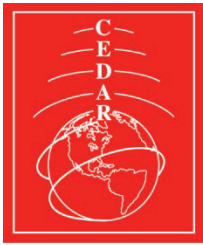


The CEDAR Program

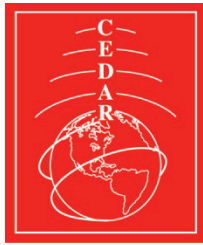
CEDAR is a highly successful research program that started in 1986 as a grass-roots community initiative for instrumentation that would enable state-of-the-art investigations of the Earth's upper atmosphere. Broadened to encompass multiple diagnostic techniques, theory, modeling, and coordinated observational campaigns, CEDAR is today the dominant national and international research program in terrestrial aeronomy. Scientifically, CEDAR is devoted to the characterization and understanding of the atmosphere above ~60 km, with emphasis on the energetic and dynamic processes that determine the basic composition and structure of the atmosphere. Particular attention is given to how these processes are coupled and to the mechanisms that couple different atmospheric regions.

CEDAR is a community based initiative that provides the community an opportunity to self-organize and exchange ideas. It also provides strategic guidance to NSF. With its emphasis on ideas, inclusivity, and education, CEDAR has become the intellectual engine of aeronomy.



CEDAR in the NSF Hierarchy

- NSF Office of the Director (Dr. Bement)
 - National Science Board (24 Member Panel)
 - ...Directorate for Geosciences (Dr. Killeen)
 - ...Division of Atmospheric Sciences (Dr. Moyers)
 - ...Upper Atmosphere Research Section (Dr. Behnke)
 - ...Aeronomy (Dr. Fesen)
 - ...Upper Atmosphere Facilities (Dr. Robinson / Dr. Morris)
 - ...CEDAR (Chair: Dr. Thayer)



2008-2009 CEDAR Science Steering Committee (CSSC) Members

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Jonathan Fentzke

Student Representative

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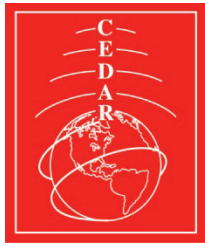
john.fentzke@colorado.edu

Marco Milla

Student Representative

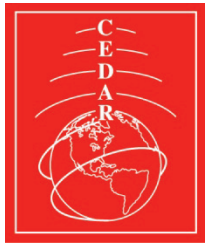
Univ. Illinois Urbana-Champaign

mmilla@uiuc.edu

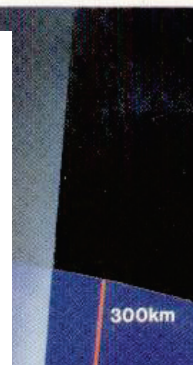
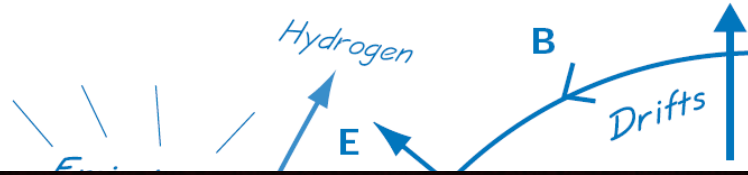


CEDAR: 24 Years Young

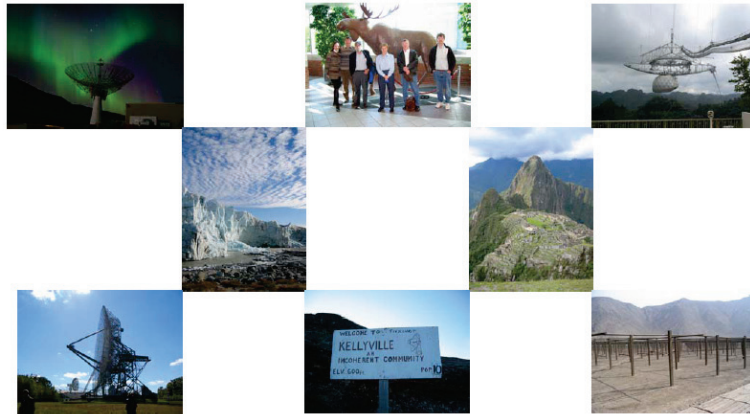
CEDAR program has maintained its prominence and longevity by planning, implementing, reviewing, self-assessing, and phasing with a grass-roots community spirit.



CEDAR
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Upper Atmosphere Facilities Review Report



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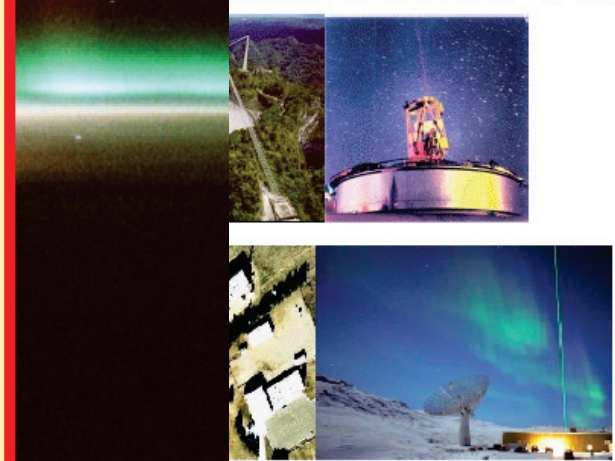
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OND PHASE III; REQUIREMENTS AND GOALS

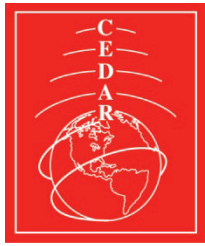


Susan K. Avery, University of Colorado, Chair
C. Robert Clauer, University of Michigan, Co-Chair: SuperDARN
Maura E. Hagan, National Center for Atmospheric Research, Co-Chair: Millstone Hill
John D. Mathews, The Pennsylvania State University, Co-Chair: Arecibo Observatory
John D. Sahr, University of Washington, Co-Chair: Jicamarca Radio Observatory
Michael J. Taylor, Utah State University, Co-Chair: Sondrestrom Radar Facility

June, 2004

DAR lidar community
Atmospheric Sciences
Foundation

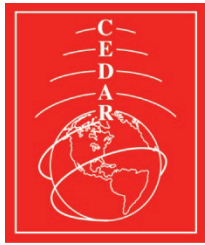
MARCH 2004



CEDAR: A Program of Phases

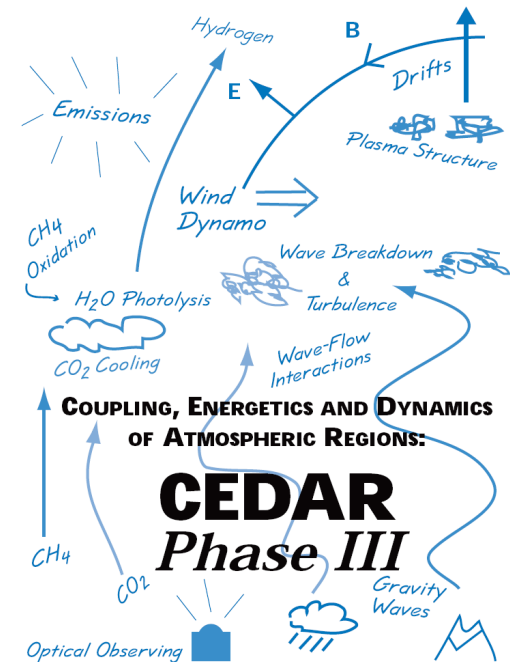
A three-phased approach was developed in the original 1986 CEDAR report

- Phase I – Instrument development, active planning and coordination of resources and science
- Phase II – Collaborative research projects, multi-site field campaigns, annual workshops, active participation by undergraduates and graduate students
- Phase III – Four focused science initiatives enabling a panoply of scientific problems to be attacked

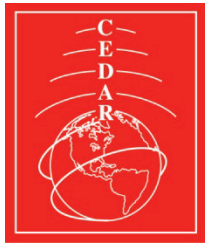


CEDAR Phase III- Published 1997

- Coupling With Lower Altitudes
- Solar-Terrestrial Interactions
- Polar Aeronomy
- Long-Term Variations

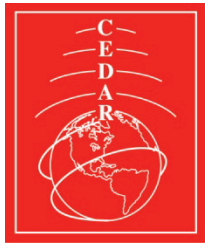


A strategic plan for the next decade of CEDAR is in the works!!



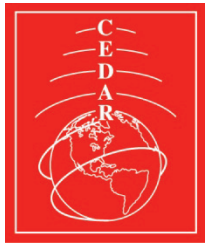
The research landscape is changing significantly

- **New data sets** have provided a new vantage point for aeronomic research, enabling new types of research and raising new questions –
Transformational Research
- **Whole atmosphere modeling** and data assimilation techniques are generating broad reaching results and challenging the observational community to “keep up”
- **More demand and expectations** are being imposed on high fidelity data collected by ground-based instrumentation (e.g., year-long runs of ISRs, day and night lidar operations)
- **More extensive satellite monitoring** of the ionosphere, thermosphere and mesosphere (such as TIMED and AIM) and of external energy sources (e.g. THEMIS, ACE, WIND) are enabling broader questions to be addressed
- **Movement within other communities**, such as earth science, are addressing their studies from a systems within systems viewpoint
- **New breed of researchers** – Data hogs, technology savvy, “bigger” issues to tackle – demand for relevance, new disciplines in system science and engineering, intentional multidisciplinary training



Students at CEDAR

- Develop a sense of community
- Develop transferrable skills for the changing marketplace
- Have total access to researchers in their field
- Have the opportunity to present their research at various stages of their graduate career
- Are essential for the future direction of CEDAR



Student Workshop Theme: Aeronomy Instrumentation

Phrases to avoid when collaborating with experimentalists

- Your data does not compare well with my model data, what is wrong with your instrument?
- Can I have all your data in ascii format (Oh, you want to be acknowledged?)
- I would like your data to provide contextual information for my analysis
- Are those error bars or plot grid lines?