ESDIS DAAC Data Archive Approval Request: (Add Collection Name)
MISR Research Aerosol Retrieval Algorithm (RA)

Proposal to Archive Data at ASDC:

(Add in name of collection)

MISR Research Aerosol Retrieval Algorithm (RA) validation dataset

ESDIS Questions

Summary: The (*Proposed collection name:*) MISR Research Aerosol Retrieval Algorithm (RA) 4-year validation dataset

Please add a summary of the proposed product here……

This is a proposal to establish the MISR Research Aerosol Retrieval Algorithm (RA) validation dataset as a data product at ASDC. This data product will allow others to reproduce the results found in Limbacher and Kahn (2019) and Limbacher et al. (2022; submitted). Additionally, this data product would potentially allow others to develop improvements to our cloud mask and quality assessment.

What is its relationship to other EOSDIS-held data?
MISR RA output is currently stored here (MISR RA volcanic eruption retrievals, among others). We are seeking to archive two of these validation dataset hdf5 files (panoply compliant) that contain about 4 years of MISR/AERONET coincidences and 48x48 1 km retrievals centered on each AERONET site. Both datasets contain MISR RA output (aerosol loading and type, surface albedos, etc.), but one file contains only coincident AERONET direct-sun data, whereas the other dataset contains coincident AERONET inversion retrievals.

1. **Might this data already be archived or will be archived at EOSDIS?**
   No

2. **Will it cost us a lot to keep it here?**
   No

   1) **Is ongoing maintenance of the data necessary?**

   Probably not, unless we really need it to be compliant with Panoply in the future

3. **Should ask the PIs the following:**
   1) **What is the provenance of the product?**

This is an output of the validation software which compares MISR RA results to AERONET validation. Began at NASA GSFC around 2017.

2) What is the PI's relationship to NASA?

Ralph Kahn is a NASA GSFC CS (Code 613)

3) Is it a standard MISR product or a derivative?

These are MISR Research Aerosol Retrieval Algorithm (RA) results collocated with AERONET validation (48x48 pixels centered on each AERONET site). This is not related to the MISR operational aerosol retrieval algorithm.

PI Submission

Data Creation Funded By: funded aspect of the NASA's MISR project since 2007

==Submission Information==

==PI Contact Information==

First Name: Ralph
Last Name: Kahn
Organization: NASA GSFC Code 613
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Country: USA
Phone: N/A (I don't think he goes in personally)

==Technical Contact Information==

Technical contact same as PI list above?

James Limbacher

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==PI Justification==

Value of this data set:

Allows others to reproduce our results if needed. Allows others to make upgrades to filters like cloud mask/QA. This is also a requirement of the journal for final publication of the following paper, which also serves as detailed documentation for the dataset:

Limbacher, J.A., R.A. Kahn, and J. Lee, 2022. The New MISR Research Aerosol Retrieval Algorithm: A Multi-Angle, Multi-Spectral, Bounded-Variable Least Squares Retrieval of Aerosol and Surface Properties. *Atm. Meas. Tech. Discuss. doi:10.5194/amt-2022-95*.

==Data Set Information==

Data Set Title: MISR Research Aerosol Retrieval Algorithm (RA) 4-year validation dataset
Data Format: HDF5 (.h5)

Data Description: 4 year 48x48 pixel MISR RA dataset centered on various AERONET locations. Contains MISR retrieved aerosol/surface properties and coincident AERONET direct-sun and inversion AERONET data.

Input Data Source: MISR RA/AERONET
Data Volume: 10 GB for the direct-sun data, 7 GB for the inversion data
Data Usage Constraints: None
Parameters: MISR RA Prescribed + Retrieved aerosol and surface properties.
Data Collection Methods: Data are from AERONET direct-sun/inversion sites coincident with 4 years of MISR data we have. The MISR RA is first run over these 4 years of coincident data before being stored in the same file as the AERONET data.

==***Data Set Coverage***==

Temporal Coverage – Start Date: 2001
Temporal Coverage – End Date: 2016
Temporal Resolution: Intersparsed (variable temporal resolution)
Spatial Coverage: Global over-land AERONET sites
Spatial Resolution: 1 km (for the MISR RA)
Gridded Data: 1 km sinusoidal
Data Processing Steps:

1) AERONET data coincident with the 4 years of MISR data are identified.
2) All AERONET data are downloaded. Coincident data (relevant fields only) are saved to a separate hdf5 file.
3) MISR radiance and ancillary data are regridded to a new 1 km grid (from 1.1 km).
4) MISR RA is run on these MISR radiance and ancillary data.
    1. 4 MISR RA runs take place (over-water/over-land + prescribed/retrieved surface).
    2. After runs take place, a land/water identification algorithm determines whether a given pixel is land or water. This reduces the number of runs to two (prescribed + retrieved surface).
5) A new hdf5 file containing MISR RA aerosol/surface properties and AERONET data are created for the MISR/AERONET coincidences (separate AERONET direct-sun/inversion datasets).
6) A new cloud/quality mask is created according to *Limbacher et al., 2022*.

==***Data Set Ingest***==

Ingest Frequency: One-time

==***Additional Information***==

References About the Data:

Limbacher, J. A., Kahn, R. A., and Lee, J.: The New MISR Research Aerosol Retrieval Algorithm: A Multi-Angle, Multi-Spectral, Bounded-Variable Least Squares Retrieval of Aerosol Particle Properties over Both Land and Water, Atmos. Meas. Tech. Discuss. [preprint], https://doi.org/10.5194/amt-2022-95, in review, 2022. References Using the

Data: AOD_SCIATRAN_highTau.h5, INV_SCIATRAN_highTau.h5
Related URLs: