

# The influence of Asian continent dust events on Northern Pacific ecosystem

# Wei Yuan[1]; Jing Zhang[2]

[1] Science and Engineering, Toyama Univ.; [2] Sci. Faculty, Toyama Univ.

Recently, it is reported that the seasonal changes of the phytoplankton distribution on the western North Pacific has been observed (R. Jordan et al., 2004; M. C. Honda, et al., 2002). M. Arisawa et al. (2004) indicated that one of the possible influential factors is the components and fluxes of aerosol depositions transported long-distance from the Asian continent, because the Kosa and/or dust events not only could provide the nutrients to phytoplankton directly but also carry some anthropogenic pollutants such as NO<sub>x</sub> and high acidity on the ocean surface. Therefore, there should be a correlation between the variations of planktons and the frequencies and scales of the continental dust events.

In this study, the correlation coefficients (a linear correlation formula was used) between the planktons and the monthly average date of the dust events were calculated, by using the meteorological data set of NOAA, the data of Asian continental dust events and time series results of sediment traps (such as clay, opal, fluxes of diatom, etc; K. Takahashi, et al., 2002) at KNOT station. The results show the remarkable relationships between the particles of phytoplankton and monthly average of the dust events. For an example, the correlation coefficients between the monthly dust events (floating dust, blowing dust and dust storm) number of days and the total diatom fluxes at 1km beneath sea surface at KNOT are 0.61-0.65, in particular with the fluxes of pennate diatoms reach 0.77-0.82. Our results indicate that the Asian dust events have important impacts on the phytoplankton distribution. Furthermore, this work will give some ideas to learn and predict the influences of Asian continental dust events on the change of surface ecosystem of Northern Pacific, then provide the evidence for the absorption of CO<sub>2</sub> into the ocean which is linked strongly with the distinction of the phytoplankton.