**Japan Geoscience Union Meeting 2010**
(May 23-28 2010 at Makuhari, Chiba, Japan)
**©2009. Japan Geoscience Union. All Rights Reserved.**

PEM021-P16 Room: Convention Hall Time: May 24 17:15-18:45

# Quantitative assessment of the probability forecast for the geomagnetic storm occurrence

Ken Tsubouchi[1*], Yuki Kubo[1]

[1]NICT

As a practical example of space weather forecasts, we try to provide one-month occurrence probability for the geomagnetic storm at the beginning of every month. Our previous study showed that total 337 storm events are identified between 1957 and 2003, and their occurrence pattern can be approximated by a Poisson process with its average frequency given by 0.77 and 0.23 per one-month for a solar active and quiet period, respectively [Tsubouchi and Omura, 2007]. If only the assumption of the Poisson process is used for the forecast, we can provide only two probability; 1-exp(-0.77) = 0.53 and 1-exp(-0.23) = 0.21 for the active and quiet period. Since the frequency of the past event occurring does exhibit a short-scale variation, however, the forecast probabilities should more broadly be distributed. In the present study, we improve the forecasting method in the following way: The cumulative distribution function for the time interval between successive events is used to translate the elapsed time after the latest event into the probability that there are no events by the forecasting time. The one-month occurrence probability is evaluated under such a condition. The resultant forecasts and corresponding observations are compared to verify the validity of the present model. Special attention is paid to the resolution of the probability distribution.