# Statistical Characteristics of Pi 2 observed at KAG and MSR during the period from 1990 to 2003

# Teiji Uozumi[1]; Kentarou Kitamura[2]; Kiyohumi Yumoto[3]; Yumoto Kiyohumi MAGDAS Group[4]

[1] SERC; [2] Space Environ. Res. Center, Kyushu Univ.; [3] Earth and Planetary Sci., Kyushu Univ.; [4] -

http://www.serc.kyushu-u.ac.jp/

The Circum-pan Pacific magnetometer network (CPMN), which is organized by Kyushu university, has observed ground magnetic variation for long time exceeded one solar activity period. The total number of data, which observed over 50 stations, exceeded 100000 days. MAGnetic Data Acquisition System (MAGDAS), which is evolved the CPMN to obtain the magnetic data instantaneously and monitor the geospace environment, are now under installing. When the full-operation of MAGDAS is started, it becomes possible to monitor the magnetic variations acquired globally and semi-real time.

It is necessary to use MAGDAS data not only for the fundamental research of magnetospheric physics, but also for space weather and space climate research. For this purpose, it is required to summarize the CPMN data and construct the database concerning to the various characteristics of the geospace phenomenon. To summarize the statistical characteristics of Pi 2 using huge amount of CPMN data, a method of automatic detection of Pi 2 is useful. This method is also useful to analyze the data of MAGDAS in full-operation. For this purpose, we developed the first version of the automatic detection algorithm of Pi2, and reported in the fall SGEPSS meeting in 2002. This time we improved the method. In the present version, the major improvement is as follows: (1) make it possible to separate the artificial noise and Sc/Si from Pi 2 (2) Pc 4s are also detected as well as Pi 2.

About 60000 Pi 2 events were detected when the present version was applied to over 5000 days data observed in Kagoshima (KAG) and Moshiri (MSR) during the period from 1990 to 2003. Saito [1969] is famous about the long-term variation of various characteristics of Pi 2 in consideration of the solar activities period. We re-examined the long-term variation of various characteristics of Pi 2 including the dependence of Dst, which has not been reported so far. We found that Pi 2 periods tend to become the minimum around Dst = -20nT. Combining the above results, we will discuss the long-term variations of Pi 2 observed during the last solar cycle. Additionally, we will discuss the advantage and the remained problem to the present automatic Pi 2 detection method. On the presentation, we will introduce the application of the automatic Pi 2 detection method to the semi-realtime data acquired by MAGDAS.