

Influence of solar wind on climate: On the factors such as Quasi Biennial Oscillation

ITOH, Kiminori^{1*} ; MATSUO, Shinya¹ ; YAMASHITA, Kazuyoshi¹

¹Yokohama National University, Graduate School of Env. & Inf. Sciences

In spite of long history of research, the influence of solar changes on the climate is not convincing enough yet. We have employed solar wind parameter (e.g., $P\alpha$ (energy flowing into magnetosphere) and aa index) to successfully show their correlation with the temperatures of the stratosphere, troposphere and surface. For further analyses, OLR (outgoing longwave radiation) and the participation of QBO etc. are studied. For instance, January OLR during 1975-2011 showed high correlation with $P\alpha$ at particular regions. At the QBO westerly phase, high correlation coefficient ($r = 0.76$) was found near Indonesia. The correlation map at the easterly phase resembled that for the Arctic Oscillation, and $r = 0.81$ at the Siberia region.

Keywords: Solar wind, climate, QBO, OLR, temperature