

Dependence on ozone concentration of Biogenic Volatile Organic Compounds emissions from coniferous trees

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Abstract

In recent years, the concentration of photochemical oxidants is increasing in Japan. One of the factors is the increase of BVOCs (Biogenic Volatile Organic Compounds), and BVOCs reactivity is 10 times higher than AVOC in the atmosphere. BVOCs emissions from the trees are affected by temperature or light intensity. It's also well known that BVOCs emissions are affected by ozone. However, the almost experiments on ozone exposure were carried out outdoors. In atmospheric environment, it is very important problem that BVOCs emissions from coniferous trees are affected by ozone concentration. In other words, it is interesting issue that whether BVOCs emissions would be increasing or decreasing. In this study, the experiments on BVOCs emissions against the ozone exposure were carried out in the growth chamber, in which temperature and light intensity can be controlled. Three coniferous trees (*C. japonica*, *C. obtusa* and *P. densiflora*), which were the dominant in the Kinki region, Japan, were selected. The air in the growth chamber was sampled every hour for 16 hours from the ozone exposure and several kinds of monoterpene were analyzed by GC/MS. In the selected trees, α -pinene was much emitted. Immediately after the ozone exposure, α -pinene emission rapidly increased, then slowly decreased, and converged to the constant emission. Compared with the standard emission, the emission from *C. japonica* was same and the emission from *C. obtusa* and *P. densiflora* decreased. The emission from *C. japonica* increased due to the increase of light intensity and decreased due to the increase of temperature.