昭和基地における大気電場の解析

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An Analisys of Atomospheric Electricity at Syowa Station, Antarctica

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Minamoto and Kadokura (2011) shows criteria to extract fair-weather data from atmospheric electric field observations at Syowa Station, Antarctica from 2006 to 2008 by using the atmospheric electric field data and meteorological data. We pick up fair-weather condition periods from three years data; February 2009 to January 2012. The total number of hours is 2,765, and the percentage of observation time is about 10 %. In that fair weather periods, 171 hours were with high geomagnetic activity (K-index > 4) , and 1590 hours were with calm geomagnetic activity (K-index = 0 or 1) (Fig.1).
In this presentation, we will show seasonal variation of diurnal curves of atmospheric electricity at Syowa Station by using the data under calm geomagnetic conditions. And we will talk about comparisons between atmospheric electricity and geomagnetic activity. Fig 2 is one of examples of the comparison.

Minamoto and Kadokura（2011）は 2006 年から 2008 年に昭和基地において観測された大気電場と気象のデータから、大気電場の解析が可能な fair weather 時間帯を抽出する基準を見出した。この基準を用いて、さらに 2009 年 2 月から 2012 年 1 月まで、３年間の気象データから、全体の約 10%、延べ 2765 時間の fair weather な期間を抽出。このうち、地磁気活動が活発な時間（地磁気活動度を示す K-index が 5 以上）が 171 時間。地磁気活動が静穏な時間（地磁気活動度を示す K-index が１以下）が 1590 時間（Fig1）であった。
このデータを用いて磁場活動が静穏な時間帯における日変化の季節変動を紹介する。一方、地磁気活動が活発な時間の事例を抽出し、大気電場と地磁気擾乱、オーロラ活動との比較を示す。fig2 に一例を示す。

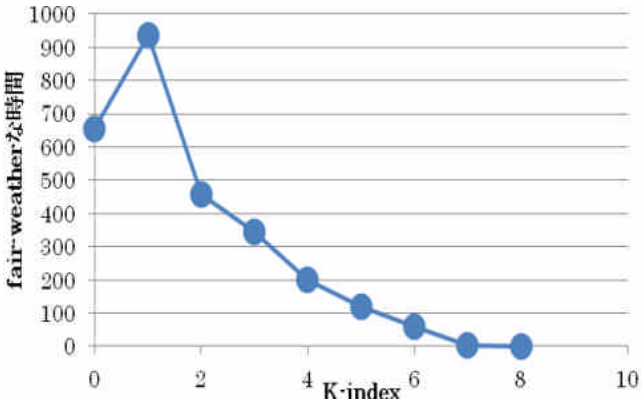

Fig.1 histogram of number of extracted fair weather period stratified by K-index

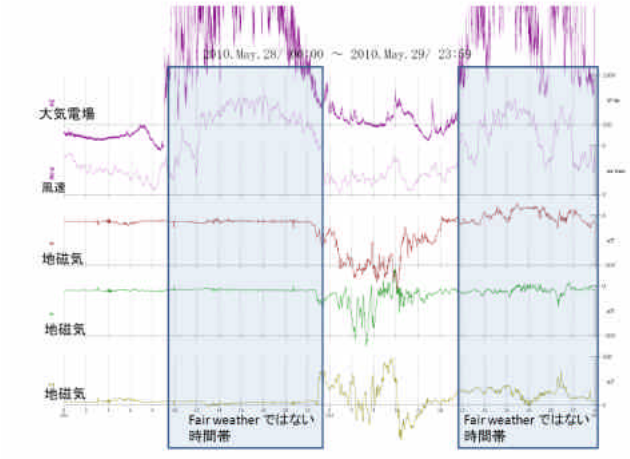

Fig.2 Chart of fair weather atmospheric electricity and active geomagnetic field (May 29,2010 03-08UT, K=6)

Minamoto, Y. and A. Kadokura, Extracting fair-weather data from atmospheric electric field observations at Syowa Station, Antarctica, Polar Science, 5, 313-318, 2011.