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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Comment on "Improving the seasonal cycle and interannual variations of biomass burning aerosol sources" by Generoso et al." *by* Y. Ji and E. Stocker

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We are very grateful to professor Martin Schultz for his comments on our commentary paper.

We agree that, in order to study the diurnal cycle, intraseasonal, and seasonal variability, the day/night hot spots must be carefully studied for reliable fire seasons and the daytime false fire pixels during non-fire seasons must be eliminated. Although a lot efforts may be necessary for more complete studies on this, we did find further evidences to support our opinion in that paper. Table 1 shows the day/night contrasts of fire counts in various areas. The data used in Table 1 excluded the non-fire season observations; during these seasons, a large number of false fire pixels may occur in daytime due to the errors in the land type screening. As shown in Table 1, in Southeast

Asia, South America, and Africa, the numbers of fire pixels in daytime and nighttime do not differ substantially. The ratios are about 1˜1.5. In Indonesia, the nighttime fire pixels are outnumbered the daytime fires pixels. Our map (not shown) shows that in typical fire seasons in Southeast Asia and South America, the maximum fire counts appears between noon to almost mid-night.

Table 1 Day/Night pixel counts

Region Longitude Latitude Time Period Day Count Night Count

Indonesia 110E-120E 10S-0 03/1-04/30/1998 152 157

Southeast Asia 90E-110E 5N-25N 02/1-03/31/1999 717 612

Southeast Asia 90E-110E 5N-25N 02/1-03/31/1999 744 640

South America 70W-50W 25S-5S 07/1-08/31/1998 2136 1450

South America 70W-50W 25S-5S 07/1-08/31/1999 2149 2078

South America 70W-50W 25S-5S 07/1-08/31/2000 658 592

South America 70W-50W 25S-5S 07/1-08/31/2001 790 630

Africa 25E-35E 0-10N 01/1-03/31/1998 709 55

Africa 25E-35E 0-10N 01/1-03/31/1999 850 540

In the paper, we used very simple window screening method based on six years data to exclude the daytime false fire pixels. First, we build a data table (e.g. table 2) which shows hot spots for each time window for each year. We then used 6 years data to determine the fire season. In this case, fire season may be defined as November to March. We then define the maximum day/night ratio in fire season (8 of 0-3pm/0-3am in this case)for various windows. We assume the nighttime hot spots are fire pixels and then calculate the maximum number of daytime fire pixels for each window. For example, the number of fire pixels in April 2000 is assumed 3X8=24 within 0-3pm

ACPD

4, S1244–S1246, 2004

Interactive Comment

instead of 981. The details of screening can not be described in this discussion.

Table 2 Number of TRMM hot spots in each 3-hour window with a daily cycle

Number of Hot Spots

Year Month 0-3am 3-6am 6-9am 9-12am 0-3pm 3-6pm 6-9pm 9-12pm

2000 1 28 15 39 113 140 107 254 94

2000 2 11 16 13 36 71 185 207 58

2000 3 30 21 17 136 224 35 83 75

2000 4 3 0 4 1960 981 21 21 2

2000 5 3 1 1 1206 971 33 13 3

2000 6 0 0 14 194 373 4 7 1

2000 7 0 0 0 552 389 0 2 0

2000 8 0 0 0 54 6 0 0 0

2000 9 1 0 0 63 107 0 1 0

2000 10 8 1 8 195 103 4 7 28

2000 11 20 6 35 46 144 275 113 19

2000 12 51 4 74 120 301 116 116 57

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 2161, 2004.