Overview

Colorado State University was awarded a new Cooperative Agreement with the Army Research Laboratory concerning the Department of Defense Center for Geosciences/Atmospheric Research (CG/AR), which became effective September 20, 2012.

Four Initial Research Task Options for the new Cooperative Agreement, as developed by Center leadership and the DoD Review Panel, in response to the DoD environmental research needs as coordinated by ARL and in consideration of CSU capabilities.

This period was a low level of effort for CG/AR. A small amount of new funding arrived for a pilot study using new satellite technology. However, the OSD RDT&E replied they had no funds to support the Center due to other budget problems and priorities in DoD Environmental Labs.

Task 1: Coordination and Staff Rotation with ARL Scientists to Improve Core Capabilities of ARL

Task 2: System Improvements to the AFWA Cloud Advection Process

Task 3: Creation of an AFWA Probability of Cloud Free Line of Sight (PCFLOS) WRF Post-Processing System

Task 4: Soldier Health and Aerosol Source Trajectories

Task 5: Army DMSP Follow-on Soil Moisture Project - This task established with the addition of funds via modification of the Cooperative Agreement

Additional research topics are periodically explored with our DoD colleagues as potential needs arise and funding opportunities are identified.

The University has provided some cost-share funding both to support tasks as needed and also to allow cooperative study of other environmental issues important to the DoD.

The following report will provide details of each of the ongoing tasks as well as the cooperative study of some new issues.
Colorado State University
Center for Geosciences/Atmospheric Research
Scientific Interactions October 2012 to Present

- Tom Vonder Haar with Gorden Videen, Pamela Clark, James Cogan and others at ARL/Adelphi
- Sonia Kreidenweis with Tom DeFelice and Alan Wetmore (ARL)
- Tom Vonder Haar with Gorden Videen, Pamela Clark (ARL)
- Tom Vonder Haar and Loretta Wilson with Dr. James Cogan (ARL)
- Andrew Jones with Dr. Jeffrey Cetola (AFWA) and others
- Andrew Jones with Gary McWilliams and others
- Tom Vonder Haar with Jeff Cetola and others at AFWA
- Tom Vonder Haar, Vince Larson, Russ Schumacher, John Forsythe, Andy Jones, Don Reinke, Jeff Niemann, Steve Miller, Phil Partain, John Haynes, Lauren Potter and Sam Atwood with James Cogan and Bob Dumais (ARL)
- Tom Vonder Haar, Andrew Jones, Vince Larson and others with Jeff Cetola and Steve Rugg (AFWA) and John Eylander (ERDC/CRREL)
- Andrew Jones with the Army Soil Moisture Working Group
- [Note: From this date onward, meetings involving travel were greatly reduced due to budget problems and restrictions.]
- Andrew Jones with John Eylander (ERDC/CRREL), Li Li (NRL-DC) and Maria Stevens (ERDC/GSL)
- Tom Vonder Haar, Russ Schumacher, and Ian Wittmeyer with James Cogan (ARL)
Task 1:  Coordination and Staff Rotation with ARL Scientists to Improve Core Capabilities of ARL (Research Theme: Coordination and Staff Rotation)

Administrative

The OSD, RDT&E was unable to reply positively to our request for continued support for the Center.

Research activity and/or results

A small pilot study named HIRES was started to transition new, cutting edge satellite technology observations to support high resolution mesoscale modeling of battlefield weather. Tom Vonder Haar and John Forsythe will complete the report in a few months.

A three-day visit by Dr. James Cogan (ARL) in early August to CSU was hosted by Tom Vonder Haar and Ms. Loretta Wilson, Program Assistant. The primary focus of the meeting was to discuss the onset of above pilot study, but Dr. Cogan met with USAF PhD student at CSU, Major Robert Tournay and other researchers at CIRA and the Department of Atmospheric Science.

Travel

None.

Equipment/systems status

Good.
Task 2:  System Improvements to the AFWA Cloud Advection Process *(Research Theme: Clouds, Icing, and Aerosols Effects)*

Task 3:  Creation of an AFWA Probability of Cloud Free Line of Sight (PCFLOS) WRF Post-Processing System *(Research Theme: Clouds, Icing, and Aerosols Effects)*

Administrative, Research activity and/or results, Travel

Nothing to report on these tasks for the period.
Task 4: Soldier Health and Aerosol Source Trajectories (Research Theme: Urban and Boundary Layer Environment)

Administrative, Research activity and/or results, Travel

Nothing to report.
Task 5: Army DMSP Follow-on Soil Moisture Project (Research Theme: Hydrometerology)

Administrative

There has been extensive discussion between ARO/ARL and CSU about additional funding for additional soil moisture research. Due to groups outside of the Cooperative Agreement, the funding has been delayed. Therefore CSU request a no-cost extension of the CA for one year to accommodate the delay.

Research activity and/or results

Nothing to report for the period.

Travel

None.
Other Cooperative Research

a) A journal publication from earlier CG/AR Battlespace Environment research (Miller et al.) was published (see full reference in Appendix 2).

b) Following earlier discussions with ARL and AFWA, Ian Wittmeyer and Tom Vonder Haar developed a new Cloud Climatology Tool with global applications.
### Appendix 1

**CG/AR Researchers under Cooperative Agreement W911NF-12-2-0066**

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Department</th>
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### CG/AR Graduate Students

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Appendix 2
Publications


Presentations

