
ANNUAL REPORT FOR NSF AWARD #OPP-98-07501

Von Walden; U of Wisconsin Madison
Collaborative Research: Longwave Radiation
Processes on the Antarctic Plateau

Participant individuals:

Partner organizations:
University of Washington: Collaborative Research

This project is in collaboration with Dr. Stephen Warren at the University of Washington. We were funded in parallel for the same proposal with the same title. His project number is OPP-97-26676. He is submitting a separate annual report.

Other collaborators:

I have contacted Dr. James Spinhirne at NASA regarding the operation of his micropulse lidar (MPL) at South Pole. This instrument will be installed during the 1998/1999-summer field season. Data from this instrument will be available to us throughout our two field seasons: summer-1999/2000 and the full year 2001.

Activities and findings:

Research Activities: The major accomplishment during this period was the start of construction of a Polar Atmospheric Emitted Radiance Interferometer (PAERI).

a. Construction of the PAERI

The AERI system was previously designed at U. Wisconsin's Space Science and Engineering Center (SSEC) for implementation at DOE's Atmospheric Radiation Measurement (ARM) sites in the central U.S., the Arctic (Barrow, Alaska), and the tropical western Pacific Ocean. The implementation of the PAERI system in the Antarctic environment has been discussed in detail by the engineering staff at SSEC. The PAERI subsystems that will operate in the outside ambient air at South Pole Station are being modified to withstand the environmental conditions. Particular care has been taken to define the interface between the interferometer and its front-end assembly; the interferometer will operate inside at room temperature, while the front-end assembly will operate outside at ambient conditions.

The status of the construction of the PAERI's subsystems is:

- i) Interferometer. The interferometer has been delivered to U. Wisconsin from Bomem, Inc.
- ii) Infrared Detector. We are currently considering candidate detectors with enhanced response out to 25 micrometers from two manufacturers, EG&G and IR Associates. The estimated delivery time is mid-February.

iii) Computer. The PAERI computer system has been delivered to U. Wisconsin from Industrial Computer Supply.

iv) Optics Bench. The machining of the parts for the optics bench and front-end assembly are scheduled for January 1999.

v) Calibration Blackbodies. The parts for the blackbody temperature controller have been ordered. The controller will be completed by the end of January 1999. The calibration blackbodies themselves have been manufactured and will be calibrated in January 1999.

vi) Housekeeping Subsystem. The electronics parts for the housekeeping system have been ordered. The subsystem will be assembled in January 1999.

In February 1999, the interferometer will be integrated onto the optics bench, and the subsystems will be installed and checked out. Testing of the PAERI as a system will occur in March 1999.

Research Training: During the next year, a graduate student from the University of Washington will visit the University of Wisconsin to learn how to operate the PAERI. The graduate student will also help install the instrument at South Pole Station.

Education and Outreach: I gave a 30-minute presentation at Van Hise Elementary School in Madison, WI on what it is like to live and work in Antarctica.

Journal Publications:

Book(s) or other one-time publication(s):

Internet Dissemination:

Other specific products:

Special Requirements for Annual Project Report:

Unobligated funds: less than 20 percent of current funds

Categories for which nothing is reported:

Participants: Other Collaborators

Products: Journal Publications

Products: Book or other one-time publication

Products: Other specific product

Contributions Within Discipline

Contributions to Other Disciplines

Contributions to Education and Human Resources

Contributions to Resources for Science and Technology

Contributions Beyond Science and Engineering

Special Reporting Requirements

Animal, Human Subjects, Biohazards

Subject: Project Report Submitted - Award # 9807501

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From: fastlane@fastlane.nsf.gov

To: flmail@nsf.gov, von.walden@ssec.wisc.edu

Award Number : 9807501
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Report Number : 204525
Report Period : 04/01/1998 to 12/01/1998
PI Name : Von Walden
PI E-mail : von.walden@ssec.wisc.edu
Note:

NSF personnel have been notified of your report submission.
Thank you.