

Carbon monoxide and ozone measurements during summertime at the summit of Mt. Fuji

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The top of Mt. Fuji is 3776 m and it located in free troposphere. Mt. Fuji weather station is a unique observatory for atmospheric measurements of free troposphere. But now the weather station is only open during summer. At the summit of Mt. Fuji, O₃ has been observed from 2007, and CO has been observed from 2008 during summer season.

CO and O₃ are monitored by Thermo Environmental Instrument Model 48C and 49i, respectively. Before and after the summertime intensive measurements, these instruments were calibrated by standard gas. Since CO analyzer is influenced by temperature and water vapor concentration, zero air produced by heated Pt catalyst was measured periodically.

Observed CO and O₃ concentrations showed large variation compared to other remote sites. Basically, CO and O₃ showed similar concentration change because clean air with low concentration and polluted air with high concentration are arrived to Mt. Fuji time to time. When only CO was high, polluted air experienced less photo chemical activity was arrived. When only O₃ was high, air from upper troposphere with high O₃ was arrived. Scatter plot of CO and O₃ was categorized by water vapor. Clear trend of low water, high O₃ and low CO was observed.

Low water vapor but high CO was observed in some case. It is expected that polluted air was lifter up and transported to the observatory.

Diurnal variation of CO and O₃ were not observed clearly. The influence of mountain wind is not important at least for CO and O₃.

The average concentrations of CO and O₃ for each year have large difference year to year. Influence of clean ocean air mass and polluted continental air mass will be different for each year and it affected the average concentration of pollutants during summer.

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