A Strategy of Atmospheric Electric Field and Electromagnetic Wave Observations by Mars Lander

HISAYOSHI SHIMIZU1, YUKIHIRO TAKAHASHI2 and KEIGO ISHISAKA3

Earthquake Research Institute, University of Tokyo 2Department of Cosmosciences, Hokkaido University 3Department of Information System Engineering, Toyama Prefectural

University

Measurement of atmospheric electric field and electromagnetic waves on the Mars' surface is very new and unique approach dedicated not only to the electrical current research but also to the meteorology of Mars. Dust devil and storm can be the generator of the currents due to dust particle collision process in the very vicinity of the surface. The measurement has a potential to clarify the mechanism of dust devil generation by comparing the electric field near the ground with the dust devil activity. In addition to this, the electromagnetic wave measurement makes it possible to locate the position of a dust devil and to determine the dust devil wind strength quantitatively with only a few observation sites. This measurement also contributes to the studies both on the crust and the upper atmosphere physics of Mars. We propose a set of instrumentation for the DC and AC electromagnetic observation installed on Mars lander.