

Global Aerosol Climatology Project Data (GACP)

Description:

The aerosol product generated under the NASA/GEWEX GACP consists of the AOT at 550nm and Angstrom exponent retrieved over the oceans from channel 1 and 2 AVHRR radiances. The unique 25 year GACP record provides valuable information on potential trends in the spatial and temporal variability of atmospheric aerosols over the ocean. The principal limitations of this product are the extremely limited spectral sampling (630 and 865 nm) and the likely negative effects of imperfect cloud screening and calibration uncertainties.

Data Availability:

Monthly mean AOT and Angstrom exponent retrievals are available from GACP web page <http://gacp.giss.nasa.gov>. The data are mapped to a 1deg x 1deg grid.

Quality:

Sensitivity analysis of GACP aerosol retrievals may be found in:

Mishchenko, M.I., I.V. Geogdzhayev, B. Cairns, W.B. Rossow, and A.A. Lacis, 1999. Aerosol retrievals over the ocean by use of channels 1 and 2 AVHRR data: sensitivity analysis and preliminary results. *Appl. Opt.* **38**, 7325-7341.

There is no pixel-level validation of the GACP retrievals with in situ measurements due to the limited number of cloud-free AVHRR pixels (4x4 km resolution sampled to 30km) contained in the gridded ISCCP DX dataset. Nevertheless, statistical comparisons with ship-borne sunphotometer results have shown good agreement. It has been found that the ensemble-averaged GACP AOT overestimates the ensemble-averaged sun-photometer data only by about 3.6% with a random error of about 0.04.

Relationship to other GEWEX products:

GACP uses ISCCP DX dataset of cloud-cleared, subsampled, recalibrated AVHRR radiances as an input to retrieve aerosol properties over oceans.