

Forest odors, also called phytoncides, provide a relaxing effect on humans and/or show a sterilizing effect on microorganisms, depending on type. In the meanwhile, it is indicated possible that forest odor substances are also involved in production of atmospheric ozone, and promote global warming. Such forest odors are known to be released from the above-ground part of trees including leaves and trunks, whereas it is little known how much forest odor substances exist in the underground part including soils. Forest odor information has been barely available from, above all, black spruce forests that are widely distributed in the North American subarctic area and likely to be susceptible to the warming.

Therefore, this study observed concentrations of forest odor substances contained in the atmosphere in a black spruce forest and its soil in the inland area of Alaska from spring to autumn. As a result, forest odor concentrations were revealed to be higher in the soil than in the forest by several hundred times, and higher in the layer of organic matters deposited as thick as 10-30 cm. It was also revealed that the major forest odour substance is α -pinene^{Note)} which is contained in cedar, etc. as well. The organic matter layer is composed of forest floor mosses and lichens as well as fallen leaves and roots of black spruce, that reserve forest odor substances underground.