



OVERVIEW

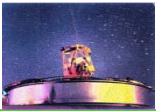
Consortium of Resonance and Rayleigh Lidars



Develop a lidar consortium for the middle and upper atmosphere scientific community.

Motivation:

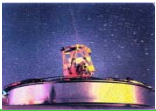
- Lidars have reached a level of robust and reliable operation whose data and scientific contributions have made them an essential community asset
- Na W/T lidars have been the driving instrument for advancements in mesospheric dynamics and thermodynamics
- Detailed measurements afforded by lidars are essential to study the atmospheric system as a whole



Lidar Consortium History

History

- **CEDAR 2003 Meeting** – Call to action by NSF to assess lidar contribution to community
- **CEDAR Lidar Self-Assessment Report, March 2004** – Presented recommendations, one of which being the development of a lidar technology center
- **CEDAR Lidar Retreat, Boulder, October 2004** – Evaluated report recommendations and discussed future developments, one of which was the concept of a lidar consortium
- **CEDAR Science Steering Committee, November 2004** - Report on findings from lidar retreat and introduced consortium concept to CSSC
- **Consortium Proposal, July 2005**



Lidar Consortium Goals

GOALS

- **Stimulate Campaign Science** - Improve, standardize, and facilitate CRRL lidars' coordination, performance, data processing and analysis, and data usage to increase their contributions to NSF CEDAR and Aeronomy collaborative science activities
- **CRRL Technology Center** - Consolidate, advance, and share lidar technology development and personnel to ensure CRRL lidar facilities achieve their highest potential
- **Community Infrastructure** - Forge and foster a CRRL infrastructure that enables collaboration and support for the NSF science community, contribute to long-term planning and vision, extend technical support to other lidar programs, and to expand the consortium
- **Community Education** - Educate, train, and support undergraduate and graduate education of future scientists and engineers through active university-based lidar research programs, summer school programs, hands-on experiences and a guest investigator program

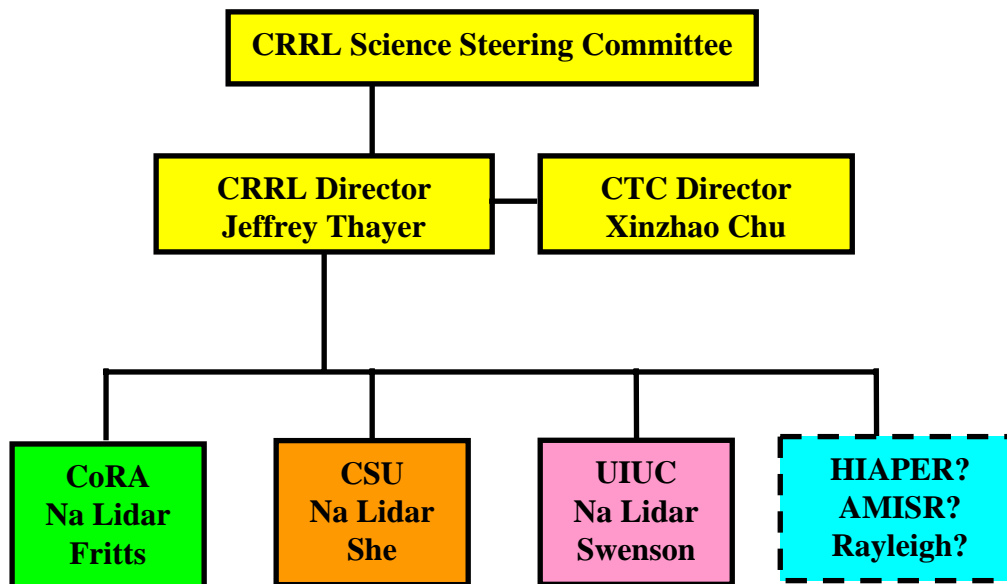


Lidar Consortium Structure

OVERVIEW

Present-day structure

- Consortium members: University of Colorado, University of Illinois, Colorado State University and Colorado Research Associates
- Lidar sites: Na wind / temperature lidars at Maui, Colorado State University, and ALOMAR
- Collaborators: Jonathan Friedman, Arecibo Observatory





Lidar Consortium Potential Expansion

OVERVIEW

At polar latitudes there are lidars at three sites.

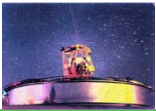
1. ALOMAR, Andoya, Norway (69°N , 16°E), Colorado Research Associates and Colorado State University with Institute of Atmospheric Physics and Andoya Rocket Range: **Narrowband resonance temperature/wind lidar (Na Doppler technique)**.
2. Sondrestrom Upper Atmospheric Research Facility, Kangerlussuaq, Greenland (67°N , 51°W), SRI International: **Broadband Rayleigh lidar, Broadband resonance lidar**.
3. Poker Flat Research Range, Chatanika, Alaska (65°N , 147°W), University of Alaska: **Broadband resonance lidar, Broadband Rayleigh lidar** (with Communications Research Laboratory)

At middle latitudes there are lidars at two sites.

1. Fort Collins, Colorado (41°N , 105°W), Colorado State University: **Narrowband resonance temperature/wind lidar (Na Doppler technique)**
2. Logan, Utah (42°N , 112°W), Utah State University (USU): **Broadband Rayleigh lidar**.

In the tropics there are lidars at two sites:

1. Maui, Hawaii (21°N , 156°W), University of Illinois at Urbana-Champaign with Maui Space Surveillance Complex: **Narrowband resonance temperature/wind lidar (Na Doppler technique)**
2. Arecibo, Puerto Rico (18°N , 67°W), National Astronomy and Ionosphere Center: **Broadband resonance lidar, Narrowband resonance lidar (K Doppler technique)**.



Lidar Consortium

GOALS

- Mutually beneficial activities amongst lidar programs
- Enable new opportunities through the collective experience within the consortium
- A united front to work with other communities – lower atmosphere