



International Civil Aviation Organization

**THE FOURTH MEETING OF IONOSPHERIC  
STUDIES TASK FORCE (ISTF/4)**

New Delhi, India, 05 – 07 February, 2014



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**Agenda Item 4: Review of progress of tasks and related items**

**(a) Task 1 – Data Collection**

**IDENTIFIED PAST PERIODS OF INTEREST FOR IONOSPHERIC DATA ANALYSIS**

(Presented by the Republic of Korea)

**SUMMARY**

This working paper presents a selection process of the past periods of interest for ionospheric data analysis by using geomagnetic indices, in response to the Action Item 3/4 identified by the third meeting of the Ionospheric Studies Task Force (ISTF/3).

**1. INTRODUCTION**

1.1 The third meeting of the Ionospheric Studies Task Force held in Seoul, Republic of Korea from 15-17 October 2013 identified an Action Item:

*ACTION ITEM 3/4: Task Lead, Task-2 to identify the past periods of interest for data analysis.*

1.2 This working paper reports on the procedure to be applied to select the past periods of interest for data analysis by using geomagnetic indices and the result obtained from the proposed method.

**2. DISCUSSION**

2.1 The dates are selected from 2001 to 2013 based on the value of geomagnetic indices. Two geomagnetic indices; Disturbance storm-time (Dst) index and Kp index are used. The Dst values are provided by World Data Center (WDC) for Geomagnetism, Kyoto University, <http://wdc.kugi.kyoto-u.ac.jp> and the Kp values are collected from National Geophysical Data Center (NGDC), <ftp://ftp.ngdc.noaa.gov>.

2.2 The Kp value of 6 and the Dst value of -200nT were determined as selection criteria based on previous studies [1]. The dates of interest were selected based on the criteria and documented into a file with MS-excel format. The days of interest are selected by four different combinations of the selection criteria and listed in four sheets in the excel file, **Attachment A:**

- a) The dates which have daily maximum Kp values greater than 6 (Kp>6)
- b) The dates which have daily minimum Dst values less than -200nT (Dst<-200nT)

- c) The dates which have daily maximum Kp values greater than 6 or daily minimum Dst values less than -200nT (Kp>6 or Dst<-200nT)
- d) The dates which have daily maximum Kp values greater than 6 and daily minimum Dst values less than -200nT (Kp>6 and Dst<-200nT)

2.3 The dates identified were arranged in order of dates, magnitude of Dst and magnitude of Kp. Selected dates are listed in the excel file with year, month, day, daily maximum Kp value and daily maximum Dst value formatted as shown in Table 1.

Table 1 Example of selected dates which were listed in order of date

In order of date				
Year	Month	Day	Kp	Dst (nT)
2001	3	19	6.7	-105
2001	3	20	7.3	-149
2001	3	28	6.3	-87
2001	3	31	8.7	-387
2001	4	8	7	-59
2001	4	11	8.3	-271
2001	4	12	7.3	-236
2001	4	13	7.3	-77
2001	4	18	7.3	-114
2001	4	22	6.3	-102
2001	8	17	7	-105
2001	9	25	7.3	-24
2001	10	2	6.7	-104
2001	10	3	7	-166
2001	10	21	7.7	-187
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2.4 The total numbers of selected dates from 2001 to 2013 for each category are shown in Table 2.

Table 2 Total number of selected dates for each category

Selection Criteria	Number of selected dates
Kp>6	122
Dst<-200nT	15
Kp>6 or Dst<-200nT	123
Kp>6 and Dst<-200nT	14

2.5 References:

[1] Jung, S. and J. Lee (2012), Long-term ionospheric anomaly monitoring for ground based augmentation systems, radio science, 47, RS4006, doi: 10.1029/2012RS005016.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information presented in the paper;
- b) discuss any relevant issues as appropriate; and
- c) share the selected periods of interest within ISTF.

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