

# Forecasting of Geomagnetic K Index

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Geomagnetic K index is commonly used for the information of local geomagnetic disturbances. National Institute of Information and Communications Technology (NICT) operates daily space weather forecast service, as a regional warning center of International Space Environment Service (ISES). We are providing current condition and forecast of geomagnetic disturbances by using K index at Kakioka.

Geomagnetic activities are driven by solar wind - magnetosphere - ionosphere coupling. The degree of geomagnetic activities are controlled by the magnitude of solar wind parameter and the efficiency of SW-M-I coupling.

We have constructed the empirical model of geomagnetic activities using the combinations of Siscoe's model and ionospheric conductivity model with solar wind parameter as inputs. This empirical model of geomagnetic activity works well for reproducing the observed activity for long time scale.

Based on this empirical model we will introduce operational model of K index forecasting. We have analyzed a statistical relationship between K index and global Km index. We find that correlation tend to be high in winter and to be low in summer. Further, correlation tends to be high in dusk and low in pre-noon sector. We will report the empirical model of K index forecasting based on this result.