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FINAL PERFORMANCE REPORT

Time Period: April 1, 1999 through June 30, 2002

Project: Cooperative Agreement NCC2-1094 entitled “Analysis of Atmospheric Aerosol Data Sets and Application of Radiative Transfer Models to Compute Aerosol Effects”

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Co-Principal Investigators: Drs. Robert W. Bergstrom and Jens Redemann

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1. Introduction

This report is the final report for the Cooperative Agreement NCC2-1094. It is a compilation of 29 peer-reviewed publications (published, in press or submitted) produced under this Cooperative Agreement and 30 first-authored conference presentations. The tasks outlined in the various proposals are listed below with a brief comment as to the research performed. Copies of title/abstract pages of peer-reviewed publications are attached.

2. NCC2-1094 Task and Accomplishments

A. "Derivation of a 1985-1995 Data Base on Stratospheric Aerosol Properties by Combining SAGE II and CLAES Measurements". Proposal funded by NASA.

This task represents the completion of Dr. Jill Bauman's PhD Thesis work at the State University of New York, Stonybrook entitled "Information Retrieval Algorithm for Satellite Solar Occultation and Infrared Emission Measurements". This also task resulted in three journal papers submitted recently and six conference presentations. Results in the dissertation and submitted mss describe a 15-year global stratospheric aerosol climatology derived from measurements by SAGE II and CLAES. At the Fall AGU meeting in 1999, Dr. Baumann also received the AGU Outstanding Student Paper Award. In July 2000, Dr. Baumann took on a civil service position in the Advanced Projects Branch at NASA Ames.

a) Peer-reviewed papers


b) Conference papers


B. “Activities in SAGE III Science Team”. Proposal funded by NASA.

This task resulted in one first-authored and four co-authored peer-reviewed journal articles and three first-authored conference papers by Dr. Schmid focusing on water vapor retrievals.

a) Peer-reviewed papers


Ingold, T., B. Schmid, et al., Modeled and empirical approaches for retrieving columnar water vapor from solar transmittance measurements in the 0.72, 0.82 and 0.94-μm absorption bands. *J. Geophys. Res.*, 105(D19), 24327-24343, 2000.


b) Conference papers (co-authored not listed)


C. "Improved Exploitation of Field Data Sets to Address Aerosol Radiative-Climatic Effects and Development of a Global Aerosol Climatology". Proposal funded by NASA.

This task resulted in five first-authored and seven co-authored peer-reviewed journal articles and 16 first authored conference papers by Drs Bergstrom, Redemann and Schmid describing results from three major field campaigns TARFOX, ACE-2 and CLAMS.

a) Peer-reviewed papers


**b) Conference papers (co-authored not listed)**


Redemann, J., P.B. Russell, and P. Hamill, Dependence of aerosol light absorption and single scattering albedo on ambient relative humidity for sulfate aerosols with black carbon cores, Presented at the International Radiation Science (IRS) Meeting, St. Petersburg, Russia, July 2000.


D. "Satellite-Sunphotometer Studies of Aerosol, Water Vapor and Ozone in Climate-Chemistry-Biosphere Interactions". Proposal funded by NASA.

This task resulted in two first-authored and six co-authored peer-reviewed journal articles and 4 first authored conference papers by Drs Bergstrom, Redemann and Schmid describing results from two major field campaigns SAFARI-2000 and PRIDE.

a) Peer-reviewed papers


b) Conference papers (co-authored not listed)


E. "ACE-Asia Aerosol Radiative Effect Studies Using Airborne Sunphotometer, Satellite and In-Situ Measurements". Proposal funded by NOAA, Office of Global Programs.

This task resulted in four first authored conference papers by Drs Bergstrom and Redemann describing results from the ACE-Asia field campaign.

a) Peer-reviewed papers
In preparation

b) Conference papers


This task resulted in one co-authored peer-reviewed journal article and one first authored conference paper by Dr Schmid describing results from the ACE-Asia field campaign.

a) Peer-reviewed papers

b) Conference papers
G. Invited Presentations


Attachment A. Copies of title/abstract pages of peer-reviewed publications.