

The TOMS aerosol index is a measure of how much the wavelength dependence of backscattered UV radiation from an atmosphere containing aerosols (Mie scattering, Rayleigh scattering, and absorption) differs from that of a pure molecular atmosphere (pure Rayleigh scattering). Quantitatively, the aerosol index AI is defined to be

$$AI = 100 \log_{10} \left[\frac{I_{360}^{Meas}}{I_{360}^{Calc}} \right]$$

where I_{360}^{Meas} = the measured 360 nm EP-TOMS radiance

I_{360}^{Calc} = the calculated 360 nm EP-TOMS radiance for a Rayleigh atmosphere

Under most conditions, the AI is positive for absorbing aerosols and negative for non-absorbing aerosols (pure scattering).