**AEROSAT Working Group on Climate Data Records**

List of candidate aerosol CDRs currently available.

**Stratospheric Aerosols**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***Satellite Instrument*** | ***Algo*** | ***Main Retrieved Quantities*** | ***Time Span*** | ***Provider*** | ***Access*** | ***Reference*** |
| SAGE | ver 7.0 (SAGE II)  ver 4.0 (SAGE III) | Aerosol extinction coefficient profiles from cloud top to 40 km at 4 wavelengths in the UV-vis-NIR | 1984-2005[[1]](#footnote-1) | NASA LaRC  eosweb.larc.nasa.gov | sage.nasa.gov | R. P. Damadeo, R. P., J. M. Zawodny, L. W. Thomason, and N. Iyer, SAGE Version 7.0 Algorithm: Application to SAGE II, Atmos. Meas. Tech., 6, 3539-3561, 2013 [www.atmos-meas-tech.net/6/3539/2013/](http://www.atmos-meas-tech.net/6/3539/2013/), doi:10.5194/amt-6-3539-2013  Thomason, L. W., James R. Moore, Michael C. Pitts, Joseph M. Zawodny, and Er-Woon Chiou, An Evaluation of the SAGE III Version 4 Aerosol Extinction Coefficient and Water Vapor Data Products, Atmos. Chem. Phys., 10, 2159-2173, 2010 [www.atmos-chem-phys.net/10/2159/2010/](http://www.atmos-chem-phys.net/10/2159/2010/) |
| ODIN OSIRIS | Saskmart | Strat. extinction vertical profiles | 2001-present | U. Saskatchewan | osirus.usask.ca | Bourassa AE, Rieger LA, Lloyd ND, Degenstein DA.  2012.  Odin-OSIRIS stratospheric aerosol data product and SAGE III intercomparison. Atmospheric Chemistry and Physics. 12:605–614. doi:10.5194/acp-12-605-2012 |
| Envisat GOMOS | AERGOM | Strat. extinction vertical profiles | 2002-2012 | BIRA | www.esa-aerosol-cci.org | Algorithm Theoretical Basis Document, “AERGOM: Aerosol profile retrieval prototype for GOMOS”, Doc. No.: AERGOM-ATBD-2010-07 Iss./Rev.: 2.0, Filip Vanhellemont and Nina Mateshvili. |

**Total Column Aerosols**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***Satellite Instrument*** | ***Algo*** | ***Main Retrieved Quantities*** | ***Time Span*** | ***Provider*** | ***Access*** | ***Reference*** |
| NOAA-AVHRR | 2-channel | AOD (ocean) | 1981-2009 | NOAA | [NOAA CLASS](http://www.nsof.class.noaa.gov/saa/products/search?%20sub_id=0&datatype_family=AERO100&submit.x=20&submit.y=11) | Heidinger et al., 2014: The Pathfinder Atmospheres–Extended AVHRR Climate Dataset. Bull. Amer. Meteor. Soc., 95, 909–922. |
| NOAA-AVHRR | 2-channel | AOD (ocean) | 1981-2006 | Global Aerosol Climatology Project | http://gacp.giss.nasa.gov/data/time\_ser/ | Journal of the Atmospheric Sciences Special Issue: Vol 59, No. 3, Feb 2002. |
| TOMS | near-UV | AOD, AAI | 1979-2005[[2]](#footnote-2) | NASA | ozoneaq.gsfc.nasa.gov | O. Torres, P. K. Bhartia, J. R. Herman, A. Sinyuk, Paul Ginoux, and Brent Holben, 2002: A Long-Term Record of Aerosol Optical Depth from TOMS Observations and Comparison to AERONET Measurements. *J. Atmos. Sci.*, **59**, 398–413. |
| ERS-2 GOME,  Envisat SCIAMACHY  MetOp GOME-2,  AURA OMI | AAI | Absorbing Aerosol Index | 1995-2014 | KNMI/TEMIS/ESA | www.temis.nl | M. de Graaf, P. Stammes, O. Torres, and R.B.A. Koelemeijer, *Absorbing Aerosol Index: Sensitivity analysis, application to GOME and comparison with TOMS,* J. Geophys. Res. 110, D010201, doi:10.1029/2004JD005178, 2005 |
| ERS-2  ATSR-2  Envisat AATSR | SU v4.2 ADV 1.42 ORAC 2.1 | AOD, mixing fractions, Angstrom | 1995-2012 | U.Swansea, FMI, Oxford/RAL, Aerosol\_CCI/ESA | www.esa-aerosol-cci.org | Bevan, S.L., North, P.R.J., Los, S.O. and Grey, W.M.F. (2012). A global dataset of atmospheric aerosol optical depth and surface reflectance from AATSR. Remote Sensing of Environment, 116, 119-210.  Curier, L., de Leeuw, G., Kolmonen, P., Sundstr ̈om, A.-M., Sogacheva, L., and Bennouna, Y., Aerosol retrieval over land using the (A)ATSR dual-view algorithm, in Satellite Aerosol Remote Sensing Over Land, Kokhanovsky,A.A.anddeLeeuw, G. (editors), Springer, Berlin, 2009  G.E. Thomas, C.A. Poulsen, A.M. Sayer, S.H. Marsh, S.M. Dean, E. Carboni, *et al.*, The GRAPE aerosol retrieval algorithm, Atmospheric Measurement Techniques, 2 (2009), pp. 679–701. |
| TERRA-MISR | Standard Aerosol algorithm V22 | AOD, ANG, aerosol type. | 2000-present | NASA | eosweb.larc.nasa.gov | J. Martonchik et al. (2009) In: A. Kokhanovsky & G. de Leeuw, ed., Satellite Aerosol Remote Sensing Over Land, Springer, Berlin  Kahn, R.A., B.J. Gaitley, M.J. Garay, D.J. Diner, T. Eck, A. Smirnov, and B.N. Holben, 2010. Multiangle Imaging SpectroRadiometer global aerosol product assessment by comparison with the Aerosol Robotic Network. J. Geophys. Res. 115, D23209, doi: 10.1029/2010JD014601. |
| AQUA-MODIS  TERRA-MODIS | Coll. 6 | AOD,  ANG (ocean),  FMF (ocean) | 2000-present | NASA | http://ladsweb.nascom.nasa.gov /data/search.html | Levy, R. C., Mattoo, S., Munchak, L. A., Remer, L. A., Sayer, A. M., Patadia, F., and Hsu, N. C.: The Collection 6 MODIS aerosol products over land and ocean, Atmos. Meas. Tech., 6, 2989-3034, doi:10.5194/amt-6-2989-2013, 2013.  Sayer, AM; Hsu, NC; Bettenhausen, C; Jeong, MJ (2013). Validation and uncertainty estimates for MODIS Collection 6 "Deep Blue" aerosol data. JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES, 118(14), 7864-7872. |
| SEAWIFS | Land: Deep Blue  Ocean: SOAR | AOD,  ANG (ocean) FMF (ocean) | 1997-2010[[3]](#footnote-3) | NASA | disc.gsfc.nasa.gov | Sayer, AM; Hsu, NC; Bettenhausen, C; Ahmad, Z; Holben, BN; Smirnov, A; Thomas, GE; Zhang, J (2012).SeaWiFS Ocean Aerosol Retrieval (SOAR): Algorithm, validation, and comparison with other data sets. JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES, 117, D03206.  Sayer, AM; Hsu, NC; Bettenhausen, C; Jeong, MJ; Holben, BN; Zhang, J (2012). Global and regional evaluation of over-land spectral aerosol optical depth retrievals from SeaWiFS. ATMOSPHERIC MEASUREMENT TECHNIQUES, 5(7), 1761-1778. |
| OMI | OMAERO | AAI, AOD | 2004-present | KNMI | http://disc.sci.gsfc.nasa.gov /Aura/data-holdings/OMI /omaero\_v003.shtml | Stein-Zweers, D. C.; Veihelmann, B.; Veefkind, J. P.; Stammes, P.; Levelt, P.,Evaluation of spatial and temporal trends in absorbing aerosol presence using OMI OMAERO Aerosol Index data, EGU General Assembly 2009, held 19-24 April, 2009 in Vienna, Austria http://meetings.copernicus.org/egu2009, p.9632 |
| OMI | OMAERUV | AAI, AOD, SSA | 2004-present | NASA | http://disc.sci.gsfc.nasa.gov/Aura/data-holdings/OMI/omaeruv\_v003.shtml  http://disc.sci.gsfc.nasa.gov/Aura/data-holdings/OMI/omto3\_v003.shtml | Torres, O., A. Tanskanen, B. Veihelman, C. Ahn,R. Braak, P. K. Bhartia, P. Veefkind, and P. Levelt (2007), Aerosols and Surface UV Products from OMI Observations: An Overview, , *J. Geophys. Res.,* 112, D24S47, doi:10.1029/2007JD008809. |
| Envisat MERIS | ALAMO v2.2 | AOD (ocean, 550nm, 865nm), fine mode fraction, *R*eff, altitude | 2002-2012 | HYGEOS/ ICARE | www.icare.univ-lille1.fr | G. de Leeuw et al., *Rem. Sens. Env.*, (2014)  DOI: 10.1016/j.rse.2013.04.023 |
| MSG SEVIRI | AEROSEVIRI | AOD (ocean) | 2003-present | ICARE | www.icare.univ-lille1.fr | F. Thieuleux, C. Moulin, F. M. Bréon, F. Maignan, J. Poitou and D. Tanré: Remote Sensing of Aerosols over the oceans using MSG/SEVIRI Imagery, Ann. Geophys., 23, 3561-3568, doi:10.5194/angeo-23-3561-2005. |
| CALIPSO CALIOP | Ver. 3 | AOD (532 nm, 1064 nm) for total aerosol and for dust only, extinction profile (532 nm, 1064 nm) for total aerosol and for dust only  Global curtain, land & ocean, 16-day repeat cycle. | 2006 – present | NASA LaRC | eosweb.larc.nasa.gov | Winker, D. M., J. L. Tackett, B. J. Getzewich, Z. Liu, M. A. Vaughan, and R. R. Rogers,  2013: “The global 3-D distribution of tropospheric aerosols as characterized by CALIOP”, *Atmos. Chem. Phys.*, **13**, 3345–3361, doi:10.5194/acp-13-3345-2013. |
| PARASOL Ocean | OC2 | AOD (670nm, 865nm), Angstrom, fine and coarse mode information, SSA | 2005-2013 | LOA/ICARE | www.icare.univ-lille1.fr | Herman, M., J.-L. Deuzé, A. Marchand, B. Roger, and P. Lallart, 2005 : Aerosol remote sensing from POLDER/ADEOS over the ocean: Improved retrieval using a nonspherical particle model, *J. Geophys. Res.*, 110, D10S2, doi 10.1029/2004JD004798. |
| PARASOL Land | LS2 | Fine mode AOD (865nm) | 2005-2013 | LOA/ICARE | www.icare.univ-lille1.fr | Deuzé J.L., F.M. Bréon, C. Devaux, P. Goloub, M. Herman, B. Lafrance, F. Maignan, A. Marchand, G. Perry, D. Tanré, 2001 : Remote Sensing of aerosols over land surfaces from POLDER/ADEOS-1 polarized measurements, *J. Geophys. Res.*, 106, 4913-4926 |

Parts of this table were based on Table 1 from R.A. Kahn, Reducing the Uncertainties in Direct Aerosol Radiative Forcing, Surv Geophys (2012) 33:701–721 DOI 10.1007/s10712-011-9153-z.

**Acronyms:**

AAI Absorbing aerosol index

AOD Aerosol optical depth (also referred to as AOT or aerosol optical thickness)

AAOD Absorbing aerosol optical depth

ANG Ångström exponent

FMF Fine mode fraction

*R*eff Effective radius

SSA Single scattering albedo

1. SAGE II (Oct 1984-Aug 2005), SAGE III-Meteor-3M (Feb 2002-Dec 2005). Older data sets from SAM II (1975-1978) and SAGE I (1979-1981) also exist. [↑](#footnote-ref-1)
2. TOMS data after 2001 should not be used for trend analysis. TOMS instruments were flown on the following satellites: Nimbus-7 (Nov 1978 - May 1993), Meteor-3 (Aug 1991 - Dec 1994), Earth Probe (July 1996 - Dec 2005), and ADEOS (Sep 1996 - June 1997) [↑](#footnote-ref-2)
3. Data quality deteriorates after 2008. [↑](#footnote-ref-3)