The CEDAR Post

May 2000 Volume 39

Inside This Issue

TIM KILLEEN APPOINTED NEXT DIRECTOR OF NCAR

On February 16, 2000, UCAR President Richard Anthes announced the appointment of Timothy L. Killeen to the position of Director of the National Center for Atmospheric Research (NCAR). Tim will succeed Bob Serafin on July 5. He joins NCAR after more than 20 years at the University of Michigan (UM) in Ann Arbor where he is a Professor of Atmospheric, Oceanic, and Space Sciences, Associate Vice-President for Research, and Director of the Global Change Laboratory at Michigan. He also served as Director of the Space Physics Research Laboratory and was the second Chair of the CEDAR Science Steering Committee in 1988 and 1989.

Tim is the first person from outside NCAR to be appointed director since Wilmot Hess in 1980 and the first to arrive directly from a university since Francis Bretherton in 1973. A native of Cardiff, Wales, Tim earned his bachelor's degree in physics and, in 1975, a doctorate in atomic and molecular physics, both from University College, London. He is president of the Space Physics and Aeronomy Section of the American Geophysical Union, and editor in chief of the Journal of Atmospheric and Solar-Terrestrial Physics. He has been honored with both the Excellence in Teaching and the Excellence in Research awards from the College of Engineering at the University of Michigan and with two NASA Achievement Awards.

Tim's resume includes an unusually strong blend of teaching, research, and administration. At Michigan, Tim leads a group of 15 scientists and engineers who are using a combination of theoretical and experimental techniques to investigate the upper atmospheres of Earth and other planets. He also leads the university's Aeronomical Observatory Program, which includes five remotely operated optical observatories from Chile to the Arctic's Resolute Bay; some sites have been on line since the late 1980s, encompassing a full solar cycle. Each site has spectrometers, all-sky cameras, and Fabry-Perot interferometers, whose development originally brought Tim to Michigan as a postdoctoral scholar. Tim's group recently built a miniature spaceborne version of the Fabry-Perot instrument for a NASA mission to be launched later this year. He plans to continue his research interests as NCAR Director, in collaboration with NCAR's High Altitude Observatory.

As an administrator, he's worked to increase UM's capabilities in

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KILLEN APPOINTED NEXT NCAR DIRECTOR

-Continued from page 1

computing, environmental science, geographic information systems, materials science, transportation research, and undergraduate education. NCAR's present and potential role in university education was one of the biggest drawing cards in Tim's decision; he sees global change as a natural for expanded collaborations.

"There are two reasons people make these sorts of transitions," says Tim. "One is because they're not happy where they are, and the other is because they're offered a tempting prospect. This is definitely the latter."

- adapted (with much appreciation!) from Staff Notes Monthly, UCAR Communications

NEWS NOTES FROM NSF

UPDATE ON THE RELOCATABLE ATMOSPHERIC OBSERVATORY

The RAO is now entering the final stages in the competition for a new start in the NSF FY2002 Major Research Equipment Line. Final selection should take place in late May or early June. I am very optimistic and especially appreciate the support that the project has received from the new GEO Assistant Director, Dr. Margaret Leinen.

- Rich Behnke, NSF

FY2000 CEDAR-TIMED COMPETITION

NSF received 39 proposals to the CEDAR/TIMED competition. Seventeen proposals are pending, awaiting clarification of the TIMED launch date (see below). The awards will total $1.5M.

FY2000 SPACE WEATHER COMPETITION

NSF received 77 proposals by the January 7 deadline for the Space Weather competition. The total amount requested by all proposals is approximately $5M; NSF anticipates only about $1.0 - 1.2M is available for awards. The list of successful proposals will be published in the next issue of the Post.

- Bob Robinson, NSF

AWARDS FROM THE FY2000 CEDAR COMPETITION

NSF received 14 proposals for the FY2000 CEDAR competition.
Eight proposals were funded for a total of $600,000. The successful investigators are as follows.

CEDAR AWARDS

PI	Institution	Title
Inan	Stanford	Sprites as a manifestation of intense electrodynamic coupling of the lower atmosphere with the ionosphere
Roesler	U. of Wisconsin	Physics of the hydrogen geocorona
Collins	U. of Alaska	CEDAR Resonance lidar studies in the Arctic mesopause
Meriwether	Clemson	Simultaneous digital ionosonde and mapping tilting filter photometer studies of the precipitation of conjugate photoelectrons into the mid-latitude winter thermosphere
Killeen	U. of Michigan	A complement of optical instruments for the Polar Cap Observatory
Kelly	SRI	Resolute Bay Observatory-Research, operations and coordination (Shared with Office of Polar Programs)
Palmer	U. of Nebraska	A study of small-scale structure of PMSE over Sweden using coherent radar imaging
Hysell	Clemson	Measuring E region plasma densities at the magnetic equator

STATUS OF TIMED SATELLITE

The launch of NASA's Thermosphere, Ionosphere, Mesosphere, Energetics and Dynamics (TIMED) spacecraft has been delayed. The TIMED spacecraft has successfully completed all prelaunch testings and is currently in storage awaiting completion of the co-manifested JASON spacecraft. TIMED was originally scheduled to be launched in May 2000. The next possible launch window is Sept. 21 through Nov. 15, 2000.

- Jeng-Hwa Yee, Applied Physics Laboratory, Johns Hopkins University

CEDAR 2000 POST-DOCTORAL AWARD

One CEDAR Postdoctoral award was made in 2000. It was given to Zhilin Hu, from Colorado State University (CSU). He received a Ph.D. from the Chinese Academy of Sciences and did doctoral research at Wuhan Institute of Physics and Mathematics before coming to Colorado State in April 1998. He will continue to work at CSU under the guidance of Professor Chiao-Yao (Joe) She on a project entitled "Tidal and mean climatology of mesopause temperature and winds observed by a two-beam day and night narrowband sodium lidar".

CEDAR POST NOW ONLINE

Starting with the January 2000 issue, the CEDAR Post is now online at the NCAR/HAO CEDAR website at http://cedarweb.hao.ucar.edu/index.html. The current issue will be on the homepage; previous issues will be stored under CEDAR Community Information.

GEM MAGNETOSPHERE-IONOSPHERE COUPLING CAMPAIGN:

THE M-I COUPLING INITIATIVE

The Geospace Environment Modeling Program (GEM) was established by NSF to consolidate our understanding of energy, momentum, and mass coupling between the solar wind, magnetosphere, and ionosphere and to formulate this understanding into a series of first-principles models. The program has been organized as a series of campaigns devoted to specific topics on which the GEM community has concentrated for periods ranging from 5 to 6 years. Typically there are 3 or 4 active campaigns at any particular time, with most campaigns requiring input from ground-based observations, satellite-based observations, modeling, and theory. The first campaign was the Magnetospheric Boundary Layer Campaign, which concentrated on coupling between the solar wind and the dayside magnetosphere. Important elements of this campaign included the identification of ionospheric signatures of the coupling process and the identification of the large-scale three-dimensional current and field patterns that couple the magnetospheric process to its boundary locations in the conjugate ionosphere(s). It was realized that while the ionosphere may not initiate a particular magnetospheric process on time scales of a few Alfven transit times (~5 minutes), the ionosphere does impact its growth and evolution. The other GEM campaigns have raised similar awareness as to the importance of the high-latitude ionosphere.

Several years ago the GEM Steering Committee formed a Magnetosphere-Ionosphere (MI) Coupling Working Group with W. J. Hughes and myself as co-convenors. Ostensibly, our responsibilities included reminding the GEM community of the importance of MI coupling and identifying and encouraging discussion on various MI coupling processes. These efforts have, among others, raised awareness of the importance of ionospheric conductance and of ionospheric outflows on magnetospheric processes. During the past year, the GEM Steering Committee agreed that the MI Coupling Working Group should be upgraded to a full Campaign. Our objective at the GEM 2000 summer meeting is to discuss and formulate a campaign plan. This will include the identification of the most critical research areas toward which the MI Coupling Campaign should be directed and the experimental and theoretical approaches that will be used. We anticipate a rather intensive week of discussion and writing, and encourage participation by interested CEDAR scientists. We appreciate that there are elements of MI coupling that are of considerable interest to

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M-I COUPLING INITIATIVE

-Continued from page 3

CEDAR scientists, e.g. high-latitude plasma structuring and high-latitude forcing. These issues will probably not come to the forefront at the GEM meeting, but could be added on the CEDAR side as MI-coupling discussions evolve at the annual CEDAR meeting.

Magnetosphere-Ionosphere-Atmosphere coupling is an important aspect of the work we do in both the CEDAR and GEM communities. It follows from the systems nature of our geospace plasma and atmosphere environment and should encourage increased interaction between the CEDAR and GEM communities. Anyone interested in the campaign is encouraged to attend the M-I Coupling workshop at GEM on June 19 and 20 or contact me or Jeff Hughes (email: ray_greenwald@jhuapl.edu or hughes@bu.edu). See http://www-ssc.igpp.ucla.edu:80/gem/Welcome.html for information on GEM and the upcoming workshop.

- Ray Greenwald, Johns Hopkins University

FIRST RESULTS FROM RAYLEIGH LIDAR AT MILLSTONE HILL

A new lidar for strato-mesospheric dynamical research is being constructed at MIT Haystack Observatory. The lidar is currently able to measure temperatures between 30 and 95 km in altitude at night. An example measurement is shown in Figure 1. The temperatures measured by the lidar are in good agreement with the climatological profile, and the uncertainties are relatively small well into the mesosphere.

The measurement shown in Figure 1 was performed using a 1.2m, f/200 steerable telescope as an optical transceiver (i.e., monostatic lidar). A picture of this telescope, located at the Firepond Optical Facility, is shown in Figure 2. Pulses from a 24W injection-seeded Nd:YAG laser transmitting at 532 nm are expanded into the telescope through the Coude focus and transmitted into the sky. The signals received by the telescope are routed into the detector by a transmit/receive-switch, implemented by arranging a polarizing beam splitter and quarter waveplate arranged in an optical isolator configuration. This use of polarization optics allows the full aperture of the telescope to be used in both the transmission and receive stages, and makes signal measurements down to the ground possible.

A 60cm, f/5.5 telescope that is co-mounted and aligned with the main telescope provides a versatile bistatic receiver; measurements are possible wherever the fields of view of the two telescopes overlap. Observations using both receivers in a "split-level" run are shown in Figure 3. Gravity waves are seen propagating through the stratosphere, and a mesospheric temperature inversion is evident at around 70 km altitude.

As part of continued development, we are adapting the lidar to allow measurements during the day. The main f/200 telescope has an extremely narrow field of view (~0.1 mRad), which reduces the collected background sky-light to a

Figure 1

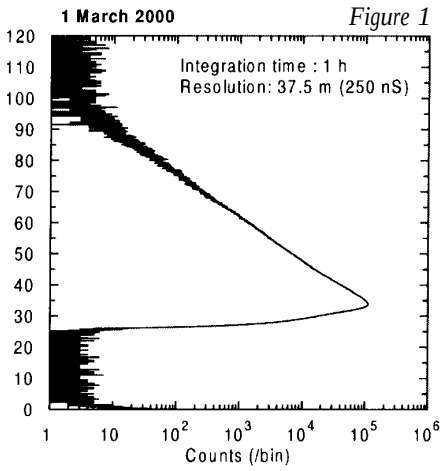


Figure 2

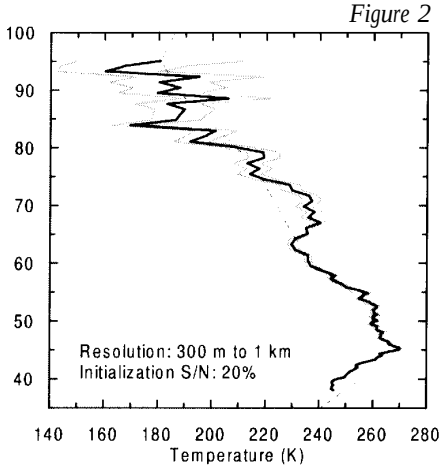
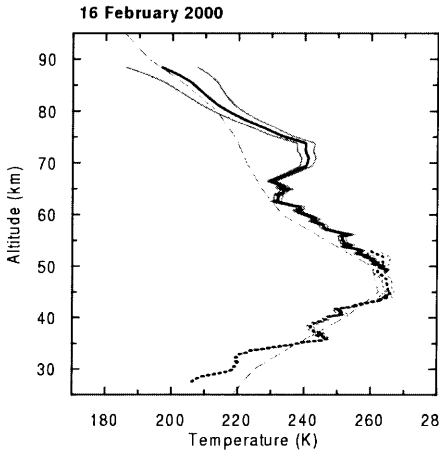


Figure 1.
Measurement obtained on the night of 1 March 2000. (Left) The raw signal profile, which extends up to 100 km in altitude. A mechanical shutter prevents detector overexposure below 35 km. (Right) The derived temperature profile. The black line represents the measurement, and the grey lines give the uncertainties. The dashed line is a climatological profile for March.

factor of 100 below that for typical lidars. Light away from the laser's wavelength will be eliminated by using a low-resolution solid etalon and a high-resolution liquid-crystal etalon in combination. Precise control of the liquid-crystal etalon, procured from Scientific Solutions, Inc., will allow Doppler measurements of winds and spectroscopic measurements of temperatures.

Figure 2. The dual telescope system housed at Firepond. The 1.2m primary can be seen in the bottom left corner, and the co-mounted and aligned 60cm telescope is contained within the white hood.

Figure 3. Observations for February 16 2000 using both the monostatic (solid lines) and the bistatic (dotted lines) receivers in a "split-level" run. Gravity wave perturbations are seen in the stratosphere, and a mesospheric temperature inversion is evident at 70 km.



Data from the lidar will be used to help understand a variety of physical processes that occur in the middle atmosphere. We are able to observe gravity waves and will study their interactions with background winds. Of particular interest are measurements of mesospheric temperature inversions throughout the diurnal cycle. Such observations will help to evaluate competing theories of mesospheric temperature inversion sources.

Detailed information and updates regarding the lidar at MIT Haystack Observatory are posted on the Web at http://www.haystack.mit.edu/~tomduck/mitlidar/. The lidar complements a rich cluster of instruments (http://www.haystack.mit.edu/) that include the MIT incoherent scatter radar, the MIT/University of Pittsburgh F-region Fabry-Perot Interferometer (630 nm) and an all-sky Doppler interferometer (630 and 557.7 nm), the Boston University image intensified imager and all-sky CCD imager, and the University of New Hampshire meteor wind radar in nearby Durham. The first mesosphere-lower thermosphere coupling experiment with the instrument cluster including the lidar was conducted in October 1999 as part of the CEDAR LTCS project, and others are planned during the year 2000.

- Thomas Duck, Dwight Sipler, Joe Salah (MIT Haystack Observatory) and John W. Meriwether (Clemson U.)

THE SONDRESTROM FACILITY GOES PUBLIC

Not often can we entice a Scientific American journalist to travel to Greenland to write about the site, but that's exactly what happened last November. Tim Beardsley, an associate editor of Scientific American, traveled with me, Craig Heinselman, and Rick Doe to Greenland to experience the business of scientific exploration first hand. Tim spent a week at the site while we worked on lidar receiver upgrades, installing and "burning-in" a newly repaired klystron, and installing and testing a new allsky imager data acquisition system. Even though he experienced a large dose of instrument development and testing, Tim appreciated that glamorous scientific discoveries require significant human effort behind the scenes. Tim was also entertained by auroral displays that whet his journalistic appetite and reminded the site staff how deeply our scientific mission is rooted in raw natural beauty. With notebook in hand, he queried us on the facility, Greenland, and the science we study. His impressions were recently published in the March issue of "Scientific American Presents". This quarterly magazine is not part of the monthly magazine but can be found on newsstands and through their web page (http://www.sciam.com/specialissues/). The quarterly focuses on specific topics; in March, the topic was "Weather - What we can and can't do about it".

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SONDRESTROM FACILITY GOES PUBLIC

-Continued from page 5

Included is a space weather article entitled "Tempests from the sun" that features the Sondrestrom facility and a nice photo taken by Craig Heinselman.

Last April, the Sondrestrom facility was visited by an IMAX film crew led by producer/director John Weiley and co-producer Dr. Bob Eather (one of our own). They produced beautiful large format images of the aurora and the silhouetted radar dish to be included in their IMAX film entitled "SOLARMAX". You can read about the production and its progress at the web site http://www.helio.com.au/; a brief summary follows:

"Solarmax is a 40-minute giant-screen documentary that tells the story of humankind's struggle to understand the sun. The film will take audiences on an incredible voyage from pre-history to the leading edge of today's contemporary solar science." Partly funded by the National Science Foundation, the film is due for release in late spring 2000, distributed by the Museum of Science and Industry in Chicago to most of the 150+ giant screen cinemas around the world. It's being well received in the large format community. The "launch strategy" aims to have two major museums open the film in June with the remainder of the theaters opening in October 2000.

We look forward to seeing the production on the big screen!

- Jeff Thayer, SRI International

RECENT UPGRADES AT EISCAT

Major upgrades and enhancements are in progress at all five of EISCAT's locations, and on all the three Incoherent Scatter radars. Unfortunately this means that some of the radar systems are unavailable for some of the time, but that's progress and the results are very worthwhile.

The UHF radar (931 MHz) in Tromsø is being re-equipped with two new klystrons which will give a reliable peak output power exceeding 2MW (12.5% duty cycle) at a considerably lower high voltage than was required by the earlier, single tube. The first of these new klystrons was successfully tested in the factory recently and is even now on its way to Tromsø for installation. The new tubes are cooled by water only (as opposed to a water and glycol mixture) and this has necessitated the introduction of a new, dual loop circulation system on both transmitters - circulating pure water through outside radiators in the arctic is not an occupation with a long term future.

On the receiver side, a new receiver protector and cryogenic front-end have been installed in the antenna at Tromsø, reducing the system temperature from about 100K to close to 60K. While the transmitter work is in progress, the receiver systems on the UHF at Sodankylä, Kiruna, and Tromsø, and on the VHF radar (224 MHz) at Tromsø are being uprated to new digital backends with powerful workstations to handle the signal processing. These new systems will mean that we are no longer limited by the speed and memory of our old correlators, though they have served us well for twenty years, and new alternating-code (only) pulse schemes are being developed to take advantage of the new capabilities. Altogether, the UHF radar will be nearly ten times faster, and the VHF two to three times faster, than before.

Along the way, we will finally retire the old Norsk Data site computers and the EISCAT Realtime Operating System (EROS) which they supported. The new systems will initially be controlled using graphical tools, similar to those already in use at the Svalbard Radar (developed in Tcl/Tk), but there are powerful programmable interfaces in Java just around the corner. Both on the mainland and on Svalbard it will be possible to record the full raw data stream or to pipe it directly to experimenters' own receiver systems.

Meanwhile the Heater and Dynasonde in Tromsø continue to provide sterling service, with the Heater last year achieving its largest annual operating total to date.

The new 42m field-aligned dish at the EISCAT Svalbard Radar (500 MHz) is now in service and a formal inauguration will be held on May 16 this year. The new antenna has been used for a number of

experiments already, including some co-ordinated incoherent scatter days. The modular design of the transmitter allows power to be directed to one antenna or the other by manipulating the phase of the drive only. Since this can be accomplished very quickly at low power levels the full transmitter output can be switched between the antennas on a pulse to pulse basis. Early experiments have also successfully employed switching between the antennas at pre-integration boundaries of about ten seconds.

Two new receiver channels have been installed at Longyearbyen to support the second antenna and to provide a plasma line capability. An automatic lubrication system has been installed on the 32m Svalbard antenna and an extensive upgrade of the transmitter cooling system is scheduled for late May and June of this year. Access to the radar site in the winter has been dramatically improved by the purchase of a tractor-mounted snow blower at the end of last year.

Data are routinely processed in real time on all three radars and the results are available on the www within a few minutes. The real time data feeds are monitored continuously by SPARC and EISCAT data are always available from the main SPARC site. The post-processed data sets are now stored in a local installation of the MADRIGAL database, together with summary plots and log information. Real time and archival data sets are also being imported into MADRIGAL as time and resources allow. Collaborative programs with the other incoherent scatter radars, particularly those at high latitudes, and with related optical, radio, and satellite instrumentation continue to be important scheduling drivers and a fully www-based scheduling request and monitoring system has been installed to streamline this process.

The range of observatory mode Common Programmes is being reviewed to optimize the co-operative use of the radars at Tromsø and Longyearbyen.

For the administration, EISCAT Headquarters has a smart new set of offices in the centre of Kiruna, Sweden, and a new set of email addresses (<<name>@eiscat.com) to match. The new mailing address is EISCAT Scientific Association, PO Box 164, Kiruna SE-981 23, Sweden.

EISCAT Headquarters is the correct place to send applications for EISCAT observing time from outside the seven EISCAT Associate

s p e S a r a d n M e s i v d n t t S w e d e h e e
C S I E r o f t a r e t a c i i
r o p m u f f r a d a r r e t t a c s
s m o L R U i v

1999 CEDAR TUTORIALS AVAILABLE ON VIDEOTAPE AND IN HARD COPY

The 1999 CEDAR meeting tutorials and CEDAR Prize Lecture are available on videotape. The videos total 6 hours in length and have been mailed to those who signed up to receive tapes at last summer's CEDAR and GEM meetings. Those who wish either the videos and/or the hard copy of the tutorials should contact Barbara Emery (emery@ucar.edu).

The videos are $50 for the set of three in NTSC format (appropriate for USA, Canada, Japan, Taiwan) and are $75 for PAL (most of Europe) or SECAM (France). Single tapes are $25 each for NTSC format and are only available in the combinations shown above (for example, it is not possible to order one tape containing Tutorial 1 and Tutorial 3.)

Videos will be sent after payment is received by Garkie Audio/Visual Services. Their contact information is

Garkie Audio/Visual Services, Inc.
4700 Sterling Drive, Suite H
Boulder, CO 80301
phone: (303) 440-3334
FAX: (303) 442-8180
e-mail: contact Heidi Law at
hlaw@garkie.com

Hard copies of the tutorials and CEDAR Prize lecture are free and available on request to Barbara Emery (emery@ucar.edu). Most of the tutorials will appear in the Journal of Atmospheric and Solar-Terrestrial Physics (JASTP).

Videos and hard copies from previous CEDAR workshops are also available upon request to Barbara Emery (emery@ucar.edu) and are listed at http://cedarweb.hao.ucar.edu/wkshp/videolist.html Most of the 1995 and 1997 tutorials appear in special issues of the Journal of Atmospheric and Solar-Terrestrial Physics in October 1996 and September 1998, respectively. Most of the 1999 tutorials will appear in JASTP in about a year.

- Barbara Emery, HAO/NCAR

THE TUTORIAL AND CEDAR PRIZE LECTURE TALKS ARE ARRANGED AS FOLLOWS:

1) **Tape 1** (88 min):
CEDAR Prize Lecture: D. Hysell, Clemson University - 46 min
"A New Look at Low- and Mid-Latitude Ionospheric Irregularities"

Tutorial #1: U. Inan, Stanford University - 52 min
"Transient Disturbances in the Nighttime Lower Ionosphere"

2) **Tape 2** (144 min):
Tutorial #2: T. Schlatter, NOAA Forecast Systems Lab - 55 min
"Variational Assimilation of Meteorological Observations: How it Works in the Lower Atmosphere"

Tutorial #3: C. R. Chappell, Vanderbilt University - 49 min
"Polar Ion Outflow - Is there enough to fill the Magnetosphere?"

3) **Tape 3** (126 min), Solar-Terrestrial Coupling Processes (S-TCP):
S-TCP Tutorial #1: N. Crooker, Boston University - 40 min
"Solar and Heliospheric Aspects of Solar-Terrestrial Coupling"

S-TCP Tutorial #2: L. Lyons, Univ of California at Los Angeles - 49 min
"Magnetospheric Interactions with the Solar Wind and Ionosphere"

S-TCP Tutorial #3: A. Richmond, High Altitude Observatory, NCAR - 37 min
"Ionosphere/Thermosphere: Response to Disturbances"

CEDAR 2000 MEETING

SUNDAY, JUNE 25 TO FRIDAY, JUNE 30, 2000
NOAA / NIST CAMPUS, BOULDER, CO

The 2000 CEDAR Workshop will be held between Sunday June 25 (the Student Workshop) and Friday June 30 on the NOAA/NIST campus in Boulder Colorado. A final agenda is still being assembled; the latest information on the meeting is available on the CEDAR homepage at http://cedarweb.hao.ucar.edu/wkshp/

New this year:

- the venue. The last time CEDAR met at NOAA/NIST was in 1995. Since then, a new building has been constructed on the campus which will provide adequate space for the meeting and workshop rooms.

- the times. The morning sessions generally end at 11:30 am. The afternoon workshops will occur from 1 to 3 PM and 4 to 6 PM, with a one-hour break between sessions (except Monday). The aim is to allow more time for informal discussion.

- the database workshops. This year, the CEDAR database workshops will be "hosted" by some of the data providers, as described elsewhere in this issue.

- the poster times and judging. Several changes have been made here:

(1) Abstracts are required and must be submitted via the web.

(2) There will be two evening poster sessions, on Tuesday and Wednesday, June 27 and 28, from 6:00 to 9:00 PM. Posters may be left up all day but must be removed in the evening after the session.

(3) Guidelines for judging of the student posters have been formulated and are available for viewing at http://cedarweb.hao.ucar.edu/wkshp/mehposters00.html

(4) Students may elect to be (or not to be!) in the competition.

(5) Citations will be awarded to those students who best meet both the Poster Guidelines and Evaluation Criteria.

- no separate evening reception. The two evening poster sessions are serving a dual role. They each will include a buffet which will substitute for the evening reception.

This year's meeting is being planned by the following members of the CSSC:

General agenda: S. Basu, B. Emery, C. Fesen, T. Tsuda

Tutorials, science highlights: T. Kane, J. Kelly, C.-Y. She

Workshops: M. Hickey, M. Sulzer, J.-H. Yee

Posters: M. Hagan, R. Smith, J.-P. St. Maurice

Student Workshop: M. Angelats i Coll

If you have any input, please contact any of the above; phone numbers and email addresses are listed at the end of this newsletter.

CEDAR MEETING DEADLINES:

1) **May 24 - June 2:** Deadline for hotel reservations. Please also submit dorm reservations via the web by June 16.

2) **May 26:** FIRM deadline for Poster submissions. The preferred method is submission via the CEDAR workshop website. If that is impossible, send to Maura Hagan (hagan@ucar.edu). Include a BRIEF abstract, title, author list, indication of whether the first author is a student, and if student authors wish to participate in the poster competition. All late submissions will be rejected.

3) **By June 2 or 9:** all students should have their airline tickets in order to obtain discounted fares. Reminder: NCAR requires a photocopy of the official ticket receipt; the copy should be turned in at the workshop to expedite travel refunds.

4) **June 9:** deadline for registration for CEDAR Workshop to avoid late fees.

5) **June 9:** deadline for workshop presenters to send an ascii description of their workshop to Barbara Emery (emery@ucar.edu) for publication on the web and in the program.

CEDAR 2000 MEETING AGENDA

Please note that the following schedule is tentative; the latest version can be found at the CEDAR website http://cedarweb.hao.ucar.edu/wkshp/

Morning Sessions are in the NIST Auditorium in the Radio Building (Bldg #1).

Sunday June 25

NIST auditorium, Radio Bldg (Bldg 1)

Times:

1 to 5:30 PM

Student Workshop: Comparative Planetary Atmospheres (non-students welcome)

5:30 to 9 PM

Student Social at Eben G. Fine Park

Monday June 26 - Chair, C. Fesen

8:30 Welcome, Intro

8:55 Student workshop report - M. Angelats i Coll
Student Introductions

9:10 CEDAR Prize lecture

9:55 Break

10:20 CEDAR Program - S. Basu

10:40 Gerald Romick: from MSP to MSX - A. Christensen

11:00 M-I Coupling Initiative - R. Greenwald

11:15 NASA Program report - M. Mellott

11:30 NASA: Living with a Star - A. Poland

12:00 Lunch

1:30 Workshops

3:30 break

4:00 Workshops

6:00 Adjourn

Tuesday June 27 - Chair: M. Hickey

8:30 Tutorial: S. Bougher: Comparative Terrestrial Planet Thermospheres: Venus, Earth and Mars

9:30 Panel discussion on Planetary Atmospheres - moderated by M. Mendillo

10:05 break

10:30 Science highlight

10:50 CEDAR Postdoc report 1- Plasma irregularities in Peru: J. Chau

11:10 CEDAR/TIMED update - J.-H. Yee

11:25 CEDAR database - P. Fox, B. Emery

11:35 Lunch

1:00 Workshops

3:00 Break

4:00 Workshops

6:00 Poster Session I

Wednesday June 28 - Chair: T. Kane

8:30 Tutorial: F.-J. Lübken: The Thermal Structure of the Upper Mesosphere and its Relationship to Layered Structures

9:30 PMSE hemispheric asymmetries - M. Huaman

9:50 High latitude observations using the U. Illinois iron Boltzmann temperature lidar - X. Chu

10:10 break

10:35 CEDAR Postdoc report 2- Mesopheric accoustic gravity wave imaging and tomography at a sub-auroral site: S. Smith

10:55 Long term trends and observations of OH temperatures - R. Lowe

11:15 The Effects of Tropical Convection Experiment (ETCE) - K. Hamilton

11:35 Lunch

1:00 Workshops

3:00 Break

4:00 Workshops

6:00 Poster Session II

Thursday June 29 - Chair: M. Sulzer

8:30 Tutorial: J. Foster: Ionospheric Effects and Storm Studies: A tribute to Michael Buonsanto

9:30 Recent laboratory measurements of the O+-O charge transfer cross section - B. Lindsay

9:50 Science highlight

10:10 break

10:35 Using powerful HF radio waves to study tidal ion layers over Arecibo - P. Bernhardt

10:55 RAO status report - R. Behnke

11:15 NSWP report - R. Robinson

11:35 Lunch

1:00 Workshops

3:00 Break

4:00 Workshops

6:00 Adjourn

Friday June 29 - Chair: C.-Y. She

8:30 Tutorial: H. Singer: The Magnetosphere and Space Weather

9:30 Specification of ionospheric parameters: R. Schunk

9:50 Highlights of the Chapman Space Weather Conference: X. Li

10:10 break

10:35 Highlights of the International Symposium on Equatorial Aeronomy: D. Farley

10:55 Space Weather: Whither aeronomy? R. Meier

11:15 announce poster citations - M. Hagan

11:25 final words from NSF

11:35 Lunch

1:00 Workshops

3:00 Break

4:00 Workshops

6:00 Adjourn

CEDAR WORKSHOP SCHEDULE

NOTE: All workshops are two (2) hours unless specified otherwise.

	WORKSHOP	CONVENOR(S)
SUNDAY	Student Workshop: Comparative Planetary Atmospheres (4 hours)	Monica Angelats i Coll
SESSION 1 - 1:00 TO 3:00		
MONDAY	Wide-Latitude Substorm Campaign	John Foster
	CEDAR Storm Study	Robert Sitar
	Neutral Dynamics	Tim Kane
TUESDAY	Magnetosphere-Ionosphere Coupling	Ray Greenwald
	CEDAR Meteors	Qihou Zhou, John Mathews
	DB Workshop	
WEDNESDAY	CEDAR-TIMED MLT Measurements during Geomagnetic Storms	Joe Salah, Larisa Goncharenko
	Analyzing Waves in Resonance Lidar	Patricia Franke, Richard Collins
	DB Workshop	
THURSDAY	Arecibo Observatory: An improved facility for research	Don Farley, Mike Sulzer
	Wave Ducting in the MLT Region	Mike Hickey, Jim Hecht
	HLPS and GIFT (4 hours)	Jan Sojka, Cesar Valladares, Dave Anderson, Tim Fuller-Rowell
FRIDAY	Millstone Hill	John Holt
	Coupling of the MLTI at High Latitudes	Roger Smith, Mike Kelley
	Inter-comparison of Measurement Techniques	Scott Palo
SESSION 2 - 4:00 TO 6:00		
MONDAY	High-Latitude Convection	Mike Ruohoniemi, John Holt
	Aurora and Airglow in the Solar System	Marina Galand, Michael Mendillo
TUESDAY	LTCS	Roberta Johnson, Cassandra Fesen
	Polar Mesospheric Dynamics	Tom Duck
	DB Workshop	
WEDNESDAY	ISR/UAFs: Panel & Audience Discussion	Don Farley
	1. Meteoric metals (4-5 p.m.)	Tim Kane
	2. MAUI/MALT (5-6 p.m.)	
	DB Workshop	
THURSDAY	Topside Ionosphere	Sixto Gonzalez, Phil Erickson, Robert Kerr
	Transient Optical Emissions In The Upper Atmosphere	Matt Heavner, Victor Pasko, Mike Taylor
	DB Workshop	
FRIDAY	ISR Planning	Tony van Eyken

EXTRA-CURRICULAR ACTIVITY FOR CEDAR 2000

We will go to the University of Colorado Fiske Planetarium for a one hour show on Thursday evening, June 29, starting at 8:30 or 9:00 PM. The cost is $3/per person, collected at the door. We can accomodate anywhere between 20 and 210 people for one of the following four shows:

1) City of Stars - night sky around us, the constellations and the Milky Way galaxy as we see it and as it is seen from other viewpoints
2) Cosmic Collision - the formation of our solar system
3) Mars Quest - exploration of and missions past and future to Mars
4) Searching for Distant Worlds - the SETI project, using the Hubble Space Telescope to look further, searching for new planets

(NOTE: there will be a special Hubble Space Telescope slide show during the meeting break on Thursday given by Dennis Ebbets of Ball Aerospace and Technologies Corporation.)

If you are planning to join us, please vote on the time (8:30 or 9:30 PM) and on which show you would like to see and email your choices to Barbara Emery at emery@ucar.edu.

NEW FORMAT FOR CEDAR DATABASE WORKSHOPS

This year the Database (DB) workshop at the CEDAR meeting is going to use a format which is quite different from previous years. Following a suggestion by Peter Fox, the CSSC asked the data providers to host the demonstrations. The aim is to have many of the instrument facilities designate at least one person to be at the workshop for an hour or more to perform interactive demonstrations with interested users. The hope is to have many demonstrations of radar, optical, and other data types.

Data providers who wish to make their data widely accessible should contact Barbara Emery (emery@ucar.edu) for help in getting their data on-line before the workshop in any format at all (although CEDAR DB format is preferred for the CEDAR DB). Similarly, CEDAR DB personnel will be at the workshop for those with questions on how to put their data on-line. It will not be necessary to sign the "Rules of the Road" to participate as a user at this workshop.

See the CEDAR website for additional details as the format evolves.

GENERAL MEETING INFORMATION

Registration packets will be available in front of the NIST auditorium on Sunday afternoon, and in the mornings Monday through Friday. Students who receive any lodging or travel support will be asked to fill out and sign their travel voucher before receiving their registration packet and to provide a photocopy of their airplane ticket receipt to expedite the reimbursement process.

The morning sessions will be held in the main auditorium in Building 1. From Monday to Friday, the afternoon workshops will be held in Buildings 1, 2 and 33. Afternoon breaks will be one hour long (except Monday) to facilitate interactions between the participants. There will be two evening poster sessions in rooms GC-402 and GB-124 in the basement of the David Skaggs Research Laboratory (Bldg #33) from 6 to 9 PM. Food will be served at the cafeteria nearby. Judging guidelines have been formulated and are available at the CEDAR website.

Parking is free at NOAA/NIST in the dirt lot behind Building 1 and beside Building 2, and in the last two rows of the parking to the west of the David Skaggs Research Laboratory (Bldg #33). There will also be free parking permits available at the registration desk to park in other areas of the NIST campus after registering your car's license plates.

GROUND TRANSPORTATION (AIRPORT)

The SuperShuttle Boulder (former Boulder Airporter) [(303) 444-0808] provides direct transportation between Denver International Airport (DIA) and Boulder hotels for $18 one way. Check in at the SuperShuttle counter at the baggage claim level 5 in the main terminal across from the Hertz counter. Major credit cards are accepted. Request drop-off at the Kittredge Complex dorms or at Boulder hotels. No reservations are required if leaving from The Broker Inn; other departure locations require a reservation. Departures from DIA are every hour between 8:10 AM and 11:10 PM while departures from The Broker Inn are at 4:30 AM, 5:15 AM, and hourly between 6:00 AM and 9:00 PM. The trip takes between 60 and 80 minutes.

DAY CARE

Children's World at 5377 Manhattan Circle in Boulder, [(303)494-3694] will accept children on a drop-in basis (based on space availability). Many other daycare facilities are listed in the Boulder telephone directory under Child Care.

PARTICIPATING HOTELS AND GROUP RATES FOR JUNE 24-30, 2000

Hotel	Single	Double	Deadline	# of Rooms
Best Western Golden Buff Lodge 1725 28th Street Boulder, CO 80301 (800) 999-2833 or (303) 442-7450, group #269250		$79	June 2	12
The Broker Inn 555 30th Street Boulder, CO 80303 (800) 338-5407 or (303) 444-3330; FAX: (303) 444-6444 Full service or buffet breakfast included, Mon-Fri AM	$90	$90	May 24	40
Days Inn 5397 South Boulder Road Boulder, CO 80303 (303) 499-4422; FAX: (303) 494-0269	$79.90	$84.15	May 25	20
Ramada Inn, Boulder (formerly the Holiday Inn) 800 - 28th Street Boulder, CO 80303 (800) 542-0304 or (303) 443-3322; FAX: (303) 443-0397	$85	$85	May 24	30
Super 8 Motel 970 28th Street Boulder, CO 80303 (303) 443-7800; FAX: (303) 443-7800 (same as phone)		$72	May 24	10

UNIVERSITY OF COLORADO

(Dormitory Campus Package which includes room and breakfast)

Kittredge Complex

Single	Double	No. of Rooms
$264.50/person + 9.7% tax	$154.50/person + 9.7% tax or 2x $154.50+9.7% tax double occupancy	42(S), 60(D)

How frequently do you hear the comment that a CEDAR Meeting workshop resembled an AGU session? Probably more often than you would like. Sometimes the "conference format" is appropriate for a workshop, but not for most. While no single format will work for all workshops, some general guidelines can be formulated. Below are some suggestions accumulated from workshop conveners and attendees.

1. Set a goal.
This is THE most important aspect. What do you want the workshop to accomplish? What is the purpose? Is a workshop format consistent with the goals?The lack of a clear and coherent theme is a sufficient condition to convert a workshop into a conference session.

2. Organize the workshop.
This would include the following:
- Being able to state clearly and succinctly the purpose of the workshop and what you hope to accomplish.
- Establishing an agenda so that it's clear to all attendees what's going to happen.
- Identifying speakers whose foremost task is to contribute to the workshop goals, not to stay within specific time limits.

Remember that workshop focus is the key element; the convener's job is to keep that focus. With that in mind ...

3. Invite only a few key speakers.
Their task is to introduce the themes of the workshop. Give them sufficient time to present material in a clear fashion but do not allow them to monopolize the session or bore the participants. Consider imposing a limit on the number of viewgraphs that can be shown to force them to focus their talks.

4. Allow time for discussion and unscheduled presentations.
Try to reserve time for spontaneous presentations and extended discussions (the lack of which is one of the biggest complaints about the CEDAR meeting). Do not open the workshop to uninvited presenters in advance and make sure any unsolicited presentations are relevant to the workshop's theme. Again, consider imposing a limit on the number of viewgraphs that can be shown.

5. Maintain control of the workshop.
Cut off discussion unrelated to the theme and remind participants, if necessary, to keep to that theme. Try to adhere to a schedule so that there is tlo6on unry3 t sur

MEETINGS CALENDAR

2000

May 16-20	Fifth International Conference on Substorms, St. Petersberg, Russia
May 17-23	International Symposium on Equatorial Aeronomy, Antalya, Turkey
May 23-26	PSMOS Workshop 2000, Toronto, Canada
May 30-June 3	AGU spring meeting, Washington, DC
June 14-17	SHINE 2000 summer workshop, Lake Tahoe, Nevada
June 19-23	GEM meeting, Snowmass, CO
June 19-29	Advanced Study Institute on Space Storms and Space Weather Hazards, Greece
June 25-30	CEDAR meeting, Boulder, CO
June 27-30	Western Pacific Geophysics meeting, Tokyo
July 16-23	COSPAR 33rd assembly, Warsaw, Poland
July 24-28	COSPAR Colloquium on the Outer heliosphere, Postdam, Germany
July 24-28	IGARSS, Honolulu
July 25-28	Lower Atmosphere effects on the ionosphere and upper atmosphere, Prague
Nov 6-10	SPARC Second General Assembly, Argentina
Oct 2-6	First S-RAMP conference, Sapporo, Japan
Dec 15-19	AGU fall meeting, San Francisco, CA

2001

May 20-June 2	AGU spring meeting, Boston, MA
June 17-22	CEDAR/SCOSTEP meeting, Longmont, CO
August 18-30	IAGA 9th Scientific Assembly and 30th IASPEI General Assembly, Hanoi
Dec 10-14	AGU fall meeting, San Francisco, CA

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