

Interactive comment on “Sand/dust storms over Northeast Asia and associated large-scale circulations in spring 2006” by Y. Q. Yang et al.

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Reply to Referee #2—part 2/3:

[Section 2.3: title of this section is better to use *Synoptic features*; for *synoptic footprints*; (also in the text).]

Thanks for this suggestion. We have revised title of this section and rephrased as followings: 2.3 Synoptic features of SDS processes in spring 2006 An analysis comparing the genesis and dying out of SDS processes in the springs since the year from 2000 shows that the sand/dust storms affecting China in the spring of 2006 have the following features:

[Please change table 2 with table 3 in the section 2.3, because table 3 is discussed there.]

Yes, we have changed table2 with table3 in section 2.3

[It could be better to revise the subtitles from "Earlier onset for severe SDS"; to "Early onset for severe SDS";, from "Most sand/dust in April"; to "Most frequent SDS in April"; in line 5, 18 (page 9265) and from "Serious damages"; to "Heavy dust fall"; in line 1 (page 9266).] [Page 9265: line 8, please change "Mongolian cyclone"; with "cold air outburst";, which is more general for Northeast Asia]

Thanks for the suggestions. We have revised those sentences, paragraphs and rephrased as followings:

Early onset for severe SDS Table 3 shows that two severe SDS processes occurred in March 2006, with an increased frequency of 182%, compared with the average of the past seven years. Under the influence of the cold air outburst, the first severe SDS process took shape over the west part of Mongolia at 14 hour, March 8, 2006. 21 hours later (1100, March 9) it made its impacts on the north of China. It furthered its course in the following hours to affect ten provinces, including western part of China, north of China and northeast of China. After that, it made an eastward transportation, and reached the Korea Peninsula in 30 hours (1700, March 10). The episode became the earliest severe SDS process in the spring of 2006, with an extensive affected area. It also makes the earliest severe SDS process with a widest coverage since the years from 2000. Table 3 Comparison of SDS frequency in 2000-2006 for three types of SDS: blowing dust storm (BLDS), sand/dust storm (SDS), and severe SDS (SSDS)

Year

Month	2000	2001	2002	2003	2004	2005	2006	Total	Annual means for 2000-2006
March BLDS	1	3	1	0	4	1	3	13	1.86
March SDS	2	4	3	0	2	0	0	11	1.57
March SSDS	0	0	2	0	1	0	2	5	0.71
April BLDS	2	1	0	2	3	2	3	13	1.86
April SDS	5	4	4	2	1	3	2	21	3.00
April SSDS	1	3	2	0	0	1	3	10	1.43
May BLDS	4	1	0	3					

2 1 1 12 1.71 -42% SDS 0 2 0 0 2 1 5 10 1.43 250% SSDS 1 0 0 0 0 0 1 0.14 -100%
16 18 12 7 15 9 19 96 13．71 39%

Most frequent SDS in April China had 8 sand/dust storm processes in April 2006, of which 3 were rated as severe SDS processes, 2 SDS processes, and 3 blowing dust process. In the past years since 2000, it was rare to see 2 severe SDS and 1 SDS occur in a short period of 7 days from April 5 to April 11. This leads to a sharply raised frequency of 110% for the occurrence of severe SDS processes over the average of the past years. Heavy dust fall All 19 SDS processes affecting China were accompanied by floating dust. This is especially true to the severe SDS process from Mongolia affecting Beijing area on April 16-18, 2006. According to incomplete figures, Beijing was covered with 330,000 tons of sand-dust, which resulted in a seriously contaminated air marked by grade-5 for air quality.

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