



External Review of the Cooperative Institute for Research in the Atmosphere (CIARA)

A Presentation to the
NOAA Science Advisory Board

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Science Review Panel

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CIRA



- Founded in 1980 to foster collaboration between what is today the Earth System Research Lab (ESRL); the National Environmental Satellite, Data, and Information Service (NESDIS); and the Department of Atmospheric Science at Colorado State University
 - Current Cooperative Institute (CI) designation awarded in 2009 following an open competition
- Single university cooperative institute
 - Colorado State University (CSU) (Fort Collins, CO)
- CIRA personnel are located in Fort Collins; Boulder, CO (co-located with ESRL); College Park, MD (co-located with the Center for Satellite Applications and Research); and Kansas City, MO (co-located with the Aviation Weather Center).



CIRA Themes

- Themes
 - Satellite Algorithm Development, Training and Education,
 - Regional to Global Scale Modeling Systems,
 - Data Assimilation,
 - Climate-Weather Processes, and
 - Data Distribution
- Cross-Cutting Areas
 - Societal and economic studies on the impacts of weather and climate on society, as well as the value of NOAA Research
 - Education and Outreach on Behalf of NOAA and the University focused on educating diverse audiences on weather and climate topics using a tiered, data-centered approach.



Overall Assessment



- CIRA has created extremely productive partnerships between academia and government and leveraged an impressive array of research support to add value to NOAA, other agencies, and society at large.
- CIRA, and therefore NOAA, has become a leader in understanding satellite observations and atmospheric modeling and the effective transfer of research in these areas to operations.
- CIRA research is vital to meeting the NOAA strategic objective of a Weather Ready Nation and supports Climate Adaptation and Mitigation.
- The ability of CIRA to fully realize its potential is limited by short term funding challenges which inhibit longer term planning.



Findings and Recommendations: Strategic Plan



CIRA is leveraging the assets of CSU and ESRL to accomplish its mission, especially the CSU Department of Atmospheric Science and creating partnerships that significantly amplify return on investment to NOAA.

CIRA's strategic plan is well aligned with NOAA's Strategic Plan.

CIRA has focused on training early and mid-career scientists which is in line with NOAA's interest in the development of a scientific workforce.

CIRA should seek to maintain its partnerships, while working with NOAA to assure adequate support for NOAA's objectives.

CIRA must continue to strengthen the collaboration between personnel in Fort Collins and Boulder in order to bring to bear the most robust satellite observation and atmospheric modeling expertise upon NOAA's research portfolio.

CIRA must insure communication and processes are in place to fully enfranchise and leverage personnel in College Park and Kansas City into CIRA.



Findings and Recommendations : Science Review



There is strong activity in each of CIRA's five research themes

- A record of excellent science in the development of new algorithms and satellite derived products with demonstrated R2O successes
- Research resulting in the operational use at NOAA's National Centers for Environmental Prediction (NCEP) of the Rapid Refresh (RAP) and High-Resolution Rapid Refresh (HRRR) forecast systems in the multi-model ensemble forecast suite
- Excellent carbon and water cycles, aerosols, and air quality analyses
- Innovative and unique research in process modeling and use of satellite products
- Strong data distribution research including the CloudSat data distribution center

The Satellite Algorithm Development, Training, and Education research theme should consider having an on-site presence at College Park to guide and mentor CIRA personnel.

The Regional to Global-Scale Modeling theme should re-invigorate and strengthen the collaboration between the Boulder FIM and NIM modeling efforts and the Fort Collins observations/processes research themes.

The Data Assimilation (DA) theme could enhance its R2O impact by collaborating more closely with NCEP.



Findings and Recommendations : Education and Outreach



CIRA defined set of objectives for E&O are in line with the agency and nation's needs.

CIRA has a dedicated staff member to support E&O activities and a strong affiliated program and partners to host and support graduate students of atmospheric research.

CIRA has collaborated on or created programs to address end users' needs.

The initial effort to establish a societal impacts capacity is encouraged.

Most of the efforts noted are funded by university (CSU) support to CIRA. It is paradoxical to expect a review on E&O activities of a CI, with ***minimal funding*** from the parent agency.

Set aside or enable the delivery of set funding to support E&O capacity building and the staffing and development of E&O activities on behalf of the agency.

Increased attention and resources should be considered for the societal impacts objective in order to establish a competitive program.



Findings and Recommendations : Science Management



CIRA management of science is exceptional (employee satisfaction and productivity are high).

CIRA has been responsive to past review team recommendations and has effectively formed partnerships with the international community.

CIRA has demonstrated the ability to adapt to budget trends.

CIRA management needs to ensure staff located in College Park and Kansas City has an adequate level of access to the CIRA collaborative/scientific culture and management.

Employees should be rewarded for designing and executing projects that result in the transition of CIRA research into NOAA operations.

NOAA should implement new formula for Task 1 funding and strategies to reduce the burden of reporting and proposal writing.

NOAA should develop and execute an aggressive schedule to establish renewal agreements in a timely manner to minimize disruption in work and funding. They should also consider funding multi-year CI research projects that are high risk/reward.



Final Comments

- The review panel unanimously agreed that CIRA should be continued and ranked the Institute's performance as "Outstanding", based on the guidelines for CI reviews.