3.004 Identification of Southeast Asian Biomass Burning from High Mountain of Taiwan.

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Abstract:

During springtime, trace gases and aerosols produced from biomass burning in Southeast Asia can be often observed in the high mountains in Taiwan. In this study, we present hourly meteorological data, trace gases, and daily aerosol samples collected at Mt. Lulin, Taiwan in 2010. Water soluble ions and trace metals of the aerosol samples are also analyzed. The indication of biomass burning from the high-mountain observations are discussed.

Results show that biomass burning emission from Southeast Asia peaked in March-April of 2010 when the collected CO and O_3 concentrations were approximately 1.8 times higher than the average concentrations obtained in other months. Biosmoke related water soluble ions, including K^+, NH_4^+, and NO_3^-, were also elevated during these months. At the same periods, the total potassium showed a good correlation with Mn. All these indicate that biomass burning species were transported to the high mountain of Taiwan by the westerly winds.

The contribution of biomass burning to the background concentrations of Mt. Lulin is estimated. Our preliminary result shows that over 70% of total potassium in the high mountain is attributed to biomass burning. In addition, anthropogenic pollutants could mix with biomass burning species during their downwind transport.