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Estimation of deposition rate of Black Carbon aerosol during the transportation over sea by aircraft observation

Masahiro Yano[1*], Kazuyuki Kita[2], Naga Oshima[3], Nobuhiro Moteki[4], Nobuyuki Takegawa[4], Makoto Koike[5], Yutaka Kondo[4]

[1]Graduate School,Ibaraki University, [2]Faculty of Science, Ibaraki University, [3]Meteorological Research Institute, [4]Research Center, University of Tokyo, [5]Graduate School, The Universi Tokyo

Black Carbon aerosol (BC) is significant for the climate change because it absorbs the solar radiation to heat surrounding air. In China, a large amount of BC is emitted with anthropogenic activities, and its global influence depends on the deposition rate of BC during the transportation.

In this study, the deposition rate of BC in air masses transported from Asian continent over East-china Sea is estimated. The BC deposition rate is evaluated from the decrease of BC concentration with the transportation time. The transport time and distance are evaluated by the backward trajectory analysis. The decrease of BC concentration by the deposition is evaluated from the ratio of the BC concentration and the increase of CO concentration from the CO background value (d-CO value). The median ratio of BC concentration to d-CO value in the air masses which had passed about 72-hours after leaving the Asian continent shoreline is about 65% smaller than that near the shoreline.

Keywords: Brack Carbon aerosol, CO