Models, In situ, and Remote sensing of Aerosols

MIRA News Number 2
March 18, 2022

Fellow Aerosol Scientists;
It has been four months since our last newsletter. During that time we have formed the beginnings of a Steering Committee and created a webpage and a logo. We have also started work on two projects within MIRA, and we hope to add more projects soon (with your help!).

Overview

What is MIRA?
MIRA is forum that fosters international collaborations amongst the aerosol Modeling, In situ, and Remote sensing specialties (as illustrated below).

Why?
The purpose of MIRA is to contextualize both observations and model results through the encouragement of holistic projects and collaborations.

Near-term Purpose
Encourage ideas and projects that benefit from a multi-specialty approach.

Membership
The MIRA working group is open to all interested aerosol scientists. This is an open working group, so we encourage you to send this newsletter to interested colleagues. Your colleagues can subscribe to the MIRA email list server by sending an email directly to calipso_v5alr-join@lists.nasa.gov with the word 'subscribe' in the subject line. Unsubscribing is accomplished by sending email to calipso_v5alr-leave@lists.nasa.gov. Post to the group by sending email to calipso_v5alr@lists.nasa.gov.

About our Logo

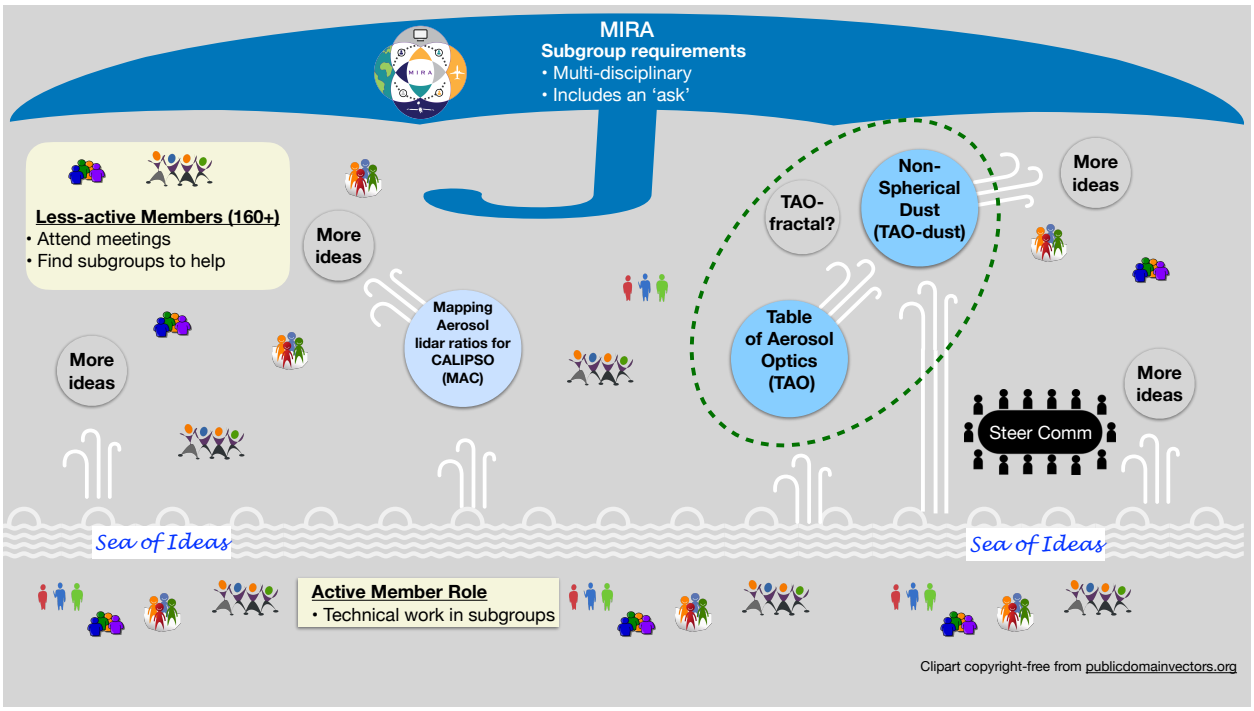
Our logo was created by Amiee Amin of the LaRC Science Directorate Communications Team. It is a Venn diagram with four overlapping circles. Three of the circles represent the MIRA aerosol science specialties – modeling, in situ, and remote sensing. The fourth circle is our common topic of study, the planet Earth. MIRA is at the intersection of the circles. The human silhouettes represent the working connections that bring the different aerosol specialties together.

MIRA Webpage

We have launched a new MIRA webpage at https://science.larc.nasa.gov/mira-wg/, which describes the purpose and scope of MIRA and the current MIRA projects. We will also host the Table of Aerosol Optics (TAO) data at this site as it becomes available.

IGAC Meeting

The call for abstracts for the 2022 iCACGP-IGAC Joint International Atmospheric Chemistry Conference is now open



until May 31, 2022. The conference is globally virtual and in-person in Manchester, UK, September 11-15, 2022. See details at https://www.icacgp-igac-2022.org/. MIRA will apply for another side meeting again this year, and we hope to establish a presence with several talks and posters as well.

MIRA Projects

MIRA has two active projects at the present time, but we wish to expand. If your work involves multiple disciplines and would benefit from additional data or model products, please consider becoming a MIRA Ambassador and using MIRA as a platform to solicit community input.

Maps of Aerosol lidar ratios for CALIPSO

Presently, CALIPSO Version 4.x aerosol retrievals use a single lidar ratio for each CALIPSO aerosol type, but a key component of the upcoming CALIPSO Version 5 aerosol product will be regionally variable lidar ratios. The lidar ratio variability implemented in Version 5 will be accomplished by creating climatological lidar ratio maps.

We are interested in verifying our approach with long term in situ measurements (1+ years) that are collocated with lidar ratio measurements. We are especially interested in quantifying the dry mass of five aerosol types: fine solubles, fine insoluble carbonaceous, fine mineral dust, coarse mineral dust, and coarse marine. We choose this classification scheme because 1.) we expect this scheme to provide different lidar ratios for each aerosol type, and 2.) this scheme is easy to map with transport models. See additional details at https://science.larc.nasa.gov/mira-wg/mac/.

This MIRA project seeks additional participation. We desire worldwide lidar ratio measurements and lidar ratio datasets that are collocated with in situ measurements. Please advertise your dataset through our distribution list at calipso_v5alr@lists.nasa.gov. Additionally, you can *contact the steering com-*

mittee, but please include [MIRA Steering Committee] at the beginning of the subject line.

Tables of Aerosol Optics (TAO)

TAO is a community repository of optics computations (extinction, absorption, single-scatter albedo, lidar ratio, etc) that are useful for global models and remote sensing applications. TAO expands upon historical efforts (e.g., *Shettle and Fenn*, 1979; *d'Almeida et al.*, 1991; *Köpke et al.*, 1997; *Hess et al.*, 1998) by building an open database that uses recent measurements and new computational techniques for non-spherical particles (e.g., *Saito et al.*, 2021; *Saito and Yang*, 2021). See more details about TAO at https://science.larc.nasa.gov/mira-wg/tao/.

This MIRA project seeks additional participation. We seek your optical calculations for particles of all shapes and hygroscopicities. Please advertise your dataset through our distribution list at aerosol-optics@lists.nasa.gov. Additionally, you can *contact the steering committee*, but please include [MIRA Steering Committee] at the beginning of the subject line.

Steering Committee

As MIRA evolves from an idea to implementation, we are building a Steering Committee to help us create a group that is useful to a wide audience. We are proud to have these scientists on our team.

The Steering Committee members promote MIRA by organizing communications (meetings, webpages, community databases, social media, etc.), originating and participating in projects, and promoting MIRA at meetings and through networks. We will continue to seek new Steering Committee members until we have adequate representation by aerosol specialty (i.e., model, in situ, or remote sensing) and by geographic region.

We also seek Ambassadors for MIRA, who originate and participate in MIRA projects, and promote MIRA at meetings and through networks.

Please contact the Steering Committee with this link, using [MIRA Steering Committee] as the first words in the subject line.

MIRA Steering Committee

Greg Schuster (Chair)	NASA Langley Research Center, USA
Chip Trepte	NASA Langley Research Center, USA
Obie Cambaliza	Ateneo de Manila University *and* Manila Observatory, Philippines
Mian Chin	NASA Goddard Space Flight Center, USA
Oleg Dubovik	CNRS / University of Lille, France
Sang-Woo Kim	Seoul National University, Korea
Ping Yang	Texas A&M University, USA

References

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