

Shortname: OMAERUVG
Longname: OMI/Aura Near UV Aerosol Optical Depth
and Single Scattering Albedo Daily L2 Global
0.25x0.25 deg Lat/Lon Grid
PFS Version: 1.2.0
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Description: >

This document specifies the format of the Ozone Monitoring Instrument (OMI) OMAERUVG product, which is the daily Level 2G (L2G) gridded data product that corresponds to the OMAERUV product. The latter is the U.S. aerosol extinction and absorption optical depth orbital Level 2 (L2) swath data product (Reference 1).

The L2G product contains 24 UTC hours of L2 product subsetted onto a longitude-latitude grid.

An OMI L2G day is defined to be the 24 hours that lie between UTC times of 0 hours, 0 minutes, 0 seconds and 23 hours, 59 minutes, 59.999999 seconds.

The L2G product contains the data for all L2 "scenes" that

- 1) have observation times that lie within the L2G day in question,
- 2) have centers that lie within the L2G grid cell in question, and
- 3) are "good".

A "good" OMAERUV L2 scene is defined as one that has

- i) a solar zenith angle that is less than or equal to 70.0 degrees, and
- ii) an UV aerosol index that is not equal to the missing value.

The adopted L2G grid is a 0.25-degree by 0.25-degree grid in longitude and latitude. The dimensions of this grid are 1440 by 720. The origin of the grid is at lower left. That is, the grid cell at coordinates (1, 1) is centered at (longitude = -179.875 , latitude = -89.875), and the grid cell at coordinates (1440, 720) is centered at (longitude = 179.875 , latitude = 89.875).

The adopted L2G grid is consistent with the document entitled "Definition of OMI Grids for Level 3 and Level 4 Data Products" by J.P. Veefkind et al. (Reference 2).

The L2G product currently excludes L2 data collected in spatial and spectral zoom modes.

Each "good" L2 scene is mapped onto only one L2G grid cell.

The number of L2 scenes that are mapped onto a given L2G grid cell can range from 0 to 12, and the corresponding data are stored in an additional dimension of the grid.

The L2 data are not averaged or weighted in any way in the L2G product.

The product is stored as one HDF-EOS 5 grid file, and has a size of 75 MB.

The format of the L2G product files is consistent with the document entitled "HDF-EOS Aura File Format Guidelines" by C. Craig et al. (Reference 3).

Global Metadata:

- Metadata Name: EndUTC
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Data Source: PGE
Description: >
UTC at the end of the L2G granule in "YYYY-MM-DDT23:59:59.999999Z" format.

- Metadata Name: FirstLineInOrbit
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1,16
Minimum Value: 1
Maximum Value: 1700
Data Source: PGE
Description: >

The first line number in each L2 orbit that

contributes to the L2G granule.

- Metadata Name: GranuleDay
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 1
Maximum Value: 31
Data Source: PGE
Description: The day of the month at the start of the L2G granule.

- Metadata Name: GranuleDayOfYear
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 1
Maximum Value: 366
Data Source: PGE
Description: The day of the year at the start of the L2G granule.

- Metadata Name: GranuleMonth
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 1
Maximum Value: 12
Data Source: PGE
Description: The month of the year at the start of the L2G granule.

- Metadata Name: GranuleYear
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 2000

Maximum Value: 2099
Data Source: PGE
Description: The (four-digit) year at the start of the L2G granule.

- Metadata Name: HDFEOSVersion
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Data Source: HE
Description: >
The version of HDF-EOS 5 used in production.
Example is "HDFEOS_5.1.8".

- Metadata Name: InstrumentName
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Valid: OMI
Data Source: PGE
Description: Actual is "OMI" (see Section 6.1 of Reference 3).

- Metadata Name: LastLineInOrbit
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1,16
Minimum Value: 1
Maximum Value: 1700
Data Source: PGE
Description: >
The last line number in each L2 orbit that contributes to the L2G granule.

- Metadata Name: NumberOfLinesMissingGeolocation
Mandatory: T
Data Type: HE5T_NATIVE_INT

Number of Values: 1,16
Minimum Value: 1
Maximum Value: 1700
Data Source: PGE
Description: >

The number of lines in each L2 orbit that are missing geolocation (a.k.a. number of "bad" lines in each L2 file).

- Metadata Name: OrbitNumber
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1,16
Minimum Value: 1
Maximum Value: 999999
Data Source: L2
Description: The OMI orbit number for each L2 input granule.

- Metadata Name: OrbitPeriod
Mandatory: T
Data Type: HE5T_NATIVE_DOUBLE
Number of Values: 1,16
Minimum Value: 5000.0
Maximum Value: 7000.0
Data Source: PGE
Description: The Aura orbital period for each L2 input granule.

- Metadata Name: Period
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Valid: Daily,Weekly,Monthly
Data Source: PGE
Description: The duration of the L2G granule. Actual is "Daily".

- Metadata Name: PGEVERSION
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Data Source: PCF
Description: Example is "1.2.0" (see Appendix K of Reference 4).

- Metadata Name: ProcessLevel
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Valid: 2G
Data Source: PGE
Description: Actual is "2G".

- Metadata Name: QAPercentCloudCover
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1,16
Minimum Value: 0
Maximum Value: 100
Data Source: L2
Description: >
The percent of data that have cloud cover in each L2 input granule.

- Metadata Name: QAPercentMissingData
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1,16
Minimum Value: 0
Maximum Value: 100
Data Source: L2
Description: >
The percent of Level 1B calibrated radiance data

that is missing from each
L2 input granule.

- Metadata Name: QAPercentOutOfBoundsData
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1,16
Minimum Value: 0
Maximum Value: 100
Data Source: L2
Description: >

The percent of data that are out of bounds in each L2 input granule.

- Metadata Name: StartUTC
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Data Source: PGE
Description: >

UTC at the start of the L2G granule in "YYYY-MM-DDT00:00:00.000000Z" format.

- Metadata Name: TAI93At0zOfGranule
Mandatory: T
Data Type: HE5T_NATIVE_DOUBLE
Number of Values: 1
Minimum Value: 0.0
Maximum Value: 1.0e+30
Data Source: PGE
Description: >

The TAI93 time at 0z of the L2G granule (see Section 6.1 of Reference 3).

Grid Metadata:

- Metadata Name: GCTPProjectionCode

Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 0
Maximum Value: 99
Data Source: PGE

Description: >

The GCTP projection code of the L2G grid. Actual is 0, which corresponds to the geographic projection.

- Metadata Name: GridName
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Valid: Aerosol NearUV Swath
Data Source: PGE
Description: Actual is "Aerosol NearUV

Swath".

- Metadata Name: GridOrigin
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Valid: Center
Data Source: PGE

Description: >

The location of longitude and latitude quoted for each L2G grid cell.

Actual is, on average, "Center" (see Section 6.2 of Reference 3).

- Metadata Name: GridSpacing
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Data Source: PGE

Description: >
Spacing of L2G grid (in degrees). Actual is "(0.25,0.25)".

- Metadata Name: GridSpacingUnit
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Valid: deg
Data Source: PGE

Description: >
Unit for GridSpacing. Actual is "deg".

- Metadata Name: GridSpan
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Data Source: PGE

Description: >
Span of L2G grid (in degrees). Actual is "(-180,180,-90,90)".

- Metadata Name: GridSpanUnit
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Valid: deg
Data Source: PGE

Description: >
Unit for GridSpan. Actual is "deg".

- Metadata Name: MaximumNumberOfCandidatesPerGridCell
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 0

Maximum Value: 15

Data Source: PGE

Description: >

The maximum number of L2 scenes per cell in the L2G grid (this can be as large as 12).

- Metadata Name:

MinimumNumberOfCandidatesPerGridCell

Mandatory: T

Data Type: HE5T_NATIVE_INT

Number of Values: 1

Minimum Value: 0

Maximum Value: 15

Data Source: PGE

Description: >

The minimum number of L2 scenes per cell in the L2G grid (this is typically 0, because empty L2G grid cells are quite common).

- Metadata Name: NumberOfEmptyGridCells

Mandatory: T

Data Type: HE5T_NATIVE_INT

Number of Values: 1

Minimum Value: 0

Maximum Value: 1036800

Data Source: PGE

Description: >

The number of cells in the L2G grid that do not contain any L2 scenes.

- Metadata Name:

NumberOfDuplicateScenesAcceptedIntoGrid

Mandatory: T

Data Type: HE5T_NATIVE_INT

Number of Values: 1

Minimum Value: 0
Maximum Value: 1500000
Data Source: PGE
Description: >

The number of L2 scenes accepted into L2G grid cells that already contain one or more L2 scenes.

- Metadata Name: NumberOfGridCells
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 1
Maximum Value: 1036800
Data Source: PGE
Description: The total number of cells in the L2G grid.

- Metadata Name: NumberOfLatitudesInGrid
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 1
Maximum Value: 720
Data Source: PGE
Description: The number of latitude bins in the L2G grid.

- Metadata Name: NumberOfLongitudesInGrid
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 1
Maximum Value: 1440
Data Source: PGE
Description: The number of longitude bins in the L2G grid.

- Metadata Name: NumberOfMultiplyPopulatedGridCells
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 0
Maximum Value: 1036800
Data Source: PGE
Description: >
The number of cells in the L2G grid that contain two or more L2 scenes.

- Metadata Name: NumberOfPopulatedGridCells
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 0
Maximum Value: 1036800
Data Source: PGE
Description: >
The number of cells in the L2G grid that contain one or more L2 scenes.

- Metadata Name: NumberOfScenesAcceptedIntoGrid
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 0
Maximum Value: 1500000
Data Source: PGE
Description: The number of L2 scenes accepted into the L2G grid.

- Metadata Name: NumberOfScenesConsideredForGrid
Mandatory: T
Data Type: HE5T_NATIVE_INT

Number of Values: 1
Minimum Value: 0
Maximum Value: 1500000
Data Source: PGE
Description: The number of L2 scenes considered for the L2G grid.

- Metadata Name: NumberOfScenesRejectedFromGrid
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Minimum Value: 0
Maximum Value: 1500000
Data Source: PGE
Description: The number of L2 scenes rejected from the L2G grid.

- Metadata Name: Projection
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Valid: Geographic
Data Source: PGE
Description: >
The map projection of the L2G grid. Actual is "Geographic" (see Section 6.2 of Reference 3).

- Metadata Name: WavelengthOfAdjustment
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Valid: "354.0, 388.0, 471.0"
Data Source: PGE
Description: >
The wavelengths of adjustment in nm. Actual is "354.0, 388.0, 471.0".

Grid Dimensions:

- Dimension Name: nCandidate
Data Type: HE5T_NATIVE_INT
Dimension Type: FIXED
Number of Values: 1
Minimum Value: 1
Maximum Value: 15
Data Source: PGE
Description: >

The L2-candidate-scenes dimension of the L2G grid. The size of this dimension is currently set at 15.

- Dimension Name: nWavel
Data Type: HE5T_NATIVE_INT
Dimension Type: FIXED
Number of Values: 1
Minimum Value: 1
Maximum Value: 3
Data Source: PGE
Description: >

The wavelengths dimension of the L2G grid. There are currently three wavelengths in both OMAERUV and OMAERUVG.

- Dimension Name: XDim
Data Type: HE5T_NATIVE_INT
Dimension Type: FIXED
Number of Values: 1
Minimum Value: 1
Maximum Value: 1440
Data Source: PGE
Description: >

The longitudes dimension of the L2G grid. There are currently 1440

0.25-degree-wide bins between longitudes -180.0 and 180.0 degrees.

- Dimension Name: YDim
Data Type: HE5T_NATIVE_INT
Dimension Type: FIXED
Number of Values: 1
Minimum Value: 1
Maximum Value: 720
Data Source: PGE
Description: >

The latitudes dimension of the L2G grid. There are currently 720

0.25-degree-wide bins between latitudes -90.0 and 90.0 degrees.

Geolocation Fields:

- Field Name: GroundPixelQualityFlags
Data Type: HE5T_NATIVE_UINT16
Dimensions: nCandidate,YDim,XDim
Minimum Value: 0
Maximum Value: 65534
Missing Value: 65535
Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: L2
Title: Ground Pixel Quality

Flags

Unique Field Definition: OMI-Specific

Description: >

The ground pixel quality flags for each L2 candidate scene in each L2G grid cell:

Bits 0 to 3 together contain the land/water

flags:

- 0 - shallow ocean
- 1 - land
- 2 - shallow inland water
- 3 - ocean coastline/lake shoreline
- 4 - ephemeral (intermittent) water
- 5 - deep inland water
- 6 - continental shelf ocean
- 7 - deep ocean
- 8-14 - not used
- 15 - error flag for land/water

Bits 4 to 6 are flags that are set to 0 for FALSE, or 1 for TRUE:

- Bit 4 - sun glint possibility flag
- Bit 5 - solar eclipse possibility flag
- Bit 6 - geolocation error flag

Bit 7 is reserved for future use (currently set to 0).

Bits 8 to 14 together contain the snow/ice flags (based on NISE):

- 0 - snow-free land
- 1-100 - sea ice concentration (percent)
- 101 - permanent ice (Greenland, Antarctica)
- 102 - not used
- 103 - dry snow
- 104 - ocean (NISE-255)
- 105-123 - reserved for future use
- 124 - mixed pixels at coastline (NISE-252)
- 125 - suspect ice value (NISE-253)
- 126 - corners undefined (NISE-254)
- 127 - error

Bit 15 - NISE nearest neighbor filling flag.
(See Section 6.2 of Reference 5 for more

details.)

- Field Name: Latitude
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nCandidate,YDim,XDim
Minimum Value: -90.0
Maximum Value: 90.0
Missing Value: -1.2676506e+30
Offset: 0.0
Scale Factor: 1.0
Units: deg
Data Source: L2
Title: Geodetic Latitude (deg)
Unique Field Definition: Aura-Shared
Description: >
The geodetic latitude (in degrees) on the ground at the center of each L2 candidate scene in each L2G grid cell.

- Field Name: LineNumber
Data Type: HE5T_NATIVE_INT
Dimensions: nCandidate,YDim,XDim
Minimum Value: 1
Maximum Value: 1700
Missing Value: -2000000000
Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: L2
Title: Line Number of Candidate Scene
Unique Field Definition: OMI-Specific
Description: >
The line number for each L2 candidate scene in each L2G grid cell.

- Field Name: Longitude

Data Type: HE5T_NATIVE_FLOAT
Dimensions: nCandidate,YDim,XDim
Minimum Value: -180.0
Maximum Value: 180.0
Missing Value: -1.2676506e+30
Offset: 0.0
Scale Factor: 1.0
Units: deg
Data Source: L2
Title: Geodetic Longitude (deg)
Unique Field Definition: Aura-Shared

Description: >

The geodetic longitude (in degrees) on the ground at the center of each L2 candidate scene in each L2G grid cell.

- Field Name: NumberOfCandidateScenes
Data Type: HE5T_NATIVE_INT
Dimensions: YDim,XDim
Minimum Value: 0
Maximum Value: 15
Missing Value: 0
Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: PGE
Title: Number of Candidate

Scenes

Unique Field Definition: OMI-Specific

Description: >

The number of L2 candidate scenes in each L2G grid cell.

- Field Name: OrbitNumber
Data Type: HE5T_NATIVE_INT
Dimensions: nCandidate,YDim,XDim
Minimum Value: 1

Maximum Value: 999999
Missing Value: -2000000000
Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: L2
Title: Orbit Number of

Candidate Scene

Unique Field Definition: OMI-Specific

Description: >

The orbit number for each L2 candidate scene in each L2G grid cell.

- Field Name: PathLength
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nCandidate,YDim,XDim
Minimum Value: 2.0
Maximum Value: 100.0
Missing Value: 1.2676506e+30
Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: PGE
Title: Path Length

Unique Field Definition: OMI-Specific

Description: >

The path length [= sec(solar zenith angle) + sec(viewing zenith angle)] for each L2 candidate scene in each L2G grid cell.

- Field Name: ScatteringAngle
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nCandidate,YDim,XDim
Minimum Value: 0.0
Maximum Value: 180.0
Missing Value: -1.2676506e+30
Offset: 0.0

Scale Factor: 1.0
 Units: deg
 Data Source: L2
 Title: Scattering Angle
 Unique Field Definition: OMI-Specific
 Description: >
 The scattering angle

$$[= \text{acos}(\text{cos}(\text{solar zenith angle}) * \text{cos}(\text{viewing zenith angle}) + \text{sin}(\text{solar zenith angle}) * \text{sin}(\text{viewing zenith angle}) * \text{cos}(\text{relative azimuth angle}))]$$
 (in degrees) on the ground at the center of each L2 candidate scene in each L2G grid cell. Also known as glint angle.

- Field Name: SceneNumber
 Data Type: HE5T_NATIVE_INT
 Dimensions: nCandidate,YDim,XDim
 Minimum Value: 1
 Maximum Value: 60
 Missing Value: -2000000000
 Offset: 0.0
 Scale Factor: 1.0
 Units: NoUnits
 Data Source: L2
 Title: Scene Number of Candidate Scene
 Unique Field Definition: OMI-Specific
 Description: >
 The cross-track ground-pixel number for each L2 candidate scene in each L2G grid cell.

- Field Name: SecondsInDay
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nCandidate,YDim,XDim

Minimum Value: 0.0
Maximum Value: 86401.0
Missing Value: -1.2676506e+30
Offset: 0.0
Scale Factor: 1.0
Units: s
Data Source: L2
Title: Seconds in Day at Start
of Scan
Unique Field Definition: Aura-Shared
Description: >
The time after UTC midnight (in seconds) for each
L2 candidate scene in each
L2G grid cell.

- Field Name: SolarZenithAngle
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nCandidate,YDim,XDim
Minimum Value: 0.0
Maximum Value: 180.0
Missing Value: -1.2676506e+30
Offset: 0.0
Scale Factor: 1.0
Units: deg
Data Source: L2
Title: Solar Zenith Angle (deg)
Unique Field Definition: Aura-Shared
Description: >
The solar zenith angle (in degrees) on the ground
at the center of each L2
candidate scene in each L2G grid cell.

- Field Name: TerrainPressure
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nCandidate,YDim,XDim
Minimum Value: 0.0
Maximum Value: 1013.0

Missing Value: -1.2676506e+30
Offset: 0.0
Scale Factor: 1.0
Units: torr
Data Source: L2
Title: Terrain Pressure (torr)
Unique Field Definition: Aura-Shared
Description: >

The terrain pressure (in torr) at the center of each L2 candidate scene in each L2G grid cell.

- Field Name: Time
Data Type: HE5T_NATIVE_DOUBLE
Dimensions: nCandidate,YDim,XDim
Minimum Value: -5.0e+09
Maximum Value: 1.0e+10
Missing Value: -1.2676506002282294e+30
Offset: 0.0
Scale Factor: 1.0
Units: s
Data Source: L2
Title: Time at Start of Scan
Unique Field Definition: Aura-Shared
Description: >

The TAI93 time (in seconds) for each L2 candidate scene in each L2G grid cell.

- Field Name: ViewingZenithAngle
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nCandidate,YDim,XDim
Minimum Value: 0.0
Maximum Value: 180.0
Missing Value: -1.2676506e+30
Offset: 0.0
Scale Factor: 1.0

Units: deg
Data Source: L2
Title: Viewing Zenith Angle
(deg)

Unique Field Definition: OMI-Specific

Description: >

The viewing zenith angle (in degrees) on the ground at the center of each L2 candidate scene in each L2G grid cell.

- Field Name: XTrackQualityFlags
Data Type: HE5T_NATIVE_UINT8
Dimensions: nCandidate,YDim,XDim
Minimum Value: 0
Maximum Value: 254
Missing Value: 255
Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: PGE
Title: Cross Track Quality

Flags

Unique Field Definition: TOMS-OMI-Shared

Description: >

The cross track quality flags assigned to each pixel in

OMI L1B data. Flags indicate detection of the OMI row

anomaly and if the effect has been corrected.

Bits 0 to 2 together indicate row anomaly status:

0 - Not affected

1 - Affected, Not corrected, do not use

2 - Slightly affected, not corrected, use with caution

3 - Affected, corrected, use with caution

4 - Affected, corrected, use pixel

- 5 - Not used
- 6 - Not used
- 7 - Error during anomaly detection processing
- Bit 3 - Reserved for future use.
- Bit 4 - Possibly affected by wavelength shift
- Bit 5 - Possibly affected by blockage
- Bit 6 - Possibly affected by stray sunlight
- Bit 7 - Possibly affected by stray earthshine

Data Fields:

- Field Name: AerosolType
- Data Type: HE5T_NATIVE_UINT8
- Dimensions: nCandidate,YDim,XDim
- Minimum Value: 1
- Maximum Value: 255
- Missing Value: 255
- Offset: 0.0
- Scale Factor: 1.0
- Units: NoUnits
- Data Source: L2
- Title: Aerosol Type
- Unique Field Definition: OMI-Specific
- Description: >

The aerosol type for each L2 candidate scene in each L2G grid cell:

- 1 - Smoke
- 2 - Dust
- 3 - Industrial
- 255 - Unknown

- Field Name: FinalAerosolAbsOpticalDepth
- Data Type: HE5T_NATIVE_FLOAT
- Dimensions: nCandidate,nWavel,YDim,XDim
- Minimum Value: 0.0

Maximum Value: 0.5
Missing Value: -1.2676506e+30
Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: L2
Title: Best Aerosol Absorption

Optical Depth (tau_abs)

Unique Field Definition: OMI-Specific

Description: >

The best aerosol absorption optical depth (tau_abs) solution for each L2 candidate scene in each L2G grid cell.

- Field Name: FinalAerosolLayerHeight
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nCandidate,YDim,XDim
Minimum Value: 0.0
Maximum Value: 10.0
Missing Value: -1.2676506e+30
Offset: 0.0
Scale Factor: 1.0
Units: km
Data Source: L2
Title: Final Aerosol Layer

Height (km)

Unique Field Definition: OMI-Specific

Description: >

The aerosol layer height (in km) for each L2 candidate scene in each L2G grid cell.

- Field Name: FinalAerosolOpticalDepth
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nCandidate,nWavel,YDim,XDim
Minimum Value: 0.0

Maximum Value: 4.0
 Missing Value: -1.2676506e+30
 Offset: 0.0
 Scale Factor: 1.0
 Units: NoUnits
 Data Source: L2
 Title: Best Aerosol Optical
 Depth (tau)
 Unique Field Definition: OMI-Specific
 Description: >
 The best aerosol optical depth (tau) solution for
 each L2 candidate scene
 in each L2G grid cell.

- Field Name:
 FinalAerosolSingleScattAlb
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions:
 nCandidate,nWavel,YDim,XDim
 Minimum Value: 0.0
 Maximum Value: 1.0
 Missing Value: -1.2676506e+30
 Offset: 0.0
 Scale Factor: 1.0
 Units: NoUnits
 Data Source: L2
 Title: Best Aerosol Single
 Scattering Albedo (omega0)
 Unique Field Definition: OMI-Specific
 Description: >
 The best aerosol single scattering albedo
 (omega0) solution for each L2
 candidate scene in each L2G grid cell.

- Field Name: FinalAlgorithmFlags
 Data Type: HE5T_NATIVE_UINT16
 Dimensions: nCandidate,YDim,XDim

Minimum Value:	0
Maximum Value:	8
Missing Value:	65535
Offset:	0.0
Scale Factor:	1.0
Units:	NoUnits
Data Source:	L2
Title:	Final Algorithm Flags
Unique Field Definition:	OMI-Specific
Description:	>

The final algorithm flags for each L2 candidate scene in each L2G grid cell:

Aerosol Single Scattering Albedo (SSA) and
Aerosol Absorption Optical Depth

(AAOD) Retrievals:

- 0 - Most reliable
- 1 - Reliable
- 2 - Less reliable

Not Reliable/No Retrievals:

- 3 - Out-of-bounds optical depth at 500 nm.
- 4 - Cloud/snow/ice contaminated data.
- 5 - Solar zenith angle above threshold (70 degrees).
- 6 - Sun glint angle below threshold over water (40 degrees).
- 7 - Terrain pressure below threshold (628.7 hPa).
- 8 - Cross-track anomaly.

- Field Name:	MeasurementQualityFlags
Data Type:	HE5T_NATIVE_UINT16
Dimensions:	nCandidate,YDim,XDim
Minimum Value:	0
Maximum Value:	65534

Missing Value: 65535
Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: L2
Title: Measurement Quality

Flags

Unique Field Definition: OMI-Specific

Description: >

The measurement quality flags for each L2 candidate scene in each L2G grid cell:

Bit 0 - Test Mode

Bit 1 - Alternative Engineering Data

Bit 2 - Alternating Sequencing Readout

Bit 3 - Co-adder Error

Bit 4 - Invalid Co-addition Period

Bit 5 - Co-addition Possibility

Bit 6 - Measurement Combination

Bit 7 - Rebinning

Bit 8 - Dark Current Correction Processing

Option

Bit 9 - Detector Smear Calculation Processing

Option

Bit 10 - SAA Possibility

Bit 11 - Spacecraft Maneuver

Bit 12 - Geolocation Error

Bit 13 - Reserved

Bit 14 - Reserved

Bit 15 - Reserved

- Field Name: NormRadiance

Data Type: HE5T_NATIVE_FLOAT

Dimensions:

nCandidate, nWavel, YDim, XDim

Minimum Value: 0.0

Maximum Value: 1.0

Missing Value: -1.2676506e+30
Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: L2
Title: Normalized Radiance
Unique Field Definition: OMI-Specific
Description: >

The normalized radiance for each L2 candidate scene in each L2G grid cell.

- Field Name: Reflectivity
Data Type: HE5T_NATIVE_FLOAT
Dimensions:
nCandidate,nWavel,YDim,XDim
Minimum Value: 0.0
Maximum Value: 1.0
Missing Value: -1.2676506e+30
Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: L2
Title: Lambert Equivalent

Reflectivity
Unique Field Definition: OMI-Specific
Description: >
The Lambert equivalent reflectivity for each L2 candidate scene in each L2G grid cell.

- Field Name: SurfaceAlbedo
Data Type: HE5T_NATIVE_FLOAT
Dimensions:
nCandidate,nWavel,YDim,XDim
Minimum Value: 0.0
Maximum Value: 1.0
Missing Value: -1.2676506e+30

Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: L2
Title: Surface Albedo
Unique Field Definition: OMI-Specific
Description: >

The surface albedo for each L2 candidate scene in each L2G grid cell.

- Field Name: UVAerosolIndex
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nCandidate,YDim,XDim
Minimum Value: -10.0
Maximum Value: 30.0
Missing Value: -1.2676506e+30
Offset: 0.0
Scale Factor: 1.0
Units: NoUnits
Data Source: L2
Title: UV Aerosol Index
Unique Field Definition: OMI-Specific
Description: >

The UV aerosol index for each L2 candidate scene in each L2G grid cell.

Core Metadata:

- Metadata Name: AssociatedInstrumentShortName
Mandatory: T
Data Type: VA20
Number of Values: 1
Valid: OMI
Data Source: MCF
Description: Actual is "OMI".

- Metadata Name: AssociatedPlatformShortName

- Mandatory: T
Data Type: VA20
Number of Values: 1
Valid: Aura
Data Source: MCF
Description: Actual is "Aura".
- Metadata Name: AssociatedSensorShortName
Mandatory: T
Data Type: VA20
Number of Values: 1
Valid: CCD Ultra Violet, CCD Visible
Data Source: MCF
Description: Actual is "CCD Visible".
 - Metadata Name: AutomaticQualityFlag
Mandatory: T
Data Type: VA20
Number of Values: 1
Valid: Passed, Suspect, Failed
Data Source: PGE
Description: Actual is "Failed".
 - Metadata Name: AutomaticQualityFlagExplanation
Mandatory: T
Data Type: VA255
Number of Values: 1
Data Source: PGE
Description: >
Actual is "An automatic quality investigation has not yet been devised."
 - Metadata Name: DayNightFlag
Mandatory: T
Data Type: VA5
Number of Values: 1
Valid: Day, Night, Both

Data Source: MCF
Description: Actual is "Day".

- Metadata Name: EastBoundingCoordinate
Mandatory: T
Data Type: LF
Number of Values: 1
Minimum Value: -180.0
Maximum Value: 180.0
Data Source: PGE
Description: >

The terrestrial longitude (in degrees) of the easternmost data in the L2G granule, which is typically 180.0 degrees.

- Metadata Name: EquatorCrossingDate
Mandatory: T
Data Type: D
Number of Values: 1,16
Data Source: L2
Description: >

The date of the ascending equator crossing for each L2 input granule.

- Metadata Name: EquatorCrossingLongitude
Mandatory: T
Data Type: LF
Number of Values: 1,16
Minimum Value: -180.0
Maximum Value: 180.0
Data Source: L2
Description: >

The terrestrial longitude (in degrees) of the ascending equator crossing for each L2 input granule.

- Metadata Name: EquatorCrossingTime

Mandatory: T
Data Type: T
Number of Values: 1,16
Data Source: L2
Description: >

The time of the ascending equator crossing for each L2 input granule.

- Metadata Name: InputPointer
Mandatory: T
Data Type: VA255
Number of Values: 1,16
Data Source: PCF
Description: >

A list of the L2 input granules. Example is

("OMI-Aura_L2-OMAERUV_2006m0101t0127-
o07788_v002-2006m0630t195047.he5",
"OMI-Aura_L2-OMAERUV_2006m0101t0306-
o07789_v002-2006m0630t194941.he5",
"OMI-Aura_L2-OMAERUV_2006m0101t0445-
o07790_v002-2006m0630t194912.he5",
"OMI-Aura_L2-OMAERUV_2006m0101t0624-
o07791_v002-2006m0630t195527.he5",
"OMI-Aura_L2-OMAERUV_2006m0101t0803-
o07792_v002-2006m0630t195857.he5",
"OMI-Aura_L2-OMAERUV_2006m0101t0942-
o07793_v002-2006m0630t195945.he5",
"OMI-Aura_L2-OMAERUV_2006m0101t1121-
o07794_v002-2006m0630t200413.he5",
"OMI-Aura_L2-OMAERUV_2006m0101t1300-
o07795_v002-2006m0630t195904.he5",
"OMI-Aura_L2-OMAERUV_2006m0101t1438-
o07796_v002-2006m0630t195021.he5",
"OMI-Aura_L2-OMAERUV_2006m0101t1617-
o07797_v002-2006m0630t195347.he5",
"OMI-Aura_L2-OMAERUV_2006m0101t1756-
o07798_v002-2006m0630t195454.he5",

"OMI-Aura_L2-OMAERUV_2006m0101t1935-
o07799_v002-2006m0630t195418.he5",

"OMI-Aura_L2-OMAERUV_2006m0101t2114-
o07800_v002-2006m0630t195155.he5",

"OMI-Aura_L2-OMAERUV_2006m0101t2253-
o07801_v002-2006m0630t195327.he5")

- Metadata Name: LocalGranuleID
Mandatory: T
Data Type: VA80
Number of Values: 1
Data Source: PGE
Description: >

Example is "OMI-Aura_L2G-
OMAERUVG_2006m0106_v002-2006m0317t220314.he5"

(see Appendix E of Reference 4).

- Metadata Name: LocalityValue
Mandatory: T
Data Type: VA20
Number of Values: 1
Data Source: MCF
Description: Actual is "Global".

- Metadata Name: LOCALVERSIONID
Mandatory: T
Data Type: VA60
Number of Values: 1
Data Source: PCF
Description: >

MD5 fingerprint of the HDF product file. Example
valids are

"RFC1321 MD5 = not yet calculated" and "RFC1321
MD5 = [0-9,a-f]{32}".

- Metadata Name: NorthBoundingCoordinate
Mandatory: T

Data Type: LF
Number of Values: 1
Minimum Value: -90.0
Maximum Value: 90.0
Data Source: PGE
Description: >

The terrestrial latitude (in degrees) of the northernmost data in the L2G granule, which typically lies in the range from 65.0 to 90.0 degrees.

- Metadata Name: OperationalQualityFlag
Mandatory: T
Data Type: VA20
Number of Values: 1
Valid: >

Passed,Failed,Being Investigated,Not Investigated,Inferred Passed, Inferred Failed,Suspect
Data Source: PGE
Description: >
Actual is "Passed".

- Metadata Name:
OperationalQualityFlagExplanation
Mandatory: T
Data Type: VA255
Number of Values: 1
Data Source: PGE
Description: >

Actual is "This granule passed operational tests that were administered by the OMI SIPS. QA metadata was extracted and the file was successfully read using standard HDF-EOS utilities."

- Metadata Name: OrbitNumber

Mandatory: T
Data Type: I
Number of Values: 1,16
Minimum Value: 1
Maximum Value: 999999
Data Source: L2
Description: The OMI orbit number for each
L2 input granule.

- Metadata Name: ParameterName
Mandatory: T
Data Type: VA40
Number of Values: 1
Valid: OMAERUV
Data Source: PGE
Description: >
The measured science parameter expressed in the
L2G granule. Actual is
"OMAERUV".

- Metadata Name: PGEVERSION
Mandatory: T
Data Type: VA10
Number of Values: 1
Data Source: PCF
Description: Example is "1.2.0" (see
Appendix K of Reference 4).

- Metadata Name: ProductionDateTime
Mandatory: T
Data Type: DT
Number of Values: 1
Data Source: TK
Description: The date and time of the Level
2G processing.

- Metadata Name: QAPercentOutOfBoundsData

Mandatory: T
Data Type: I
Number of Values: 1
Minimum Value: 0
Maximum Value: 100
Data Source: PGE

Description: >

An average for the entire L2G granule of the percent of data that are out of bounds.

- Metadata Name: QAPercentMissingData
Mandatory: T
Data Type: I
Number of Values: 1
Minimum Value: 0
Maximum Value: 100
Data Source: PGE

Description: >

An average for the entire L2G granule of the percent of missing Level 1B calibrated radiance data.

- Metadata Name: QAPercentCloudCover
Mandatory: T
Data Type: I
Number of Values: 1
Minimum Value: 0
Maximum Value: 100
Data Source: PGE

Description: >

An average for the entire L2G granule of the percent of data that have cloud cover.

- Metadata Name: RangeBeginningDate
Mandatory: T

Data Type: D
Number of Values: 1
Data Source: PGE
Description: The year, month and day when
the L2G granule begins.

- Metadata Name: RangeBeginningTime
Mandatory: T
Data Type: T
Number of Values: 1
Data Source: PGE
Description: >
The hour, minute, second and fraction of a second
when the L2G granule
begins.

- Metadata Name: RangeEndingDate
Mandatory: T
Data Type: D
Number of Values: 1
Data Source: PGE
Description: The year, month and day when
the L2G granule ends.

- Metadata Name: RangeEndingTime
Mandatory: T
Data Type: T
Number of Values: 1
Data Source: PGE
Description: >
The hour, minute, second and fraction of a second
when the L2G granule ends.

- Metadata Name: REPROCESSINGACTUAL
Mandatory: T
Data Type: VA20
Number of Values: 1

Valid: >
processed 1 time,processed 2 times,processed 3
times,processed 4 times

Data Source: PCF

Description: >

An indication of what reprocessing has been
performed on the L2G granule.

- Metadata Name: ReprocessingPlanned

Mandatory: T

Data Type: VA40

Number of Values: 1

Valid: >

no further update anticipated,further update is
anticipated,

further update anticipated using enhanced PGE

Data Source: DP

Description: Actual is "further update is
anticipated".

- Metadata Name: ScienceQualityFlag

Mandatory: T

Data Type: VA20

Number of Values: 1

Valid: >

Passed,Failed,Being Investigated,Not
Investigated,Inferred Passed,

Inferred Failed,Suspect

Data Source: DP

Description: Actual is "Not Investigated".

- Metadata Name: ScienceQualityFlagExplanation

Mandatory: T

Data Type: VA255

Number of Values: 1

Data Source: DP

Description: >

Actual is "An updated science quality flag and explanation is put in the product .met file when a granule has been evaluated. The flag value in this file, Not Investigated, is an automatic default that is put into every granule during production."

- Metadata Name: ShortName
Mandatory: T
Data Type: VA8
Number of Values: 1
Valid: OMAERUVG
Data Source: MCF
Description: Actual is "OMAERUVG".

- Metadata Name: SizeMBECSDataGranule
Mandatory: F
Data Type: LF
Number of Values: 1
Minimum Value: 0.0
Maximum Value: 10000.0
Data Source: DSS
Description: >
The volume of data (in MB) contained in the L2G granule (this Metadata will not appear in the L2G granule).

- Metadata Name: SouthBoundingCoordinate
Mandatory: T
Data Type: LF
Number of Values: 1
Minimum Value: -90.0
Maximum Value: 90.0
Data Source: PGE
Description: >
The terrestrial latitude (in degrees) of the

southernmost data in the L2G granule, which typically lies in the range from -90.0 to -65.0 degrees.

- Metadata Name: VERSIONID
Mandatory: T
Data Type: SI
Number of Values: 1
Minimum Value: 0
Maximum Value: 999
Data Source: PCF
Description: Example is 3.

- Metadata Name: WestBoundingCoordinate
Mandatory: T
Data Type: LF
Number of Values: 1
Minimum Value: -180.0
Maximum Value: 180.0
Data Source: PGE
Description: >
The terrestrial longitude (in degrees) of the westernmost data in the L2G granule, which is typically -180.0 degrees.

Product Specific Attributes:

- Metadata Name: ExpeditedData
Mandatory: T
Data Type: VA10
Number of Values: 1
Valid: TRUE,FALSE
Data Source: PGE
Description: The indicator for expedited Level 0 data.

- Metadata Name: ExposureTimes

Mandatory: T
Data Type: F
Number of Values: 1,256
Minimum Value: 0.0
Maximum Value: 2000.0
Data Source: PGE

Description: >

An array containing the exposure times (in seconds) used for the measurements.

- Metadata Name: MasterClockPeriods
Mandatory: T
Data Type: F
Number of Values: 1,128
Minimum Value: 0.0
Maximum Value: 10.0
Data Source: PGE

Description: >

An array containing the master clock periods (in seconds) used for the measurements.

- Metadata Name: NrMeasurements
Mandatory: T
Data Type: I
Number of Values: 1
Minimum Value: 0
Maximum Value: 30000
Data Source: PGE

Description: >

The number of measurements used to create the L2G granule.

- Metadata Name: NrSpatialZoom
Mandatory: T
Data Type: I

Number of Values: 1
Minimum Value: 0
Maximum Value: 0
Data Source: PGE
Description: >

The number of measurements in spatial zoom mode.
Actual is 0, because
zoom measurements are excluded from the L2G
granule.

- Metadata Name: NrSpectralZoom
Mandatory: T
Data Type: I
Number of Values: 1
Minimum Value: 0
Maximum Value: 0
Data Source: PGE
Description: >

The number of measurements in spectral zoom mode.
Actual is 0, because
zoom measurements are excluded from the L2G
granule.

- Metadata Name: NrZoom
Mandatory: T
Data Type: I
Number of Values: 1
Minimum Value: 0
Maximum Value: 0
Data Source: PGE
Description: >

The number of measurements in zoom modes. Actual
is 0, because zoom
measurements are excluded from the L2G granule.

- Metadata Name: SolarEclipse
Mandatory: T

Data Type: VA10
Number of Values: 1
Valid: TRUE,FALSE
Data Source: PGE
Description: >

The indicator that during part of the measurements a solar eclipse occurred.

- Metadata Name: SouthAtlanticAnomalyCrossing
Mandatory: T
Data Type: VA10
Number of Values: 1
Valid: TRUE,FALSE
Data Source: PGE
Description: >

The indicator that during part of the measurements the spacecraft was in the South Atlantic Anomaly.

- Metadata Name: SpacecraftManeuverFlag
Mandatory: T
Data Type: VA10
Number of Values: 1
Valid: TRUE,FALSE,UNKNOWN
Data Source: PGE
Description: >

The indicator that during part of the measurements the spacecraft was performing a maneuver.

Archived Metadata:

- Metadata Name: ESDTDestructorRevision
Mandatory: T
Data Type: VA10
Number of Values: 1
Data Source: MCF

Description: >

The version of the ESDT descriptor file as determined by ECS.

- Metadata Name: LongName
Mandatory: T
Data Type: VA80
Number of Values: 1

Valid: >

OMI/Aura Near UV Aerosol Optical Depth and Single Scattering Albedo Daily L2 Global 0.25x0.25 deg Lat/Lon Grid

Data Source: MCF

Description: >

Actual is

"OMI/Aura Near UV Aerosol Optical Depth and Single Scattering Albedo Daily L2 Global 0.25x0.25 deg Lat/Lon Grid"

References: >

1. "OMAERUV README File"
(2009 March 31)
(http://disc.sci.gsfc.nasa.gov/Aura/data-holdings/OMI/omaeruv_v003.shtml)
2. "Definition of OMI Grids for Level 3 and Level 4 Data Products"
(OMI-Grids_L3L4, SD-OMIE-KNMI-443, 25 January 2005)
3. "HDF-EOS Aura File Format Guidelines"
(OMI-AURA-DATA-GUIDE, Version 2.12, 24 October 2006)
4. "OMI Science Software Delivery Guide for Version 0.9"

(OMI-SSDG-0.9.10, Version 0.9.10, 22 June 2005)

5. "OMI GDPS Input/Output Data Specification (IODS) Volume 2"

(OMI-GDPS-IODS-2, SD-OMIE-7200-DS-467, 8 November 2004)

6. "OMAERUVG ECS Metadata Requirements"

(OMI-OMAERUVG_Metadata_RD, Version 0.9.30, In Preparation)

7. "Release 6A Implementation Earth Science Data Model for the ECS Project"

(420-TP-022-002, June 2001)

(<http://edhs1.gsfc.nasa.gov/waisdata/rel6/html/tp4202202.html> and

http://edhs1.gsfc.nasa.gov/waisdata/rel6/html/tp42022_adds.html)