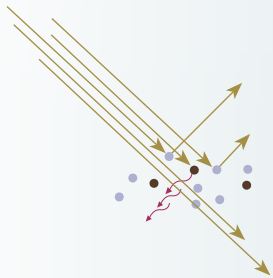


THERE'S SOMETHING IN THE AIR

An aerosol is a suspension of small solid or liquid particles in air or another gas.
The smaller the particles, the longer they hover in the air.

THE EFFECTS OF AEROSOLS



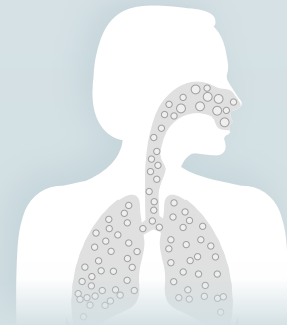
Light-colored aerosol particles (e.g., sulfate particles) reflect sunlight and thus have a cooling effect on the climate. On the other hand, dark particles (e.g., those made of soot) absorb sunlight. They therefore contribute to the warming of the atmosphere.



Aerosol particles also serve as condensation nuclei for the formation of cloud droplets (dark blue), which also have a cooling effect. Ice crystals (light blue hexagons) can also form on some particles – such as desert dust, bacteria, and spores – in higher atmospheric layers, thereby contributing to the formation of rain, snow, and hail.



Biological aerosol particles such as pollen and fungal spores play an important role in the reproduction of plants and fungi. They can also cause allergies.

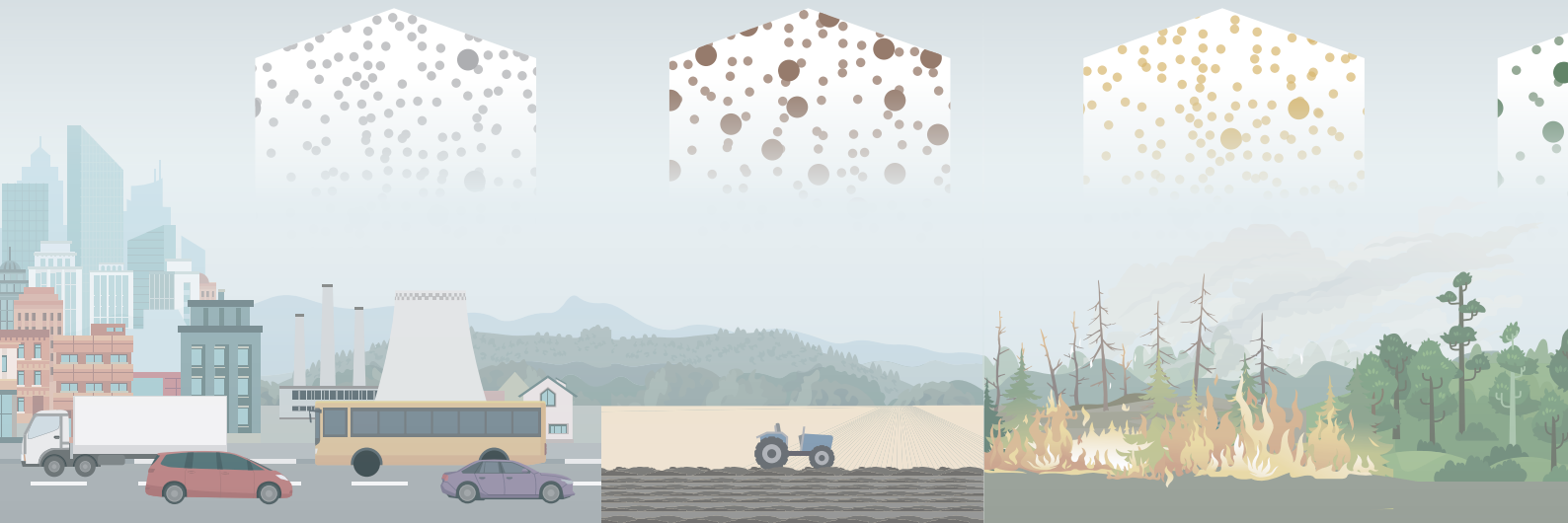


Some pathogens (e.g., viruses and tuberculosis bacteria) are exhaled and transmitted as fine aerosol particles. Apart from infectious diseases, particulate matter generated by combustion processes, industry, agriculture, and other sources can trigger inflammatory reactions and lead to respiratory and cardiovascular diseases.

42

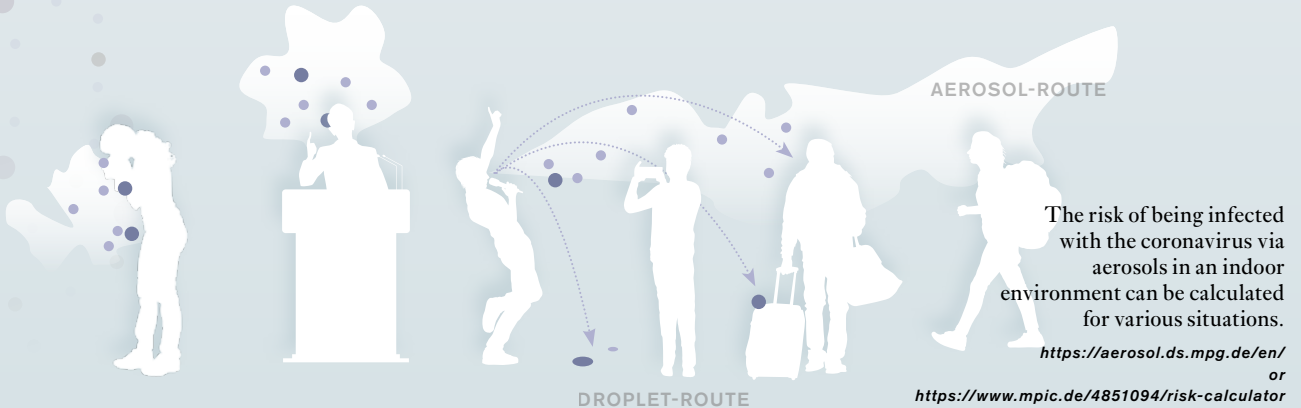
SOURCES AND PROPORTIONS

Aerosols come from various human-made and natural sources. The sizes and quantities of the particles can vary greatly. Volcanoes eject many small and large particles high into the atmosphere, while other sources release particles closer to the ground.

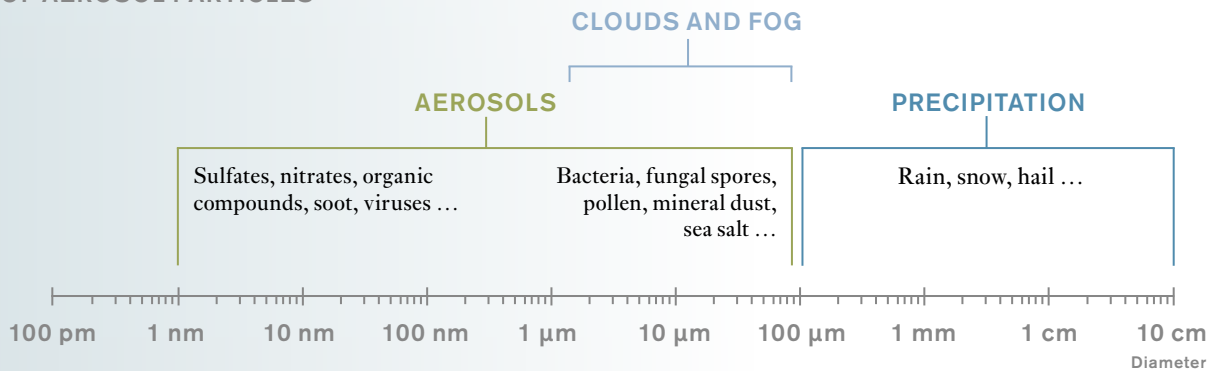


AEROSOLS AS DISEASE VECTORS

Infectious diseases such as COVID-19 are transmitted by various routes. Aerosols play an important role here – especially indoors – where they can accumulate over a long period of time.



SIZES OF AEROSOL PARTICLES



Aerosol particles range in size from about 1 nanometer (nm) to 100 micrometers (μm). Larger particles quickly fall to the ground as precipitation. Primary aerosol particles (e.g., dust) enter the atmosphere as solid particles or droplets, while secondary particles (e.g., sulfate particles) are formed in the atmosphere from condensable gases and are usually smaller than 100 nm.

The most obvious example of aerosols in the atmosphere are clouds, which consist mainly of condensed water. In atmospheric science, however, the term aerosol traditionally refers to suspended particles, most of which are not composed of water.