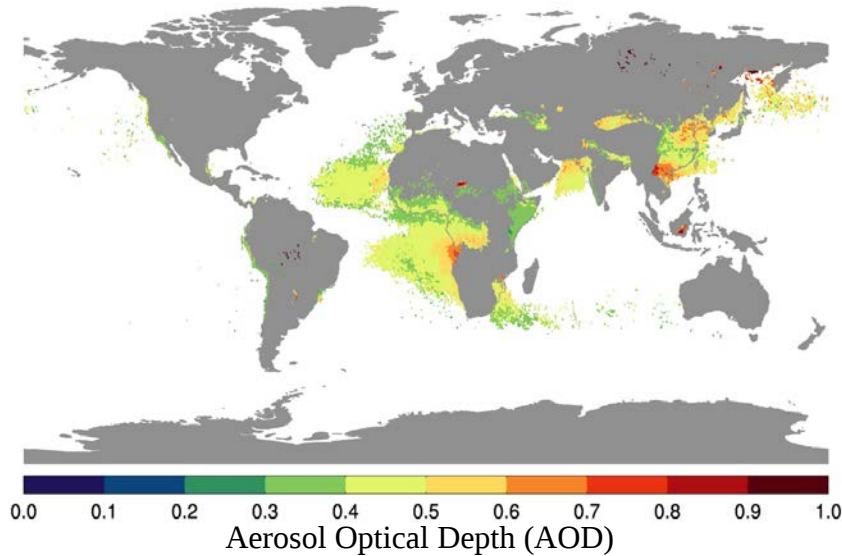


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Annual Climatology (2005-2016) of OMI Above-cloud AOD (388 nm)



Science Question: How does the cloud-aerosol system impact the climate?

Finding: Layers of absorbing aerosols commonly overlay low-level cloud decks in several regions of the world. OMI's The near-UV spectral region sensed by the Ozone Monitoring Instrument (OMI) aboard the Aura spacecraft offers unique ability of detecting the presence absorbing aerosols in clear as well as cloudy areas. OMI detects moderate to heavy aerosol loading above clouds on a monthly to seasonal scale.

Impact: Absorbing aerosols over cloud can exert a significant level of atmospheric absorption and produces a positive radiative forcing (warming) at top-of-atmosphere. This effect is in contrast to the known cooling effects of these aerosols in cloud-free scenarios over dark surfaces. The OMI product provides a global distribution of above-cloud aerosol optical depth, which in conjunction with the clear-sky aerosol products make the quantification of "all-sky" radiative effects of aerosols on climate possible.

Why It Matters: Aerosol-cloud interactions are one of the leading uncertainties in climate models

Hiren Jethva, Omar Torres and Changwoo Ahn, " A ten-year global record of absorbing aerosols above clouds from OMI's near-UV observations ", Proc. SPIE 9876, Remote Sensing of the Atmosphere, Clouds, and Precipitation VI, 98761A (May 5, 2016); doi:10.1117/12.2225765