

CEDAR 1989 Workshops – June 20, 1989

Workshops can be in several stages. The stages are: I. Project Initiation, II. Preliminary Results, and III. Scientific Yield. The workshops are listed in order with their chairpersons, characteristics, requirements, and a short description. A schedule follows. *Note that the schedule as printed in the May 1989 issue of the CEDAR Post was incorrect.*

1. Solar Variability/QBO/Weather, B. Tinsley (UTD) and S. Avery (U of CO), (II), 2 days (June 20-21). Mechanisms for tropospheric effects of solar variability and the quasi-biennial oscillation.
2. Equatorial Dynamics, M. Mendillo (BU), (I/II), 3.5 hours. F region equatorial dynamics using San Marco, airglow, and the ALTAIR radar near Kwajalein. First discuss results of August 1988 Kwajalein Initiative, and then discuss 1990 campaign which will include rockets.
3. Twilight Studies, G. Sivjee (Embry-Riddle), (I), 3.5 hours. Uses twilight airglow to deduce atmospheric composition.
4. High Latitude Radar: New Location, R. Behnke (NSF), (I), 2 hours. A new incoherent scatter radar is considered for the polar cap area, possibly at Resolute Bay, Canada.
5. LTCS, J. Forbes (BU), (I/II/III), 7 hours. Lower Thermosphere Coupling Study based on the periods of September 1987 and December 1988.
6. HLPS, Sunanda Basu (Emmanual College), (II/III), 6 hours, want Monday and Tuesday. High-Latitude Plasma Studies. Interest is on the cascading from large to small scales in plasma structures.
7. Lidar, C. Gardner (U of IL) and J. Meriwether (AFGL), (I), 2 hours. Review the current status of lidar facilities and discuss possible multi-lidar campaign activities.
8. AIDA ACT'89, C. Hines (Arecibo), (II), 3.5 hours. Show and tell for Mar-May '89 campaign (2.5 hr), and future plans (1 hr).
9. AIDA ACT'91, C. Hines (Arecibo), (I), 1 hour. Plans for 1991, possibly look into thin strata in the D and lower E regions.
10. GISMOS, R. Johnson (SRI) and O. de la Beaujardiere (SRI), (II/III), 7 hours, no conflict with LTCS or New IS Location. The purpose of this workshop is to study the ionospheric and thermospheric effects of very large IMF values, such as those observed during the January 12-17, 1988 storm(s) as well as the storms of July 22-23, 1983 and March 13-15, 1989.
11. GEMINI, F. Harris (NRC Canada), (I), 2 hours. General Excitation Mechanisms In N₂ Nightglow will do limb scanning measurements of mesopause between 260 and 800 nm using sounding rockets from White Sands in 1992. Want minimum gravity wave occurrence and no aurora. Introduction to program and invitation to participate in ground campaign.
12. CHARM, R. Kerr (BU) and F. Roesler (U of WI), (II), 2.5 hours, no conflict with LTCS, New IS Location, AIDA, or Lidar. Collaborative optical H-Alpha, incoherent scatter Radar and Modelling of the coupled exosphere/ionosphere.
13. IS Potpourri, R. Behnke (NSF), (I), 2 hours, no conflict with LTCS, New IS Location, GISMOS, HLPS, AIDA'89, or CHARM. Question about what constitutes a storm alert (like for March 1989), and what the radar community can contribute to GEM.

14. ARIA, A. Christensen (Aerospace), (I), 1 hour. Project to investigate local atmospheric response to auroral inputs using sounding rockets and ground-based observations.
15. Auroral Arc Emission Studies, G. Swenson (Lockheed) and J. Hecht (Aerospace), (II), 2-3 hours. Compositions measurements derived in aurora from optical and incoherent scatter techniques. Will discuss Feb '88 and Feb '89 campaigns.
16. MAPSTAR, E. Dewan (AFGL), (II), 6 hours, closed sessions Monday and Tuesday afternoons. Middle Atmosphere Periodic Structure Associated Radiances. Look at wave-like structures in OH and OI airglow from the campaign in Colorado from May-Jul 1988. Will determine papers that need to be written etc. See Ed Dewan for details.
17. Detector Advances for Imaging Spectroscopy and Interferometers, G. McCormac and T. Killeen (U of MI), (I), 3.5 hours. Will look at the advances in technology in making detectors for optical instruments.
18. SUNDIAL, E. Szuszczewicz (SAIC), (I), 3.5 hours, ^{open}~~closed~~ session Monday afternoon in the Chapman Room. Coordinated SUNDIAL, ground-based and rocket borne campaign. See Ed Szuszczewicz for details.

19. UARS

CEDAR June 22-27, 1989 Workshops - June 20, 1989

The Saturday sessions are at NIST and the others are at NCAR. The NCAR rooms are: M-main seminar room (120), D-Damon Room (50), and F-Fleischmann Bldg (35). Two smaller rooms, C-Chapman Room (28) and CM-Capt. Mary Room (16), will probably be available as well. If you would like to meet in them, contact B. Emery at (303) 497-1596 to make reservations or to find out if they are free. The NIST rooms are: A-auditorium (560), 7-1107 (50), 5-1105 (30), 3-1103 (30). Room 1105 can be combined with 1103 to create a larger meeting room, or will be available for people in small groups to use.

Thurs NCAR	Fri NCAR	Sat NIST	Mon NCAR	Tues NCAR
		AM 2 hrs		
		GEMINI-3 New IS Location-A ARIA-7		
PM 3.5 hr	PM 3.5 hr	PM 3.5 hr	PM 3.5 hr	PM 2.5 hr
LTCS-D Twilight-F Det Adv-M	LTCS-D Aur Arc Em-F IS Pot (3:30-5:30)-M	GISMOS-7 Equ Dyn-3 AIDA'89-A	GISMOS-F HLPS-D AIDA'91 (2-3)-M Lidar (3-5)-M	CHARM-F HLPS-M UARS-D

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BOSTON UNIVERSITY
SESQUICENTENNIAL

16 May 1989

TO: Participants in CEDAR Equatorial Dynamics Workshop #2
FROM: Michael Mendillo *Michael Mendillo*
SUBJECT: Plans for CEDAR 1989

The CEDAR Workshop on Equatorial Dynamics is scheduled for Saturday, June 24, 1989. At last year's meeting, the Project Initiation Workshop defined a four-year program of observations and modelling linked to currently outstanding problems of coupling and dynamics in equatorial aeronomy. The tentative plan was as follows:

- (1) 1988 - The PEAK/JOHANNA Campaign of August 1988
- (2) 1989 - (a) Preliminary Results Workshop on PEAK/JOHANNA Campaign
(b) Plans for 1990 Campaign
- (3) 1990 - (a) Final Results Workshop for PEAK/JOHANNA Campaign
(b) The CRRES experiments of July-August 1990 (Kwajalein)
(c) Plans for 1991 Campaign(s)
- (4) 1991 - (a) Preliminary Results Workshop on CRRES Campaign
(b) 1991 Campaign(s)

The full set of minutes of the 1988 Workshop are attached.

CEDAR Participants
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The August 1988 campaign produced a rich data set from several longitude regions, and plans for the 1990 CRRES period are well underway. With only a single 3 1/2 hour workshop period allocated to Equatorial Dynamics, I would like to focus our efforts on the few basic questions that led to the 1988 campaign:

- (1) When and where is the F-region susceptible to the formation of equatorial instabilities?
- (2) What are the launch criteria for the 1990 CRRES experiments (chemical release to create ionospheric holes as seeds for ESF)?

The observations made in 1988 can be used to address these issues in several ways:

- (1) Longitude effects
14 August: 7:00 - 12:00 U.T.
 - Airglow depletions in Hawaiian sector were observed for several hours while little or no activity occurred in the Kwajalein sector.
 - No activity in Brazilian sector
- (2) Instability onset but without full development
12 August: 08:30 - 9:30 U.T.
 - ESF signatures in all diagnostic systems on Kwajalein, with little or no activity observed at Wake
 - Contrast with 7 August
- (3) Fully developed ESF signatures
7 August: 11:00 - 14:00 U.T.
 - ESF signatures fully developed from Kwajalein to Wake
 - Contrast with 12 August

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(4) Instability onset - launch criteria
14 and 15 August: 07:00 - 08:00 U.T.

- Contrast no-ESF onset vs. dramatic ESF onset in Kwajalein observations
- Modelling studies of onset conditions

---- I suggest, therefore, that we discuss these four U.T. periods on August 7, 12, 14 and 15.

For possible discussion, we could include two other events of interest:

(5) 9 August: 09:30 - 11:00 U.T.

-- Coordinated Narrow-Field and All-Sky field of view imaging on Wake

(6) 10 August: 08:30 - 12:30 U.T.

-- Most intense scintillations of entire period

After considering the above, please let me know to what extent your data sets, simulation results, etc., can contribute to the success of our workshop. I will try to draw up a final agenda for the meeting based upon responses received in the next few weeks.

Thank you for your continued interest and cooperation.

Best wishes.

MINUTES OF 1988 WORKSHOP

EQUATORIAL DYNAMICS WORKSHOP

PROJECT INITIATION

The initial meeting of this CEDAR project took place from 3-5:30 pm on June 7, 1988. B.A. Tinsley was convener and M.J. Mendillo co-convener. Attendance was about 60 people.

SCIENCE OBJECTIVES

The purpose of the formation of this CEDAR Project is to facilitate cooperation between a number of groups that are planning to make measurements at equatorial latitudes by a variety of techniques. In this way we expect to greatly improve the scientific return by clustering instruments at specific sites for simultaneous measurements, and at the same time coordinating observations at several sites to look for longitude variations in transient phenomena. Specific goals consistent with CEDAR objectives are:-

Study of F-Layer plasma dynamics, particularly as manifest in transequatorial bubbles and at the time of chemical releases.

Study of magnetic storm effects, particularly as manifest in modification of transequatorial bubble development, the production of ionization and optical emission and heating and winds during particle precipitation events.

Study of equatorial mesospheric dynamics, particularly as manifest in possible gravity wave effects on bubble development. The measurement of mesospheric tides and mean winds is also relevant.

Observations are planned at least three longitude regions; Kwajalein/Wake I; Hawaii/Christmas I/Palmerston I.; Jicamarca/Arequipa/N. Peru/Brasil.

EXPERIMENTAL PLANS

There was interest expressed in three major campaign periods spread over four years:

(1) 1988 (a) PEAK and JOHANNA, 3-15 August, 1988, on Kwajalein Atoll and Wake I., with SRI (Tsunoda) operation of Altair radar, Boston U (Mendillo) all-sky imaging and satellite radio beacon observations; AFGL (Weber and Basu) Polar Bear observations, narrow field imaging and GPS and satellite radio beacon observations; and NASA San Marco observations.

(b) UTD (Hanson and Rohrbaugh) and U. Arizona (Broadfoot) operate on Haleakala (all-sky and narrow field imagers) in coordinated observations with San-Marco.

(c) IGP (Woodman) operates Jicamarca (IS radar) and U.Pitt.(Biondi) and AFGL (Meriwether) operate Arequipa (scanning imager and Fabry Perot) and INPE (Sahai) operate SJDC (Brasil) in coordinated observations with San Marco.

Simultaneous observations at all three longitudes during PEAK/JOHANNA periods.

(2) 1990 (a) CRESS rocket measurements (Boston U, AFGL) with radar, imaging, satellite observations, and Cornell (Kelly, Swartz) 50 MHz interferometer, on Kwajalein, Wake, and

Guadalcanal.

(b) UTD and U. Arizona operate on Haleakala with imagers; Alaska (Smith), Washington (Hernandez), Michigan (McCormac), and Aerospace (Hecht) operate Fabry Perots and imagers and spectrographs on Haleakala and Christmas Island for F-region and mesospheric winds; Alaska (Fritts) operates MS radar on Maui; NOAA (Balsley) operates MST radar on Christmas I with MST radar and NOAA adaption for F-region backscatter and Colorado (Avery) adaption for meteor winds. Boston C (Eather) operates imagers on Palmerston I to complete mid Pacific field line chain.

(c) IGP and U. Pitt. and AFGL and INPE observations of South American network. Possibility of an imager in Northern Peru.

(3) 1991 (a) CRRES related activities - TBD

(b) Components at other longitudes. Possibilities for adding Indian sector. Also African sector? Asian sector? An international activity during the Solar Max year might be worthwhile. Coordinate through WITS?

Group Leaders; The meeting appointed group leaders for activities in the three longitudes; - M. Mendillo for Western Pacific region,
B. Fejer for South American region,
B. Tinsley for Mid Pacific region.

THEORY AND MODELLING

For coordinating the AFGL and NRL modelling work, David Anderson was appointed. The SUNDIAL network and working group will provide the global context for interpreting the magnetic disturbance studies.

OTHER ASPECTS

Participants: There will be additional participants to those listed above, at a total of at least 14 institutions.

Students : There should be plenty of student involvement at the universities mentioned above.

A data plan will be developed consistent with CEDAR requirements.

Our first "Preliminary Results Workshop" could be held at the CEDAR '89 Meeting to review results from 1988 campaigns and plan 1990 and 1991 campaigns.

TWILIGHT WORKSHOP #3

The twilight workshop will review the work that has been done in the last 12 months. There were comparative observations made for a few nights last fall between an imaging spectrograph and a scanning spectrometer on the O^+ emission at 7320\AA among others. There is also an ongoing development of algorithms to reduce this data to oxygen densities. Reports on the progress will be made.

The goal is to arrive at a means of determining atmospheric densities of oxygen and molecular nitrogen in an inexpensive, timely fashion. When this is sorted out then participation in the various campaigns will be warranted.

LTCS/CEDAR-89 WORKSHOP #5

The first afternoon of the LTCS workshop will begin with a brief summary of the results and conclusions of LTCS/CEDAR-88, and new results and progress reports pertaining to the LTCS-1 Campaign (21-25 Sept 87). This will be followed by presentations and discussions of MLT and IS radar data obtained during LTCS-2 (5-10 Dec 88), and a science discussion on LTCS-2 (i.e., what can be learned from a comprehensive data and modeling analysis of this period?). Optical data presentations pertaining to LTCS-2 will be postponed to the second afternoon, in anticipation of those experimenters having conflicts with the workshop on Advanced Detector Development. Results of recent modeling efforts will be presented, probably to be continued in the second afternoon.

The second afternoon of LTCS/CEDAR-89 will begin with optical data presentations from LTCS-2, and a brief polling of radar and optical data availability from LTCS-3 (30 May - 04 Jun 89). The remaining time will be devoted to completing presentations and discussion of model simulations, and a brainstorm session on mesosphere-thermosphere coupling mechanisms (not to be missed !). A brief discussion on future experimental campaigns and symposia related to mesosphere-thermosphere coupling will conclude the workshop.

CEDAR Workshop on High Latitude Plasma Structure (HLPS) #6

DATES: June 26, 1989 2:00 - 5:30 p.m.

June 27, 1989 12:30 - 3:00 p.m.

PLACE: NCAR on both days

HLPS is an ambitious program for understanding the interplanetary magnetic field (IMF) ordering of sources and evolution of plasma structures from hundreds of km to m-scales in the high-latitude convection field. The CEDAR Workshop will be a follow-on to the two highly successful AGU Sessions held at Baltimore on May 12, 1989 on the same topic. HLPS deals with all facets of plasma structuring in the coupled magnetosphere-ionosphere-thermosphere (M-I-T) system: multitechnique observations spanning several decades of scale-length coverage, theoretical advances and computer modeling and simulations.

The observational results were primarily obtained during two high latitude campaigns conducted in February and December 1988, the first one when the sunspot number was 40 and the second when the sunspot number was 180 with consequent dramatic changes in the M-I-T system. Diagnostics included incoherent scatter radars, coherent radars in the Arctic and Antarctic, all-sky imaging photometers, Fabry-Perot interferometers, digisondes, total electron content and scintillation measurements, as well as a host of in-situ measurements from DMSP F-8, F-9, Hilat and Polar Bear satellites. The idea for these quasi-global scale measurements is to follow the trajectories of long-lived F-region plasma structures in the polar cap, their cascading to smaller scales and their possible transformation into auroral features. Results from both campaigns will be presented at the Workshop. A list of interesting events and science issues to be discussed at the Workshop are attached. Sunanda Basu, the Convenor of this Workshop mailed these attachments on May 15, 1989 to the HLPS participants whose number now exceeds 50. On June 26 the discussions will be primarily on the joint Thule/Sondrestrom measurements of polar cap patches and sun-aligned arcs while the Sondrestrom measurements of auroral arc dynamics will be discussed on June 27.

All interested scientists are welcome.

Events of Detailed Study at the CEDAR HLPS Workshop
in Boulder, June 26 - 27, 1989

Polar Cap Patch Events:

1. Dec. 5 - 6, 1988 2300 - 0200 UT
2. Dec. 12, 1988 0000 - 0200 UT*
3. Feb. 18, 1988 2100 - 2300 (for comparison with
Dec. 1988 events)

Sun-Aligned Arc Events:

1. Dec. 12, 1988 1000 - 1200 UT
2. Dec. 8, 1988 1200 - 1300 UT
3. Feb. 11, 1988 0500 - 0600 UT (for comparison with
Dec. 1988 events)

Auroral Arc Dynamics:

1. Dec. 12 - 13, 1988 2030 - 0200 UT

*Careful viewing of Qanag and Thule ASIP images simultaneously, shows that this period is characterized by F-layer sun-aligned arcs, and not patches, as indicated on this list, originally mailed out to HLPS participants on May 15, 1989.

Partial List of Science Issues

1. Polar-cap patches/auroral blobs:

- i) Formation of patches during very quiet magnetic periods
- ii) Does the IMF control the 'patchiness'
- iii) Plasma structuring in neutral rest frame from tens of km to m scales
- iv) Spectral evolution between Thule and Sondrestrom
- v) Exit mechanism of patches
- vi) Do patches get converted to auroral blobs
- vii) The role of E-region images and conductance in blob and patch structuring

2. Sun-aligned arcs:

- i) Neutral wind and plasma drift structure associated with arcs
- ii) Are the instabilities being driven by velocity shears
- iii) Role of particle precipitation vis-a-vis transport in determining arc-related total electron content
- iv) Solar cycle variation of arc parameters
- v) Are there structuring differences associated with E-region/F-region sun-aligned arcs
- vi) With imagers/radars/DMS F8 and 9 is instantaneous convection pattern for northward B_z possible

3. Future campaigns



ANNOUNCEMENT OF A GISMOS WORKSHOP #10 AT THE UPCOMING SUMMER CEDAR MEETING

"IONOSPHERIC AND THERMOSPHERIC EFFECTS OF THE STORMS OF JANUARY 1988 DURING THE 12-17 JANUARY GISMOS CAMPAIGN"

Dear Colleague:

This letter is to announce a GISMOS workshop at the upcoming CEDAR meeting, 22-27 June 1989 in Boulder. The workshop will focus on the ionospheric and thermospheric effects of the intense geomagnetic disturbances which occurred during the 12-17 January 1988 GISMOS campaign. This campaign coincided with a period of activity on the 12th as well as a 34-hour interval of slowly varying IMF when the B_y and B_z component magnitudes reached 20 to 30 nT. The goal of this workshop is to present and discuss the available data. Hopefully this will lead to new insights on some of the unique effects observed during this campaign and to collaborative efforts to analyze and model this exceptional interval. Comparison of the response to geomagnetic disturbances observed during other GISMOS campaigns or during the March 1989 storm will also be presented, as they relate to the January 1988 observations.

Observations from multiple optical, magnetic and radar facilities will be presented. We plan to begin with a discussion of the high-latitude ionospheric convection and precipitation to set the context for the following presentations. We will then focus the effort toward two separate topics: thermospheric effects and modeling; and high-latitude ionospheric convection and precipitation.

The workshop is tentatively scheduled for the afternoons of the 24th (Saturday) and the 26th (Monday). All interested scientists are welcome. If you have data obtained during this interval, we urge you to present it at this workshop. Please contact either of the co-conveners, Roberta Johnson (313)-764-7226, or Odile de la Beaujardière (415)-859-2093 to schedule your presentation, or for further information. An answer by June 1 is necessary in order to organize the workshop in more detail.

SRI International

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Preliminary Agenda # 10
GISMOS Workshop

SATURDAY - June 24, 2:00 - 5:30 PM

1. Overview

IMF

Geophysical conditions

Ionospheric plasma drift, density, temperatures

Thermospheric winds, temperature

(R. Johnson)

2. Controversial questions in magnetospheric electrodynamics

(L. Lyons - Invited talk)

3. Effects of larger geomagnetic storms on the coupled ionosphere-thermosphere

(R. Roble - Invited talk)

4. Scientific issues to be addressed with this data set

From brief "show and tell" and group discussion, the main topics of interest will be identified, and the important intervals for detailed study will be determined. The "show and tell" presentations--5 minutes each + discussion--will include the following:

Sondrestrom convection	de la Beaujardière/Johnson
Millstone convection	Foster
Eiscat convection	de la Beaujardière
Goose Bay/PACE	de la Beaujardière
Jicamarca drifts	Fejer
Arecibo drifts	Burnside
Injection events	Lyons
DMSP	Foster
DE images	Killeen
All-Sky camera (Sondrestrom)	Mende
Magnetometers	de la Beaujardière
Thule TEC	Bishop
Riometer, South Pole	Rosenberg
Sondrestrom winds	Johnson
Svolbard FPI	Smith
Sondrestrom FPI/Thule FPI	Thayer
Millstone winds/temperatures/TEC	Hagan
Arecibo winds, FPI	Burnside

MONDAY - June 26, 2:00 - 5:30 PM

1. **Review list of scientific issues and interesting time intervals**

2. **Subsections:**

Possible groups include:

A. Convection (high latitude)

B. Substorm, patches, precipitation

**C. Neutral winds and temperatures (all latitudes),
perturbation electric fields (low latitudes)**

More detailed data presentation and discussion will take place during the subgroup meetings. We may have section A meet first, then B and C simultaneously, if room permits.

GEMINI

GENERAL EXCITATION MECHANISMS IN NIGHTGLOW

GEMINI is a joint Canada-US rocket program headed by Dr. Frank Harris of NRCC. The rocket will be launched from White Sands in late 1992. GEMINI will measure an array of lower thermosphere airglow emissions in situ with the rocket as well as resonance lamp derived profiles of [O] and [H]. In addition the northern limb (lower thermosphere) will be imaged between 260 and 800 nm. The intent is to study the roles of O, O₂, O₃, OH, NO and Na in the nightglow chemistry of the region. Launch criteria include minimal gravity wave occurrence and no aurora. In conjunction with the rocket experiment, a ground-based campaign is planned, with stations along the 106.4° W meridian.

The workshop will provide an introduction to the GEMINI program, and will describe the rocket instrumentation and ground campaign. **CEDAR scientists are invited to participate in the ground campaign.** The workshop will provide a forum for those interested in participating. Assistance in establishing launch criteria, statistics on gravity waves, measurements of atmospheric temperatures (O₂ and OH) and information on atmospheric sodium would be most welcome.

Location: NIST (formerly NBS), Boulder, Colorado

Date: Saturday, June 24 (AM)

Chairman: Dr. Richard Link
Space Sciences Laboratory
University of California
Berkeley, CA 94720
Phone: (415) 643-8020
FAX: (415) 643-7629
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Co-chairmen: Dr. Frank Harris
National Research Council
of Canada
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Dr. Supriya Chakrabarti
Space Sciences Laboratory
University of California
Berkeley, CA 94720

For further information please contact Dr. Link at the above address.

June 1, 1989

Dear Colleague,

Attached is a tentative adgenda for the 1989 CEDAR 'Auroral Arcs' workshop #15 to be convened on Friday afternoon, June 23, in Boulder. If you have any suggested revisions to the agenda, or you want to reserve time to speak, please let me know in advance (415-424-3297, or SPAN= LOCKHD::SWENSON). Also, please check the distribution (attached) and advise me of any other potential interested persons who might like to receive the agenda.

We look forward to seeing you at CEDAR, and at the meeting.

Sincerely,

Gary Swenson, Lockheed

James Hecht, Aerospace

PS. Note that those of you who have an electronic mailbox should receive this first.

AGENDA

Modeling Discussion and Status (30 minutes)

S. Solomon-AE 3371 vs 4278 (10-15 min)

Status of Model Discussion-Opportunity for Fred R. or Doug S.
to say something
if they desire. Also, discussion of other
results such as Dick G. measurements.

Studies and Interesting Observation Phenomena

John Kelly-- Disappearing F over arcs? (20 minutes)

Jim Hecht-- Optical Calibration activities (10 minutes)

D. Strickland -- Radar Derived E vs I (20 minutes)

Past Campaign Status and Analysis plans (30 minutes)

(Christensen, Gattinger, Hecht, Kelly, Niciejewski, Sivjee, Swenson,
and other interested persons)

87 88 89 campaigns

events for focus

lead investigator - plan

Future plans

Campaign 90

Dates? With H campaign?

Campaign 91

New Initiatives?

CEDAR Workshop

on

Detector Advances for Imaging, Spectroscopy, and #17 Interferometry

Thursday, 22nd June 1989

at

National Center for Atmospheric Research

Chairman;

F. G. McCormac
University of Michigan
Space Physics Research Laboratory
Ann Arbor, MI 48109

Amended Agenda:

2.00 pm	Jeff Baumgardner:	B.U.	The CEDAR imaging system and the Boston University imaging spectrograph
2.20 pm	Steve Mende:	Lockheed	Detection Systems for Auroral Imagers
2.40 pm.	Jim Hecht:	Aerospace	Bare CCD detection of OH and O ₂ nightglow with an all-sky monochromatic imager.
3.00 - 3.15	Break		
3.15 pm.	Rudy Wiens:	U. York	Wind and Temperature Imaging with Bare CCDs
3.35 pm	Tim Killeen:	U. Michigan	Bare CCD systems for imaging and interferometry.
3.55 pm	Roger Smith:	U. Alaska	Detectors for use in current remote automated instruments
4.15 pm	Alan Delemere:	Ball Aerospace	Recent Advances in CCD technology
4.45 pm	Bill McCumin:	Photometrics	Current Scientific Grade CCD's
5.15 pm	Discussion		