DEPOSITION OF ATMOSPHERIC MINERAL PARTICLES IN THE NORTH PACIFIC OCEAN

Mitsuo Uematsu, Robert A. Duce
Center for Atmospheric Chemistry Studies,
Graduate School of Oceanography,
University of Rhode Island, Kingston, Rhode Island 02881
U.S.A.

and

Joseph M. Prospero
Rosenstiel School of Marine and Atmospheric Science,
University of Miami, Miami, Florida 33149
U.S.A.

ABSTRACT. Total deposition of atmospheric mineral particles (wet plus dry) has been measured during consecutive two-week sampling intervals from January, 1981 to March, 1982 at four island stations (Midway, Oahu, Eniwetok, and Fanning) of the SEAREX Asian Dust Study Network in the North Pacific. The total deposition of mineral aerosol during the period from February to June is higher than that during the period from July to January at most of the stations. A systematic geographical trend is apparent in the dust flux, with greater fluxes at higher latitudes. The deposition values are correlated with the atmospheric mineral particle concentrations at these stations. The mineral particles are transported from arid regions in Asia to the North Pacific, and the annual dust deposition to the ocean appears to be dominated by sporadic dust events of short duration. Wet deposition dominates the removal of dust particles from the atmosphere over the North Pacific. The total deposition of atmospheric mineral material to the central North Pacific is estimated to be \( \sim 20 \times 10^{12} \) g yr\(^{-1}\).

Key words: Annual dust flux, mineral aerosol, North Pacific, spatial distribution, long-range transport, Asian dust, marine sediments.