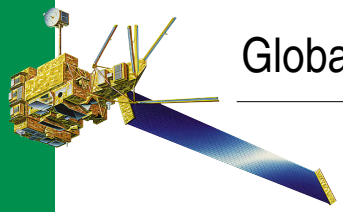
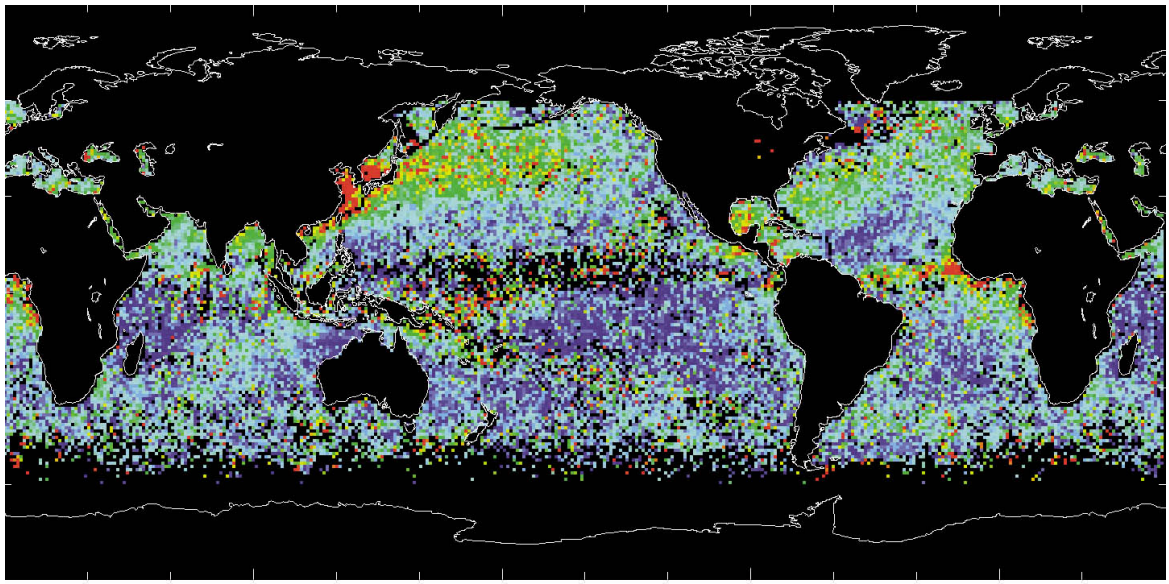
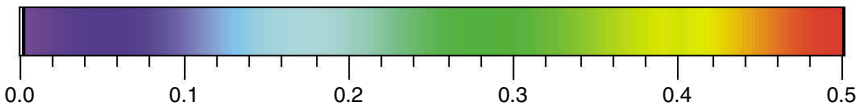
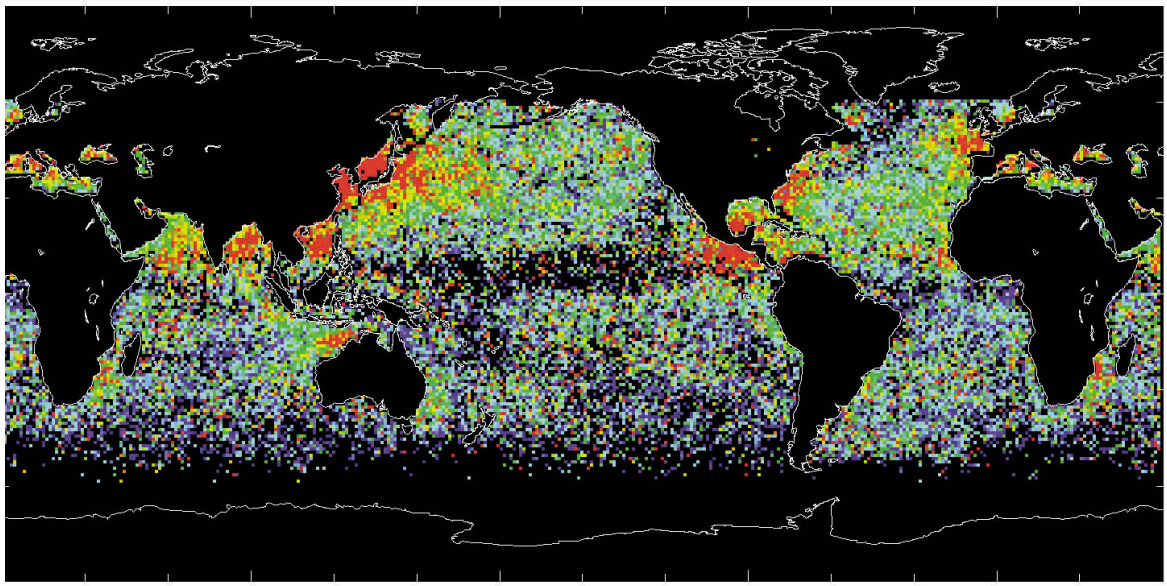


Global Distribution of Atmospheric Suspended Particles (Aerosols)





Aerosol Optical Thickness at 500nm (ADEOS OCTS April 1997)



Ångström Exponent (ADEOS OCTS April 1997)

Provided by NASDA / CCSR

Global Distribution of Atmospheric Suspended Particles (Aerosols)

These products were obtained by analyses of radiance data from Ocean Color and Temperature Scanner (OCTS) aboard ADEOS and show monthly averages of aerosol distribution during April 1997. The aerosol optical thickness (*1) decreases with increasing wavelength, and the rate of decrease, called Ångström exponent, depends on the typical particle size of aerosols. A large value of the Ångström exponent, for example, indicates that small aerosols of submicron diameters are dominating in the aerosol layer. We can study the global characteristics of aerosols by the aerosol optical thickness at a standard wavelength (0.5 micron in this case) and the Ångström exponent.

Close look at the satellite-retrieved images indicates that optically thick and small aerosols located around populated regions in the Northern Hemisphere (e.g., the east coasts of China and North American continents). It is supposed that these small aerosol particles are generated from air pollutants emitted from industries and cities in these regions. Small particles are also found in tropical regions of Central America and Southeast Asia. These small particles are considered to be generated from biomass burning in these regions. On the other hand, optically thick large aerosols are found off the West Coast of Africa. These aerosols were originated from the Saharan desert. Although the Saharan dust layer was not so significant due to weak dust generation in this year, very thick dust layers have been observed in other years by satellites.

Satellite remote sensing of aerosols by high sensitive sensors like OCTS thus provides useful information for studying the global characteristics of aerosols, of which climate effects are considerably unknown.

*1 Optical thickness: Optical thickness is a minus of the logarithm of transmittance. If the optical depth of a medium is 1, the strength of light which passed through that medium is attenuated to 1/e (e is the base of natural logarithms and is approximately 2.72). When the quantity of aerosol increases, the optical thickness of aerosol increases.