determine the large-scale structure of the magnetic field in the corona, as well as the distribution of the solar wind velocity, plasma density, and temperature, which can be used to predict the plane-of-sky polarization brightness and emission of UV and X-ray radiation.

For examples, please see: <http://iMHD.net> .

Zoran Mikic is a Senior Research Scientist at Science Applications International Corporation in San Diego. His interests include large-scale MHD modelling of the solar corona, the eruption of coronal magnetic field arcades, coronal mass ejections, the three-dimensional structure of the solar corona, modelling of active-region coronal magnetic fields, coronal heating, and solar flares.

### **THANK YOU !!!**

Every conference is "a little bit of work". Though, without following friends, it would not have been possible to organize. Thank you very much indeed on behalf of the solar eclipse community:

Derryl Barr  
Fred Espenak  
Michael Gill  
Ed Krupp  
Jay Pasachoff  
Glenn Schneider  
Mike Simmons

All invited Speakers  
The complete Griffith Observatory team  
The complete Mount Wilson Observatory team  
The complete SEC2007 Hotel team  
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Bronze Sponsor	Raymond Brooks

## **Background**

Over the last decade, there have been dramatic changes in solar eclipse traveling. Solar Eclipse specialists meet most of the time in the shadow of the Moon. Solar Eclipse meetings out of totality are rare, or are mainly focused on solar physics. The Solar Eclipse Mailing List and the Solar Eclipse Newsletter has been successful as a vehicle in bringing together solar eclipse enthusiast, professional and amateurs alike. Because there was no central eclipse in 2000 we had been presented with a perfect opportunity for an International Solar Eclipse Conference.

We have had this project in mind for some time, but mainly due to planning eclipse travels it has been put on hold. The aim of the conferences is to bring together professionals and amateurs, addicts, enthusiasts, and chasers, as with the mailing list and the newsletter, sharing information, knowledge, and experience. For the same reason we organized an international Solar Eclipse Conference in 2004.

After two international Solar Eclipse Conferences (SEC2000 and SEC2004), we feel that still not all topics and subjects, related to solar eclipses have been presented and discussed. SEC2007 will be the next opportunity to meet and discuss.



Two days of lectures will be given in each of the disciplines: predictions, mathematics, solar physics, weather forecasting, eye safety, diameter measuring, edge and central, and ancient eclipse research. Of course the latest and forthcoming solar eclipses should be great topics of discussion, along with the once-in-a-lifetime Venus Transit. Friday evening is a social event with reception and informal meetings.

## **Apologized**

Following (invited) speakers could not make it or were not able to give a presentation at the conference. On behalf of them apologize. Alphabetical by first name:

Alex S. Pang, Andrey Tlatov, Barrie W. Jones, Bart de Pontieu, Bob Morris, Brad Schaefer, Brian May, Carlos Mallamaci, Darald Nye, Dennis Di Cicco, Edwin L. Aguirre, Elisabeth M. Jakob, Eva Markova, Forrest M. Mims III, Hamid Khodashenas, Jack Newton, John Tilley, Kenneth Phillips, Leon Golub, Miloslav Druckmuller, Owen Gingerich, Philip Veerman, Rick Fienberg, Sheridan Williams.

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We reserve the right to cancel or modify reservations where it appears that a delegate has engaged in fraudulent or inappropriate activity or under other circumstances where it appears that the reservation contain or resulted from a mistake or error.

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## **MENU SEC2007 Saturday Dinner**

Please find herewith your choice of dinners for Saturday night.

Fish menu

House Salad with Ranch and Vinaigrette Dressing  
Salmon with Dill Butter Sauce  
Garlic Mashed Pot and Vegetables  
Rolls and Butter  
Cheesecake with Strawberry Sauce  
Coffee, Tea and Decaf

Meat menu

House Salad with Ranch and Vinaigrette Dressing  
 Grilled Flat Iron Steak with Mushroom Demi  
 Garlic Mashed Pot and Vegetables  
 Rolls and Butter  
 Cheesecake with Strawberry Sauce  
 Coffee, Tea and Decaf

No drinks are included.

## Proceedings SEC2007

Proceedings of SEC2007 will be available as soon as possible after the conference on a ROM disc. The content will depend on what speakers and delegates provide for inclusion (e.g. lectures / photographs / video etc...). Price for delegates will be 10UKP or 20USD - and this includes postage. Please contact Val or Andrew White to order (preferably cash with order) at the conference or by e-mail [val\\_and\\_andrew@hotmail.com](mailto:val_and_andrew@hotmail.com)

## Delegates List

Aaron Brown	USA	Hanna Druckmullerova	Cz	Mike Simmons	USA
Adam Crocker	USA	Henrik Glintborg	Denmark	Monika Zipf	Germany
Alson Wong	USA	Hiram Clawson	USA	Naomi Pasachoff	USA
Amanda Lambert	UK	Howard Duncan	USA	Nina Whiddon	USA
Andrew Crocker	USA	Jack Denur	USA	Pam Barr	USA
Andrew White	UK	Jame Vilinga	Angola	Pascale Demy	Germany
Andrey Tlatov	Russia	James Downing	USA	Patricia Espenak	USA
Audiece Barnette	USA	Jan Sladeczek	Czech R	Patti Harris	USA
Bengt Alfredsson	Sweden	Jay Anderson	Canada	Philip Veerman	Australia
Bernd Brinkmann	Germ	Jay Friedland	USA	Patrick Poitevin	UK
Bob Minor	USA	Jay M. Pasachoff	USA	Ralph Chou	Canada
Bob Morris	Canada	Jean Kodama	USA	Ray Brooks	USA
Cameron Zucker	USA	Jean-Luc Dighaye	Germ	Richard Garcia	USA
Carter Roberts	USA	Jen Winter	USA	Richard Woo	USA
Craig Small	USA	Jim Windlinger	USA	Robert Stephens	USA
Daniel Fischer	Germany	Joanne Poitevin	UK	Robin Small	USA
Dava Sobel	USA	Joel Harris	USA	Ron Royer	USA
Dave Kodama	USA	Joel Moskowitz	USA	Saran Poshyachinda	Thail
David Balch	USA	Joerg Schopmeyer	Germ	Sascha Zipf	Germany
David Dunham	USA	John Beattie	USA	Serge Koutchmy	France
David Larson	USA	John Ginder	Canada	Sheridan Williams	UK
David Levy	USA	John Pearson	USA	Sherri Besser	USA

Derek Lillie	USA	John Tilley	UK	Sherri Simmons	USA
Derryl Barr	USA	John Westfall	USA	Sina Sadjadi	USA
Dimitrie Olenici	Romania	Johnny H Cox	USA	Stephen Kolodny	USA
Dimitry Rotstein	Israel	Jordan Suttle	USA	Stephen Sobel	USA
Dori Brooks	USA	Judy Anderson	Canada	Steve Edberg	USA
Dorothy Livingston	USA	Katie Lambert	UK	Susan Franklin	USA
Doug McCarty	USA	Kurt Barnhardt	USA	Susan Hoerger	USA
Eckehard Schmidt	Germ	Landon Curt Noll	USA	Susanne Hüttemeister	Ger
Ed Krupp	USA	Larry Gershon	USA	Synthia Kyte	USA
Eleanor Larson	USA	Larry Stevens	USA	Terry Cuttle	Australia
Elise Peterson	USA	Laura Appleton	UK	Thomas Goodey	UK
Elizabeth Westfall	USA	LinLan	China	Thomas Haeberle	USA
Evan Zucker	USA	Lloyd Franklin	USA	Tony Crocker	USA
Fabio Pettinati	USA	Loren Dolman	USA	Tony Misch	USA
Francis Graham	USA	Marc Nussbaum	USA	Tunc Tezel	Turkey
Fred Bruenjes	USA	Marcel Belik	Czech Rep	Val White	UK
Fred Espenak	USA	Marjorie Barnette	USA	Voyto Rusin	Slovakia
George Lenzen	Switzerl	Mark Margolis	USA	Walter Lickteig	USA
Gernot Meiser	Germ	Mark Petersen	USA	William Livingston	USA
Glenn Schneider	USA	Matthew Poulton	France	Xavier Jubier	France
Greg Buchwald	USA	Matthias Graner	Germany	Zoran Mikic	USA
Hamid Khodashenas	Iran	Michael Gill	UK		

## Batch Clarification


Name color   Red   = Organizers  
                   Green = Speakers  
                   Blue = Delegates

Participation Color    

 Mt Wilson Tour

 Saturday Lectures

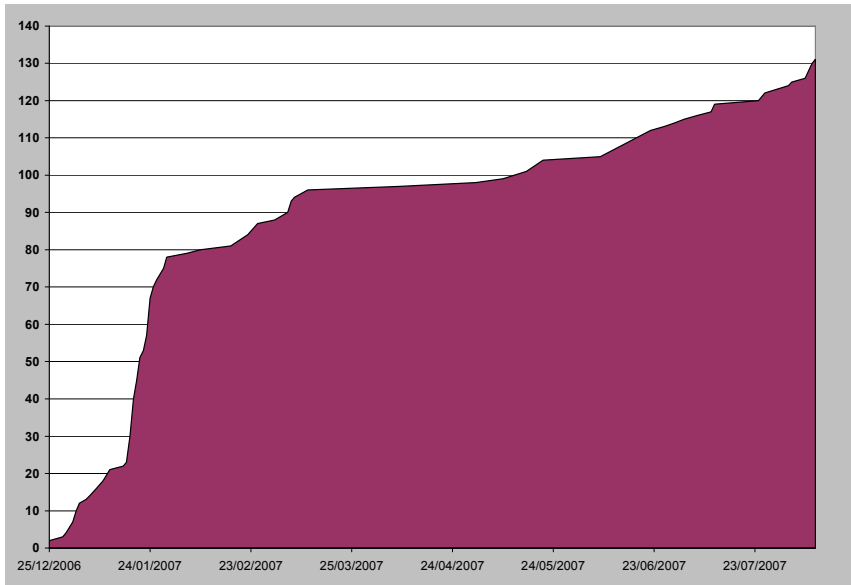
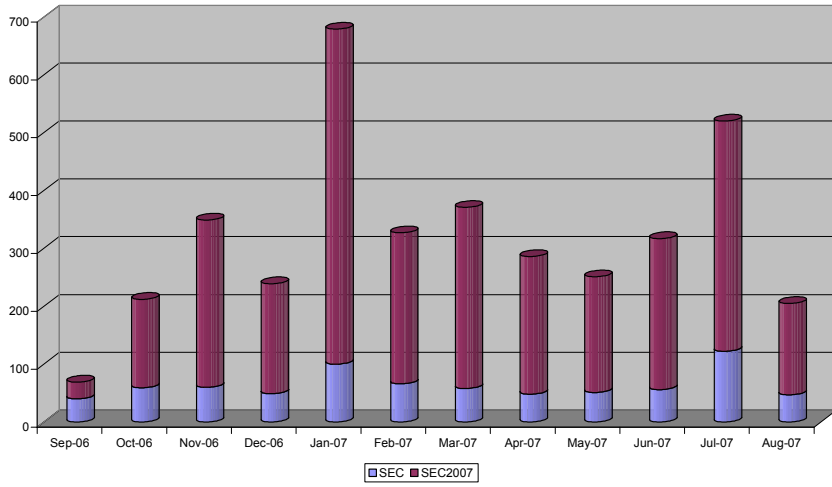
 Saturday Dinner

 Sunday Lectures

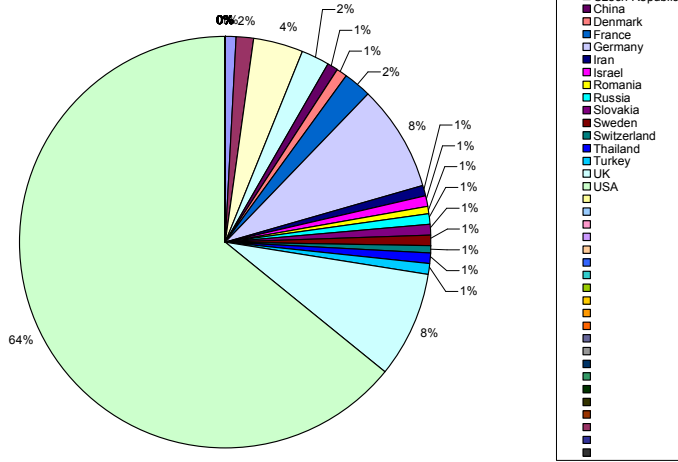
## Graphs

Solareclipsewebpages visits, Registrations, Countries

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**Wishing you all a very nice conference!!!**

**Joanne & Patrick Poitevin**