

Atmospheric aerosols: general introduction and effects on the environment

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Atmospheric aerosols, consisting of liquid or solid particles suspended in air, play a key role in many environmental processes. Aerosols scatter and absorb solar and terrestrial radiation, influence cloud formation and participate in heterogeneous chemical reactions in the atmosphere. Atmospheric aerosols also have an important impact on human health and it is now well established that exposure to ambient aerosols is associated with damaging effects on the respiratory and cardiovascular systems. However, there are significant uncertainties in the real impact of atmospheric aerosols on climate and due to of a lack of knowledge about their sources, composition, properties and mechanisms of formation.

Atmospheric aerosols are formed from a wide variety of natural and anthropogenic sources. Primary particles are directly emitted from sources such as biomass burning, combustion of fossil fuels, volcanic eruptions sea salt and biological materials. Secondary particles are formed in the atmosphere by gas-particle conversion processes such as condensation and heterogeneous and multiphase Chemical reactions.

This paper presents general characterization of the atmospheric aerosols and their formation from the sources. In addition, already noted uncertainties and modern instrumental technology will be discussed.