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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Screening the ESA ATSR-2 World Fire Atlas (1997–2002)" *by* B. W. Mota et al.

Anonymous Referee #3

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This paper presents an analysis and review of the European Space Agency (ESA) ATSR-2 World Fire Atlas (WFA) for the years 1997 through 2002. This satellite-based dataset includes identification of global fires at high spatial resolution over a relatively long time period. The authors describe the dataset in detail and provide a useful analysis of the data to remove incorrect fire detections and non-vegetative fires. The authors provide a very thorough introduction with relevant references and background material and a useful comparison between the WFA and other satellite fire detection products. The paper is well-written and appropriate for publication in AC&P. I recommend that this paper be accepted after some revisions have been made. My comments are here.

GENERAL COMMENTS

1) In general, this paper provides information about a fire detection database that will be extremely useful for creating emission inventories for input to chemical and climate models. It was my understanding that the authors will make their processed dataset available to the community. However, there is no information within the paper describing where potential users can access the information. I think that this needs to be included within the manuscript.

2) The authors have processed the World Fire Atlas for a period of 5 years to improve the value of the information. The authors provide details about this process and how much of the fire detections were shown to be vegetative fires versus how many were non-vegetative fires. Although these results are interesting, I think that the authors need to provide more substantial results and conclusions. For example, how will these improvements impact emissions inventories that are calculated with these data? The authors hint in the conclusions that these improvements in the data may change the results of studies that have applied the original WFA data, but I think that they should go into more detail about the way in which results will change. The dataset described in this paper are very valuable, but I believe that more can be done to investigate the importance of the revised dataset.

SPECIFIC/TECHNICAL COMMENTS

3) Page 4642: Ito and Penner, 2003 should be Ito and Penner, 2004.

4) Page 4643-4644: The authors provide an extensive list of references in which the WFA has been applied. Although the references are useful, I am not sure that all of these references need to be included. Also, perhaps a table containing this information would be more useful?

5) Page 4645, line 5: I am unable to connect to the given link, nor am I able to find the link from line 19 on this same page. Please check these links.

6) Page 4645: Is there a reference (other than a web site) that describes the ENSO

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and climate variations during the study period?

7) Page 4646: It is unclear to me the difference between incomplete data and missing data. Is there a difference? If so, this should be explained in more detail.

8) Page 4646, line 19: The authors describe problems with the geo-location accuracy of the ERS-2 during 2001. How far off were the detections (i.e., a few km? Or, a few degrees?)

9) Page 4648: The authors describe 2 satellite-derived land cover datasets: GLC2000 and MODIS LCT. A sentence or two about the accuracy of the applied land cover dataset should be included. (Also, the link to the GLC2000 web site does not appear to work).

10) Page 4649: Are there published references for the volcano detections used? Also, the authors state that the GLC20000 and Landsat scene quick-looks were used in the review of volcano eruptions. There is no explanation of the Landsat scenes or a source for these. This information should be provided. (There is a source for Landsat data on page 4650. If this is the correct source and reference, then it should be moved to the place where Landsat scenes are first mentioned in the text).

11) Page 4650: Why were large clusters unlikely to be vegetation fires? Is this always the case? Would there be exceptions? Could prescribe burns and agricultural fires have geometric shapes?

12) Page 4651: I am surprised that the authors only see seasonal patterns in the fire detections associated with boreal fires. Were there any indications of tropical burning in Africa, Southern Asia, and South America?

13) Page 4651-4652: Why would the intersection of the land cover filter with the gas flares have a seasonal trend?

14) Page 4652, line 4-6: This sentence is confusing.

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15) Page 4652, lines 16-21: The authors state that most of the removed fire detections were in the northern hemisphere at relatively high latitudes. Why is that? What impact will this have on the resulting dataset?

16) Page 4654: What are the data acquisition and processing errors caused by? Why did they only occur in specific areas of the globe? Is this a function of the satellite instrument or orbit?

17) Tables 2 and 3 contain some redundant information. Could they be joined?

18) Figure 3: Why do oil and gas flares have a seasonal variation?

19) Figure 7: I am not convinced that his analysis and the results shown in this figures adds substantially to this paper.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 4641, 2005.