

Summary

In the middle of the past century, during the industrial revolution, the concentration of air pollutants such as SO_2 , CO and NO_x has rapidly increased. The attention was also given to organic pollutants, for example: monoterpenes and isoprene, in the last twenty years. These compounds are released into the air by natural processes. The most common are isoprene and terpenes that are emitted by plants and trees.

Concentrations of these biogenic volatile organic compounds (BVOC) are in a range from several ppt to a few ppb. The role of BVOC in plants and trees is still unclear. One of the possible roles of isoprene is controlling the time of blossom, which could be useful for regulation of pollination. Another role could be in plant toleration of ozone and heat stress. Monoterpenes occur in flower scents and in plant signalization and could function as temptation for insect during pollination.

The interaction of BVOC with radicals of $\text{OH}\cdot$ and $\text{NO}_3\cdot$ causes increase of tropospheric ozone, a secondary pollutant. Higher concentrations of tropospheric ozone are responsible for fogs above widespread vegetation. Other pollutants made of BVOC are secondary organic aerosols (SOA), that can disperse or absorb the solar radiation. This affects energetic balance on the Earth .

This work points to the possibility of natural air pollution, a result of tropospheric ozone formation. The fraction of total emissions that is made from BVOC are shown in the graphs, which were processed using simulated values from the model Carbon Bond 05, Carbon Bond 6 and SAPRC-99 .

Key words: tropospheric ozone, volatile organic compounds, biogenic volatile organic compounds, tropospheric chemistry, emission