

Wanna tag along?
Scan QR for code and slides



Familiarisation and Visualization of Aerosol data with Hands-on-Retrieval using iAOD software

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Operational AOD products

Satellite-based products	Ground-based measurements
MODIS* (DB, DT, combined, MAIAC)	AERONET*
OMI, OCM-2	ARFINET
AVHRR (1 st satellite AOD product)	ICARB
POLDER, CALIPSO	EARLINET
Landsat, Sentinel 2 ^a	ACE-1, SAFARI 2000

^aKumar, A., & Mehta, M. (2024). Global evaluation of sentinel 2 level 2A Sen2Cor aerosol optical thickness retrievals. *International Journal of Remote Sensing*, 46(2), 728–744. <https://doi.org/10.1080/01431161.2024.2421947>

Part I: Products, Access and Visualization

MODIS (DBDT & MAIAC), AERONET

MODIS Deep Blue – Dark Target (DB-DT)

LAADS DAAC


<https://ladsweb.modaps.eosdis.nasa.gov/>

Access MODIS data (LAADS DAAC)


← → ↺ ladsweb.modaps.eosdis.nasa.gov 🔍 ☆ 🏠 📁 🎵 👤 ⋮

📱 Apps 🗄️ | 📺 YouTube 🗺️ Maps 📰 News 📧 Gmail 📁 Useful Websites - A... 🌐 GEOG-422/510 📁 Open Source Books 📄 GEOG-414 📧 Email - Akhilesh Ku... 🌐 Cancer Drug Interac... 📁 All Bookmarks

🚀 | EARTHDATA Other DAACs - Feedback 📢 ?

 **Level-1 and Atmosphere Archive & Distribution System**
Distributed Active Archive Center


About LAADS- Data - Learn Login - 🔍





LAADS DAAC Migrates to the Cloud
Learn more.


Your Source for Level-1 and Atmospheric Data
Providing Access to Global Science Data Projects


[View Data](#) [Find Data](#)



Missions


Level 0 & 1


Atmosphere


Airborne


Land


Applications

Access MODIS data ...

ladsweb.modaps.eosdis.nasa.gov/search/

LAADS DAAC

About LAADS Data Learn Login

1 PRODUCTS 2 TIME 3 LOCATION 4 FILES 5 REVIEW & ORDER

No products selected. No date selected. No location selected. No files selected. reset

All Sensors All Standard Collections

Aerosol All Standard Collections keyword Browse products

All [531]

Level-0 / Level-1 [32]

- MODIS Terra, Aqua [12]
- VIIRS Suomi NPP [9]
- OLCI ESA Copernicus Sentinel-3A [2]
- SLSTR ESA Copernicus Sentinel-3A [1]
- OLCI ESA Copernicus Sentinel-3B [2]
- SLSTR ESA Copernicus Sentinel-3B [1]
- MERIS Envisat [5]

Atmosphere [78]

Aerosol [33]

- Water Vapor [5]
- Cloud Properties [20]
- Atmosphere Profiles [2]
- Cloud Mask [6]
- L2 Joint Atmosphere Product [2]
- L3 Atmosphere Product [8]
- VIIRS+CrIS Fusion [2]
- GEO-LEO Dark Target Aerosol [9]

Airborne [5]

AERDB_M3_GEOLEO_Merged
MODIS+AH1+ABI+VIIRS/GEO-LEO Merged Deep Blue Aerosol monthly 1x1 degree grid

AERDB_M3_VIIRS_NOAA20
VIIRS/NOAA20 Deep Blue Level 3 monthly aerosol data, 1x1 degree grid

AERDB_M3_VIIRS_SNPP
VIIRS/SNPP Deep Blue Level 3 monthly aerosol data, 1x1 degree grid

AERDT_L2_VIIRS_NOAA20
VIIRS/NOAA20 Dark Target Aerosol 6-Min L2 Swath 6 km

AERDT_L2_VIIRS_SNPP
VIIRS/SNPP Dark Target Aerosol L2 6-Min Swath 6 km

MOD04_3K
MODIS/Terra Aerosol 5-Min L2 Swath 3km

MOD04_L2
MODIS/Terra Aerosol 5-Min L2 Swath 10km

MYD04_3K
MODIS/Aqua Aerosol 5-Min L2 Swath 3km

MYD04_L2
MODIS/Aqua Aerosol 5-Min L2 Swath 10km


XAERDT_L2_ABI_G16
ABI/GOES-16 Dark Target Aerosol 10-Min L2 Full Disk 10 km

XAERDT_L2_ABI_G17
ABI/GOES-17 Dark Target Aerosol 10-Min L2 Full Disk 10 km


XAERDT_L2_ABI_H08

Step 1:
Select Product (s)

Access MODIS data ...


 LAADS DAAC About LAADS ▾ Data ▾ Learn Login ▾

← 1 PRODUCTS 2 TIME 3 LOCATION 4 FILES 5 REVIEW & ORDER →

MYD04_3K (61) 2025-01-01 No location selected. No files selected. 

Date Range Single Date



Display as: YYYY-MM-DD ▾

 2025-01-01

Add Date

+ Advanced

Date Selection: Clear All

2025-01-01  

Coverage Selection:

☒ Day

☒ Day-Night Boundary

Custom Dates Entry

Please enter one value per line.

single date as YYYY-DDD HH:MM, YYYY-MM-DD HH:MM or without the time component
date range as YYYY-DDD..YYYY-DDD or YYYY-MM-DD..YYYY-MM-DD

2025-01-01

Save Cancel

Step 2:
Select Date (s)

Access MODIS data ...

Step 3: Select Location (s) Using Validation Sites

The screenshot displays the MODIS data selection interface, specifically the 'LOCATION' step. The interface features a top navigation bar with five steps: 1 PRODUCTS, 2 TIME, 3 LOCATION (active), 4 FILES, and 5 REVIEW & ORDER. Below the navigation bar, a search bar contains 'MYD04_3K (61)', and a date selector shows '2025-01-01'. A coordinate bar indicates 'W: -180°, N: 90°, E: 180°, S: -90°' and 'No files selected.' with a 'reset' button. The main area is a world map with numerous colored dots representing validation sites. A sidebar on the left includes 'Search by Product', 'Online Archive', 'Filename Search', 'Image Viewer', 'Load/Save Search', and 'Past Orders'. A 'LEGEND' box at the bottom left identifies the site types: NASA EOS Core Site (blue dot), AERONET (red dot), VALERI (white dot), FLUXNET (purple dot), COMPLET (light blue dot), and Other (yellow dot). On the right, a 'SELECT AREA OF INTEREST' panel offers options: 'World', 'Countries', 'Validation Sites' (selected), and 'Click on the map to select sites'. It also includes a 'View' dropdown set to 'All', checkboxes for 'Draw Custom Box (Classic)' and 'Enter Coordinates', and a 'Current selection' box showing the same coordinate range as the top bar.

Access MODIS data ...

Step 3: Select Location (s)
Using a bounding box

The screenshot shows the NASA LAADS DAAC web interface. The top navigation bar includes the NASA logo, 'LAADS DAAC', and links for 'About LAADS', 'Data', 'Learn', and 'Login'. Below this is a horizontal menu with five steps: 1. PRODUCTS, 2. TIME, 3. LOCATION (highlighted), 4. FILES, and 5. REVIEW & ORDER. The 'LOCATION' step is active, showing a map of the Indian Ocean region with a bounding box around India. The map is labeled with 'MYD04_3K (61)' and '2025-01-01'. The bounding box coordinates are 'W: 64.8°, N: 37.2°, E: 97.5°, S: 4.5°'. The right sidebar contains a 'SELECT AREA OF INTEREST' panel with options: 'World', 'Countries', 'Validation Sites', 'Draw Custom Box (Classic)' (selected), and 'Enter Coordinates'. The 'Draw Custom Box (Classic)' option is selected, and the 'Current selection' is displayed as 'W: 64.8°, N: 37.2°, E: 97.5°, S: 4.5°'. The left sidebar includes a 'Search by Product' button, an 'Online Archive' button, a 'Filename Search' button, an 'Image Viewer' button, a 'Load/Save Search' button, and a 'Past Orders' button.

Access MODIS data ...

Step 4: Select File (s)

LAADS DAAC

About LAADS Data Learn Login

1 PRODUCTS 2 TIME 3 LOCATION 4 FILES 5 REVIEW & ORDER

MYD04_3K (61) 2025-01-01 W: 66°, N: 37.7°, E: 98°, S: 4.2° 7 files selected reset

* Download selected files as json or CSV

Search: Showing 1 to 7 of 7 entries Select All Clear All

Filename	Product (collection)	Date / Time	Download
MYD04_3K.A2025001.1020.061.2025002235307.hdf	MYD04_3K (61)	2025-01-01 10:20:00	14 MB
MYD04_3K.A2025001.0840.061.2025002235451.hdf	MYD04_3K (61)	2025-01-01 08:40:00	9 MB
MYD04_3K.A2025001.1025.061.2025002235221.hdf	MYD04_3K (61)	2025-01-01 10:25:00	8 MB
MYD04_3K.A2025001.0850.061.2025002235524.hdf	MYD04_3K (61)	2025-01-01 08:50:00	4 MB
MYD04_3K.A2025001.0705.061.2025002235525.hdf	MYD04_3K (61)	2025-01-01 07:05:00	9 MB
MYD04_3K.A2025001.0845.061.2025002235508.hdf	MYD04_3K (61)	2025-01-01 08:45:00	15 MB
MYD04_3K.A2025001.0710.061.2025002235925.hdf	MYD04_3K (61)	2025-01-01 07:10:00	6 MB

Access MODIS data ...

Step 5: Review and Order

LAADS DAAC About LAADS Data Learn Login

1 PRODUCTS 2 TIME 3 LOCATION 4 FILES 5 REVIEW & ORDER

MYD04_3K (61) 2025-01-01 W: 66°, N: 37.7°, E: 98°, S: 4.2° 7 files selected reset

Files Summary:

MYD04_3K (Collection 61) Total: 7 files ✕
2025-01-01 07:05:00 .. 2025-01-01 10:25:00]
The order will generate 7 files.

Post-Processing Parameters

Sds	Geo	Mosaic	Reformat	Reproject	Control
Sds Info Please select one or more parameters to be included in the subset order. Parameters - use Ctrl key to add multiple Aerosol_Cloud_Fraction_Land Aerosol_Cloud_Fraction_Ocean					

Cancel Post-Processing

View Delivery Method

Delivery method: HTTP GET
Stage products where I can download them using GNU Wget

The order may generate as many as 7 files.

Add another search Submit Order

- Metadata (sds)
- Georeference (Geo)
- Combine multiple files (Mosaic)
- Different file formats (Reformat)
- Reproject

...and lots of other options.

Access MODIS data ...

Step 6: Download



LAADS Web Order Notification Inbox x



v2lads <noreply@nasa.gov>

10:40 AM (0 minutes ago)

to me ▾

Your Export ID is: 502424881

The data you ordered will be staged (in about 10 minutes), and you can retrieve the data through HTTP using GNU wget, as follows

```
wget -e robots=off -m -np -R .html,.tmp -nH --cut-dirs=3  
https://ladsweb.modaps.eosdis.nasa.gov/archive/orders/502424881/  
--header "Authorization: Bearer <YOUR_EDL_TOKEN>" -P <target dir>
```



Using Command Terminal

Replace the <YOUR_EDL_TOKEN> placeholder with your Earthdata Login token. EDL tokens can be created and retrieved by logging into your Earthdata account and selecting "Generate Token" from the menu.

Replace the <target dir> placeholder with the directory where you wish to save the files.

Explanation of additional options used:

- e robots=off : Bypass the robots.txt file, to allow access to all files in the order
- m : Enable mirroring options (-r -N -l inf) for recursive download, timestamping & unlimited depth
- np : Do not recurse into the parent location
- R .html,.tmp : Reject (do not save) any .html or .tmp files (which are extraneous to the order)
- nH : Do not create a subdirectory with the Host name (ladsweb.modaps.eosdis.nasa.gov)
- cut-dirs=3 : Do not create subdirectories for the first 3 levels (archive/orders/502424881)
- header : Adds the header with your appKey (which is encrypted via SSL)
- P : Specify the directory prefix (may be relative or absolute)

If you do not have wget:

- Windows users can download it at <https://eternallybored.org/misc/wget/>
- Mac OS X users can install it using Homebrew (<https://brew.sh>) using the command `brew install wget`
- Additional information on wget is available at <https://www.gnu.org/software/wget/faq.html>

Alternatively, you can use an HTTP script from

<https://ladsweb.modaps.eosdis.nasa.gov/tools-and-services/data-download-scripts/>

or manually download all files from

<https://ladsweb.modaps.eosdis.nasa.gov/archive/orders/502424881/>

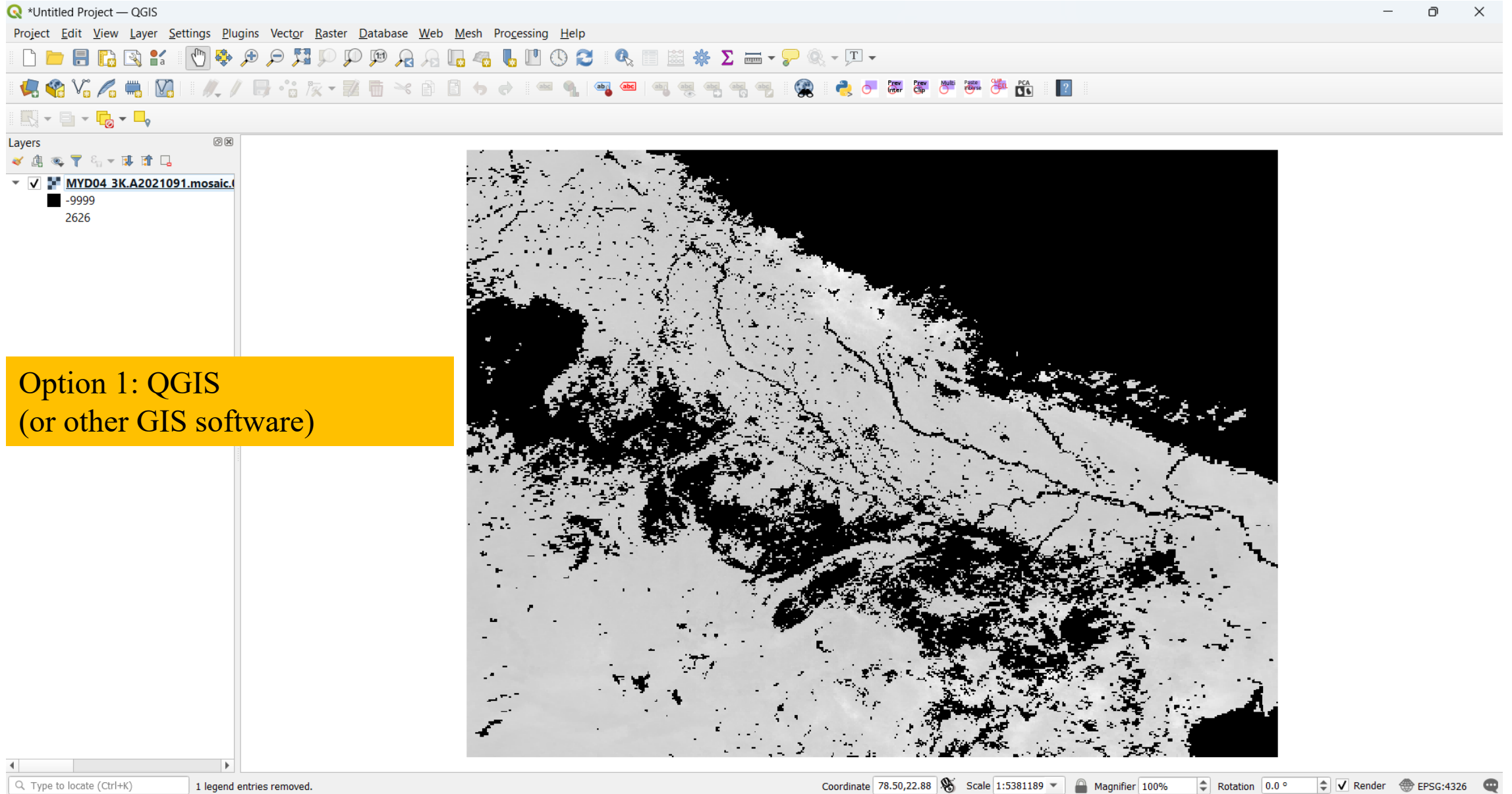


Using HTTP scripts (site crawl)



Manual

Visualizing MODIS data



Visualizing MODIS data ...

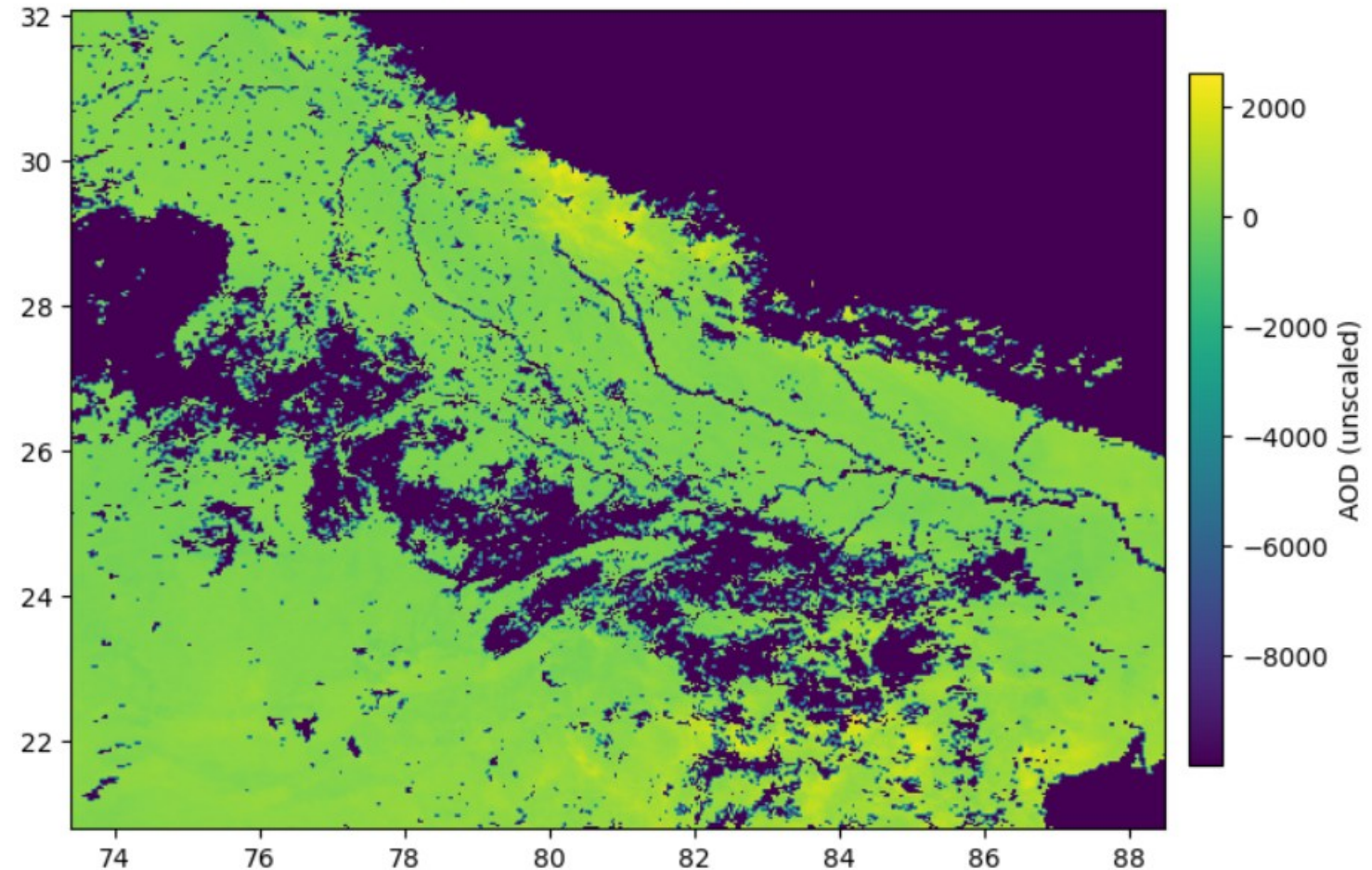
```
1 import rasterio
2 from rasterio.plot import show
3 import matplotlib.pyplot as plt
4
5 def display_geotiff(path):
6
7     with rasterio.open(geotiff_path) as src:
8         data = src.read(1) # first band
9         print("CRS:", src.crs)
10        print("Bounds:", src.bounds)
11        print("Resolution:", src.res)
12
13        fig, ax = plt.subplots(figsize=(8, 8))
14        img = show(data, transform=src.transform, ax=ax, cmap="viridis")
15
16        cbar = plt.colorbar(img.get_images()[0], ax=ax, fraction=0.05)
17        cbar.set_label("AOD (unscaled)") # label for legend
18        plt.show()
19
20
21 # Example
22 geotiff_path = r"D:\Aerosol Modelling\Validation_Data\MYD04_3K\MYD04_3K_20030101.tif"
23 display_geotiff(geotiff_path)
```

Option 2: Programming Language
(Python (shown above), R, etc.)

CRS: EPSG:4326

Bounds: BoundingBox(left=73.4, bottom=20.8, right=88.5, top=32.1)

Resolution: (0.026916221033868083, 0.02703349282296651)



Multi-angle Implementation of Atmospheric Correction (MAIAC)

Google Earth Engine

https://developers.google.com/earth-engine/datasets/catalog/MODIS_061_MCD19A2_GRANULES

Access MAIAC data ...

ata Catalog

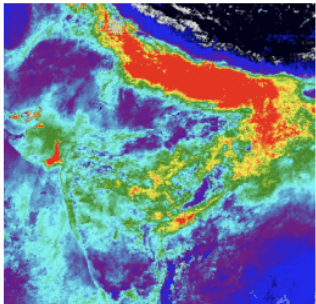
Search

All datasets All tags Landsat MODIS Sentinel Publisher Community API Docs Dataset status

MCD19A2.061: Terra & Aqua MAIAC Land Aerosol Optical Depth Daily 1km



AI-generated Key Takeaways



Dataset Availability

2000-02-24T00:00:00Z–2025-11-20T23:55:00Z

Dataset Provider

NASA LP DAAC at the USGS EROS Center

Earth Engine Snippet

```
ee.ImageCollection("MODIS/061/MCD19A2_GRANULES")
```

Cadence

1 Day

Tags

aerosol

usgs

Description Bands Terms of Use Citations DOIs

Citations:

- Please visit [LP DAAC 'Citing Our Data' page](#) for information on citing LP DAAC datasets.

Data on: Google Earth Engine
Access: Python (earthengine-api)

```
1 import ee
2
3 if not ee.data._credentials:
4     ee.Authenticate()
5 if not ee.data._initialized:
6     ee.Initialize(project='[redacted]')
7
8 bbox = ee.Geometry.BBox(73.4, 20.8, 88.5, 32.1)
9 collection = (ee.ImageCollection("MODIS/061/MCD19A2_GRANULES")
10              .filterBounds(bbox)
11              .filterDate("2023-01-01", "2023-01-31"))
12
13 image = collection.first()
14 image = image.select("Optical_Depth_055") # Optical depth at 550nm
15
16 image_clipped = image.clip(bbox)
17
18 # Download locally via URL
19 print("Generating download URL...")
20 url = image_clipped.getDownloadURL({"scale": 1000, # MODIS native resolution ~1km
21                                   "crs": "EPSG:4326", "region": bbox})
22
23 print("Download link: ", url)
```

Generating download URL...

Download link: [https://earthengine.googleapis.com/v1alpha/projects/\[redacted\]/thumbnail/f5be9506:getPixels](https://earthengine.googleapis.com/v1alpha/projects/[redacted]/thumbnail/f5be9506:getPixels)

Visualizing MAIAC data ...

```
import ee
import folium
import geemap

if not ee.data._credentials:
    ee.Authenticate()
if not ee.data._initialized:
    ee.Initialize(project='[redacted]')

bbox = ee.Geometry.BBox(73.4, 20.8, 88.5, 32.1)

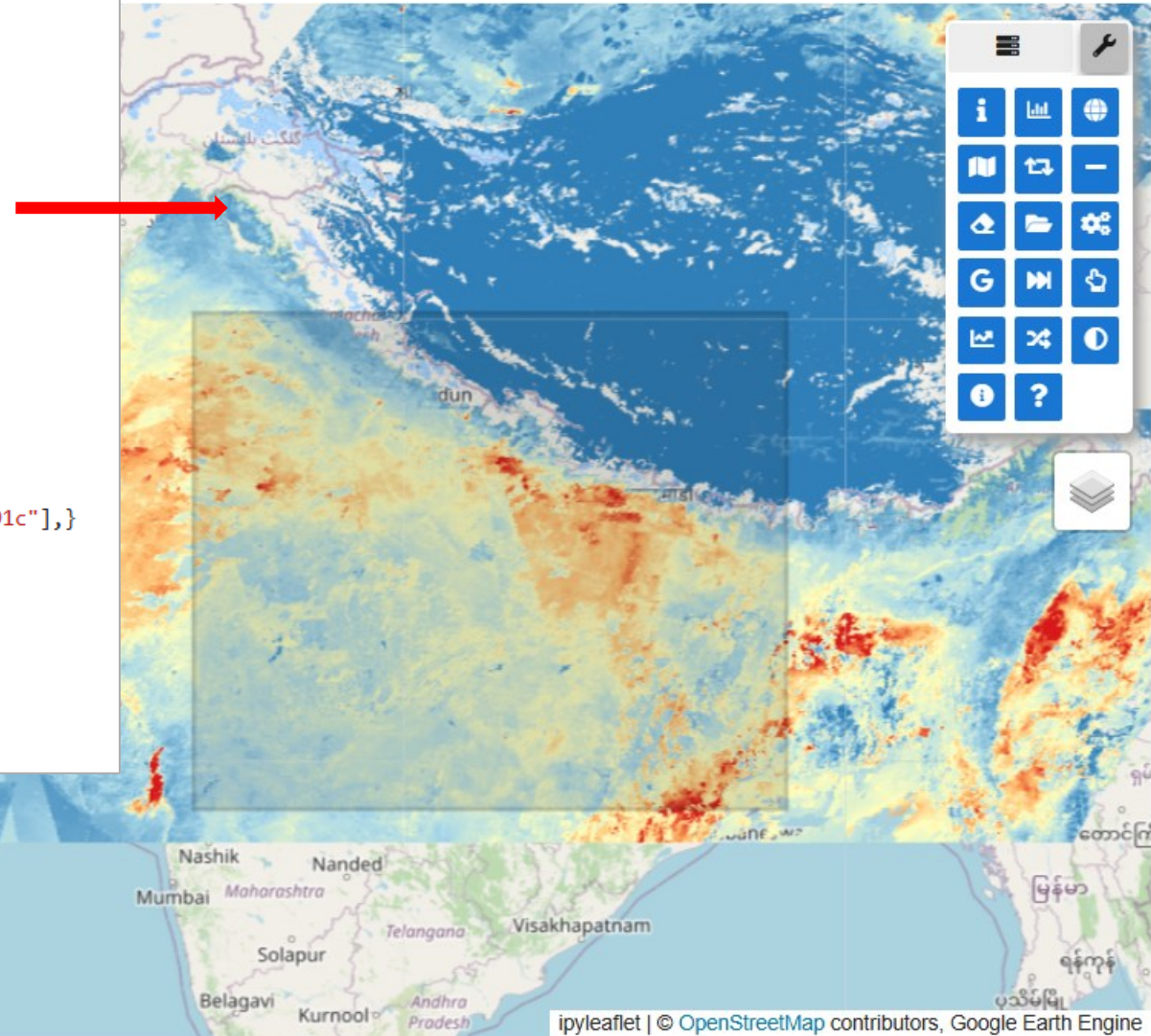
collection = (ee.ImageCollection("MODIS/061/MCD19A2_GRANULES")
    .filterDate("2023-05-01", "2023-05-15")
    .filterBounds(bbox))

mosaic = collection.mosaic()
aod = mosaic.select("Optical_Depth_055").multiply(0.001)

vis_params = {"min": 0, "max": 1.5, "palette": ["#2c7bb6", "#abd9e9", "#ffffbf", "#fdae61", "#d7191c"],}
m = geemap.Map(center=[26.5, 80], zoom=5)
m.addLayer(aod, vis_params, "MCD19A2_GRANULES AOD Mosaic")

bbox_fc = ee.FeatureCollection([ee.Feature(bbox)])
m.addLayer(bbox_fc, {"color": "black"}, "Bounding Box")

m.addLayerControl()
m
```



Access/Visualize Sentinel 2 data ...

Harmonized Sentinel-2 MSI: MultiSpectral Instrument, Level-2A (SR)

◆ Page Summary 




Dataset Availability

2017-03-28T00:00:00Z–2025-12-16T22:49:35.914000Z

Dataset Provider

[European Union/ESA/Copernicus](#)

Earth Engine Snippet

```
ee.ImageCollection("COPERNICUS/S2_SR_HARMONIZED") 
```

Revisit Interval

5 Days

Tags

copernicus

esa

eu

msi

reflectance

satellite-imagery

sentinel

sr

Image collection:
COPERNICUS/S2_SR_HARMONIZED

Band:
AOT

Aerosol Robotic Network (AERONET)

NASA AERONET

<https://aeronet.gsfc.nasa.gov/>

Access AERONET data (website)



+ AEROSOL OPTICAL DEPTH

+ AEROSOL INVERSIONS

+ SOLAR FLUX

+ OCEAN COLOR

+ MARITIME AEROSOL

For receiving updates on AERONET - subscribe to the mailing list by sending an email to aeronet-join@lists.nasa.gov

-Home

Home

+ AEROSOL/FLUX NETWORKS

+ CAMPAIGNS

+ COLLABORATORS

+ DATA

+ LOGISTICS

+ NASA PROJECTS

+ OPERATIONS

+ PUBLICATIONS

+ SITE INFORMATION

+ STAFF

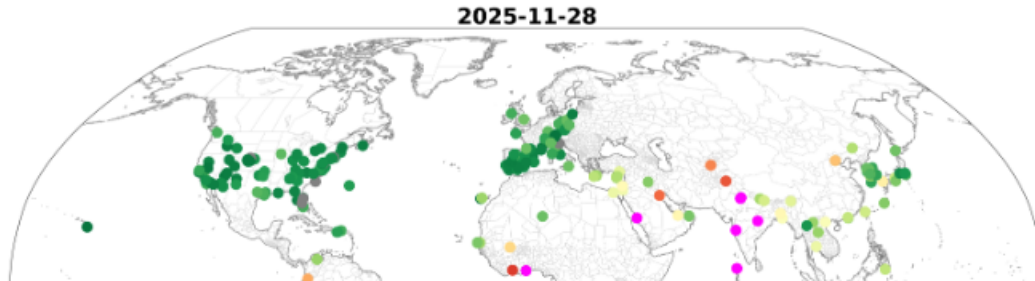
+ SYSTEM DESCRIPTION

AERONET DATA ACCESS

DATA VISUALIZATION

+ Synergy Tool

+ Map Explorer



AERONET DATA ACCESS

DATA VISUALIZATION

+ Synergy Tool

+ Map Explorer

+ Air Quality

+ Diurnal Analysis

AEROSOL OPTICAL DEPTH (V3)-
SOLAR

+ Data Display

+ Download Tool

+ Download All Sites

+ Climatology Tables

+ Web Service

About AERONET

The AERONET (AERosol RObotic NETWORK) program is a federation of ground-based remote sensing aerosol networks established by NASA and PHOTONS (PHOTométrie pour le Traitement Opérationnel de Normalisation Satellitaire; Univ. of Lille 1, CNES, and CNRS-INSU) and is greatly expanded by networks, calibration centers, and collaborators (e.g., RIMA, AeroSpan, APAC, AEROCAN, AEROSPAIN, NEON, and CARSNET) from national agencies, institutes, universities, individual scientists, and partners. For more than 25 years, the project has provided long-term, continuous, and readily accessible public domain database of aerosol optical, microphysical and radiative properties for aerosol research and characterization, validation of satellite retrievals, and synergism with other databases. The network imposes standardization of instruments, calibration, processing and distribution.

AERONET collaboration provides globally distributed observations of spectral aerosol optical depth (AOD), inversion products, and precipitable water in diverse aerosol regimes. Version 3 AOD data are computed for three data quality levels: Level 1.0 (unscreened), Level 1.5 (cloud-screened and quality-controlled), and Level 2.0 (quality-assured). Inversions, precipitable water, and other AOD-dependent products are derived from these levels and may implement additional quality checks.

The AERONET - Ocean Color (AERONET-OC) is another component of the AERONET program, provides the additional capability of measuring the radiance emerging from the sea (i.e., normalized water-leaving radiance) with sun-photometers installed on offshore platforms like lighthouses, oceanographic and oil towers. Similarly, the Maritime Aerosol Network (MAN) component of the AERONET program provides ship-borne aerosol optical depth measurements from the Microtops II

<https://aeronet.gsfc.nasa.gov/>

AERONET Data Access

Aerosol Optical Depth (V3) -
Solar

Download Tool

Access AERONET data

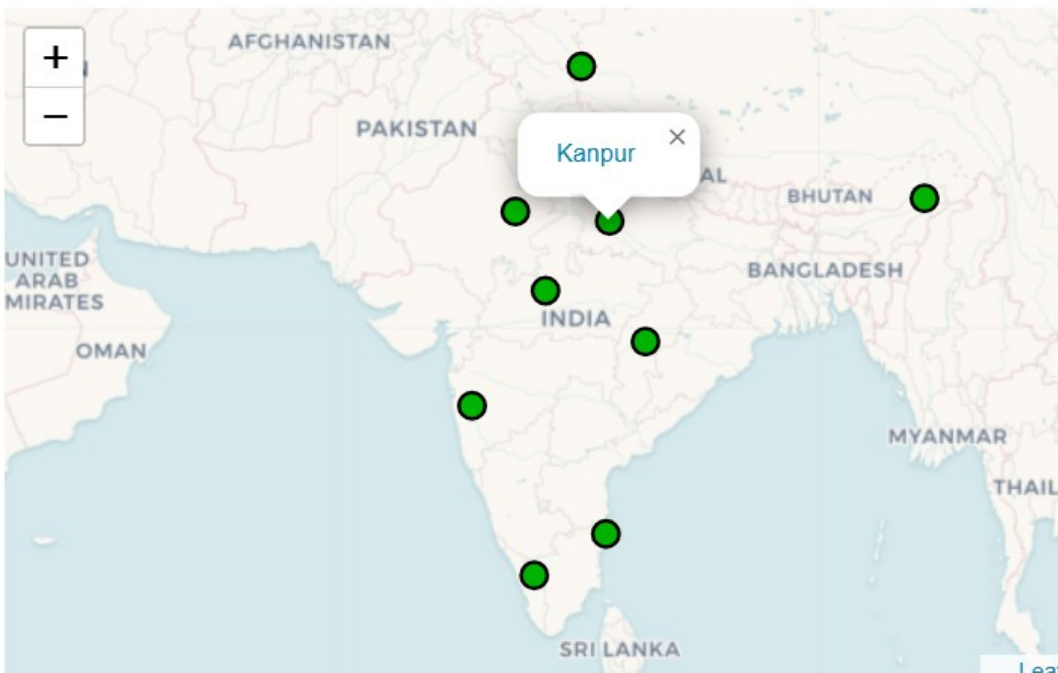
Step 1: Select site

Step 2:
Select date & product (s)

[+Home](#)
Aerosol Optical Depth
[+ AEROSOL/FLUX NETWORKS](#)
[+ CAMPAIGNS](#)
[+ COLLABORATORS](#)
- DATA
[+ LOGISTICS](#)
[+ NASA PROJECTS](#)
[+ OPERATIONS](#)
[+ PUBLICATIONS](#)
[+ SITE INFORMATION](#)
[+ STAFF](#)
[+ SYSTEM DESCRIPTION](#)
AERONET DATA ACCESS
DATA VISUALIZATION
[+ Synergy Tool](#)

AERONET Data Download Tool **Version 3 Direct Sun Algorithm**

Active Status	Region Selection	Country/Province Selection	AERONET Site
Active ▾	Asia ▾	India ▾	All Sites



AERONET Data Download Tool **Version 3 Direct Sun Algorithm**

Click Geographic Region, Country/State or AERONET Site to change site selection:

Geographic Region	Country/State	AERONET Site
Asia	India	Kanpur

Download Data for Kanpur
Select the start and end time of the data download period:

START:	Day/Month/Year	END:	Day/Month/Year
	1 ▾ JAN ▾ 2025 ▾		30 ▾ JAN ▾ 2025 ▾

[Data Descriptions](#) [Data Units](#)
Note: Data are not available if the data type is *italicized*
Select the data type(s) using the corresponding check box:

Direct Sun Products	Select
Aerosol Optical Depth (AOD) with Precipitable Water and Angstrom Parameter	Level 1.0 <input type="checkbox"/> Level 1.5 <input checked="" type="checkbox"/> Level 2.0 <input type="checkbox"/>
Total Optical Depth based on AOD Level*	Level 1.0 <input type="checkbox"/> Level 1.5 <input checked="" type="checkbox"/> Level 2.0 <input type="checkbox"/>
Spectral Deconvolution Algorithm (SDA) Retrievals -- Fine Mode AOD, Coarse Mode AOD, and Fine Mode Fraction	Level 1.0 <input type="checkbox"/> Level 1.5 <input type="checkbox"/> Level 2.0 <input type="checkbox"/>

Data Format	
<input checked="" type="radio"/> All Points	<input type="radio"/> Daily Averages <input type="radio"/> Monthly Averages

Download

***All Points Format Only**

Process AERONET data (manual)

The screenshot displays the Microsoft Excel interface with the 'Convert Text to Columns Wizard - Step 2 of 3' dialog box open. The wizard is configured with 'Tab' and 'Comma' as delimiters. A yellow box labeled 'Step 1: Load & Format' is positioned over the first step of the wizard. Another yellow box labeled 'Step 2: Temporal averaging' is positioned over the second step. A third yellow box at the bottom right states 'Time taken: ~ 15-20 mins per site per date'. The background shows a spreadsheet with columns A through K, containing data for 'AERONET Version 3' and 'Kanpur'.

AERONET Extraction Module

AERONET Extraction

Year:	2025	Satellite Overpass Time	24-01-2025 05:15:29
Temporal Scale [For averaging, in minutes]:	60	Wavelength (in nm)	550
AERONET Data Level:	1.5		
Raster File [for extracting extent]:	Browse	D:/Aerosol Modelling/Aerosol/Scripts/GUI/Landsat 8	
Destination Folder [to save downloaded files]:	Browse	D:/Aerosol Modelling/Aerosol/Scripts/GUI/Landsat 8	
Extract AERONET AOD		View Result	Calculate Angstrom AOD

Output console:

```
| | Site_Name | lon | lat | Elevation(meters) |
|-----+-----+-----+-----+-----|
| 340 | Amity_Univ_Gurgaon | 76.916 | 28.3173 | 285 |
| 416 | IIT_Delhi | 77.1926 | 28.545 | 15 |
|-----+-----+-----+-----+-----|
Processing: Fetching and averaging AERONET Level1.5 values at ±60min

File downloaded successfully from https://aeronet.gsfc.nasa.gov/cgi-bin/print_web_d
ata_v3?site=Amity_Univ_Gurgaon&year=2025&month=1&day=24&hour=5&year2=2025&month2=1&
day2=24&hour2=6&AOD15=1&AVG=10

File downloaded successfully from https://aeronet.gsfc.nasa.gov/cgi-bin/print_web_d
ata_v3?site=IIT_Delhi&year=2025&month=1&day=24&hour=5&year2=2025&month2=1&day2=24&h
our2=6&AOD15=1&AVG=10

| | Site Name | AOD_440nm | AOD_1020nm | AOD_550.0nm |
|-----+-----+-----+-----+-----|
| 0 | Amity_Univ_Gurgaon | 0.375297 | 0.16821 | 0.303303 |
| 1 | IIT_Delhi | 0.338077 | 0.101567 | 0.245701 |
```

About

Checking the availability, downloading, cleaning and pre-processing AERONET data for each station is a time consuming process. Using this module, data for all the available AERONET sites within a raster extent can be downloaded, cleaned, and averaged in less than a minute or two.

Since most AOD retrieval studies focus on temporal averaging within ± 30 -60 minutes of satellite overpass time, an option has been provided to set a temporal averaging time too (default is 60 min). Satellite overpass time must be provided by the user. It is generally available in the metadata file. By default, AERONET site for year 2021 is accessed but it can be changed by the user as per their needs.

In the output file, the 'hour' value is the median time of the temporal averaging scale and is generally equal to the satellite overpass time. Since AERONET AOD is only available at certain wavelengths, once AERONET AOD has been extracted, use 'Calculate Angstrom AOD' to calculate AOD at the required wavelength.

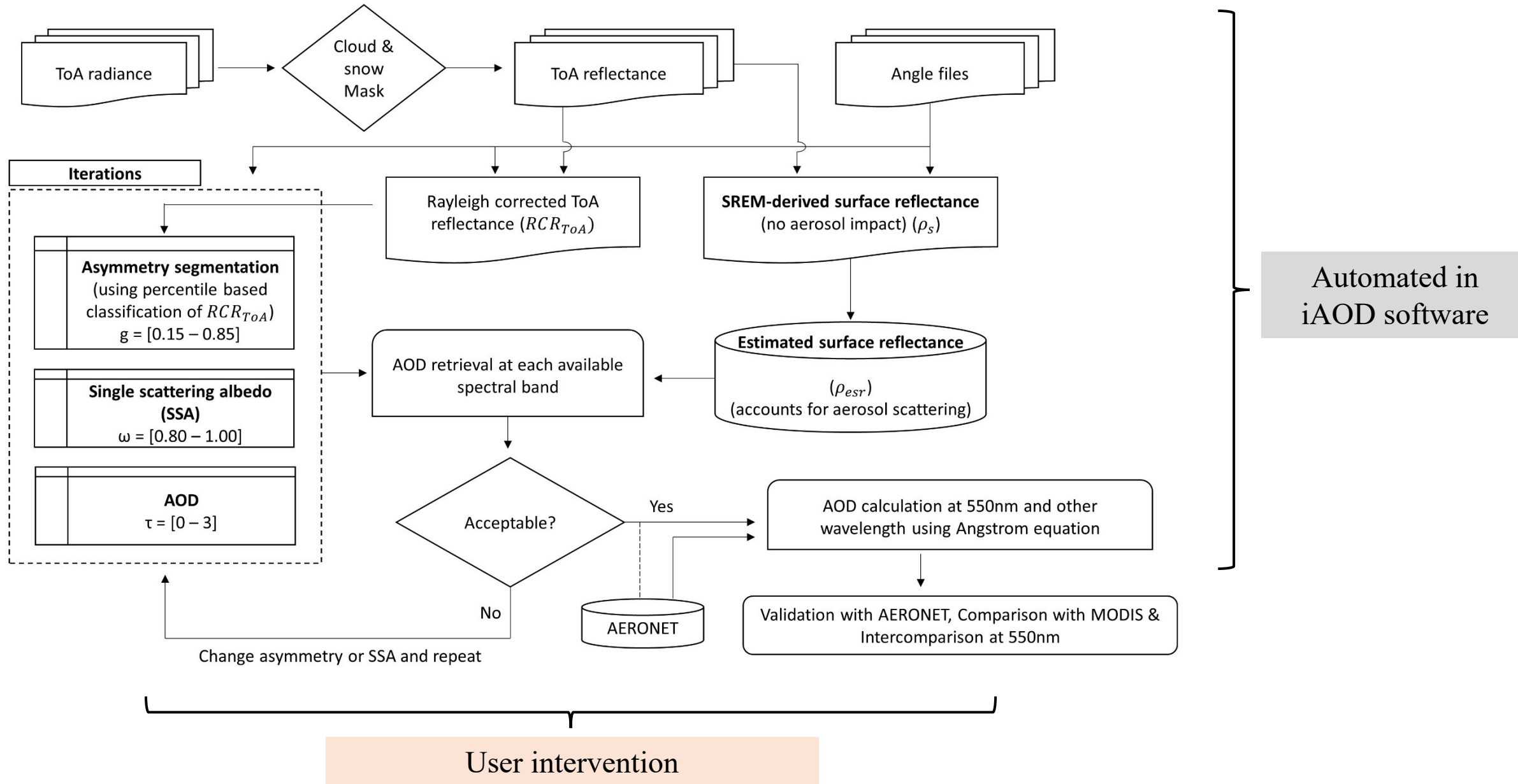
Extract AERONET AOD – Retrieve, Clean, and preprocess AERONET data

Calculate Angstrom AOD – AOD
@ 550nm using AOD at 443 nm &
865 nm

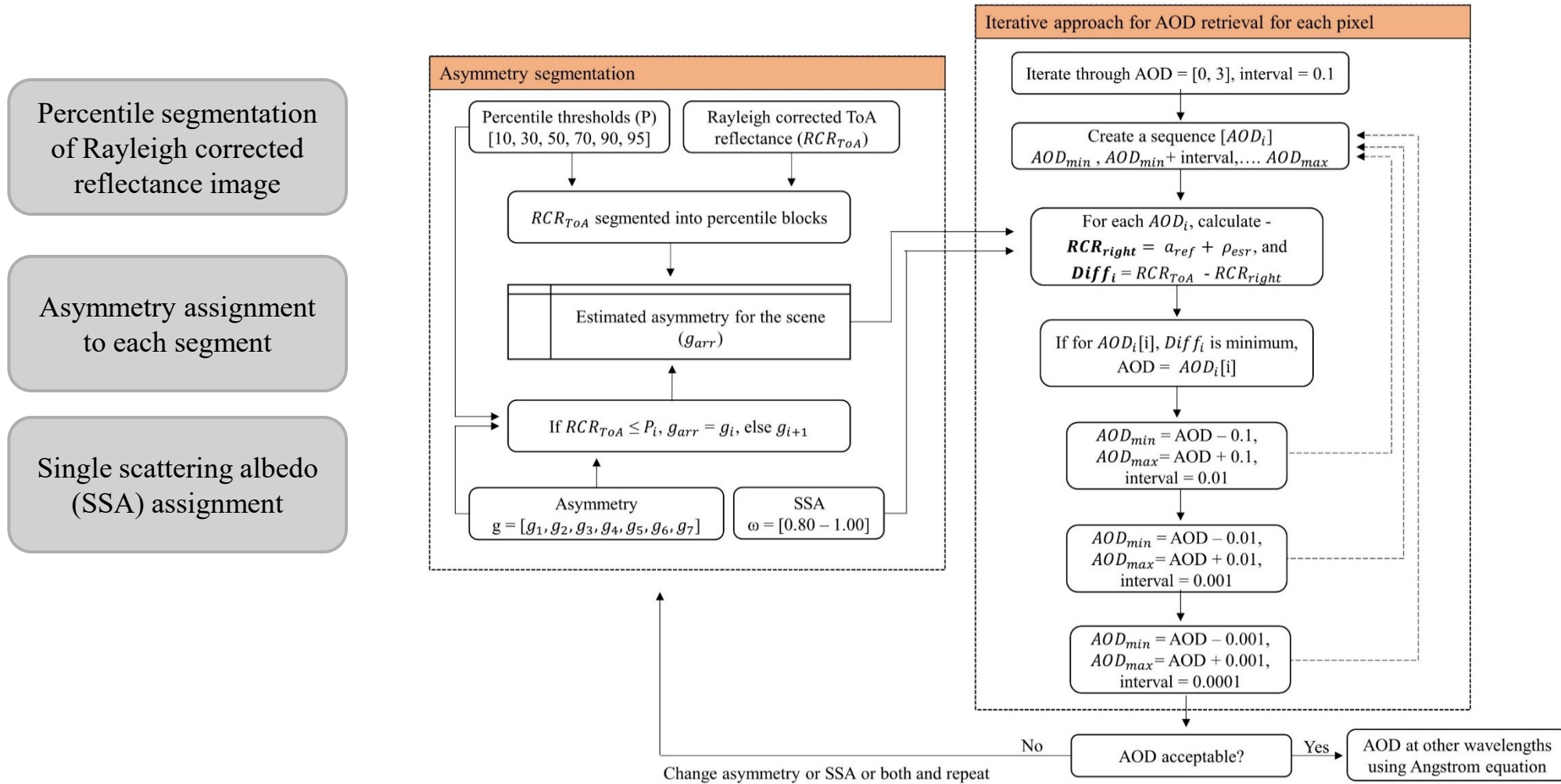
Time taken: $\sim 10\text{-}30$ sec

Part 2: iAOD Demonstration

iAOD Methodology (Kumar & Mehta, 2023)



iAOD Methodology^b (cont.)



^bKumar, A., & Mehta, M. (2023). Investigating the applicability of a simple iterative approach for aerosol optical depth (AOD) retrieval over diverse land surface types from Landsat 8 and Sentinel 2 using visible and near-infrared (VNIR) spectral bands. *Atmospheric Environment*, 314, 120082.

Thank you!

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Missed presentation?
Scan QR for code and
slides

