

Analysis of Inter-Annual Variation of Dust Emission/ Transport in East Asia and its Relation to Climate Indices

YUKARI HARA¹ and ITSUSHI UNO²

¹*Graduate School of Engineering and Science, Kyushu University, Kasuga, Fukuoka Japan*

²*Research Institute for Applied Mechanics, Kyushu University, Kasuga, Fukuoka Japan*

A dust transport model coupled with a regional meteorological model was used for springtime simulations from 1972 to 2003. The model reproduced major inter-annual variations of observed dust. Dust observation/modeled records in Korea and Japan show almost the same annual variation. The strong wind frequency and the maximum wind speed over the Gobi Desert had a strong positive correlation with simulated dust emission. The snow coverage over the Gobi Desert in March had a significant negative correlation with modeled dust emission, but had almost no correlation in April. There is a clear difference in the simulated inter-annual variations of the horizontal dust transport flux and the transport path within the atmospheric boundary layer (ABL) between dust frequent and non-frequent years. An anomaly in the geopotential height from the ECMWF global analysis data explained the frequency of strong wind over the dust source region and the variations of the dust transport path. We will also show the correlation analysis of the dust emission/transport with the several climate indices to have a better idea of dust interannual variations.