

Interactive comment on “Long-term change in the contributions of various source regions to surface ozone over Japan” by Tatsuya Nagashima et al.

Anonymous Referee #1

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A review of "Long-term change in the contributions of various source regions to surface ozone over Japan" by Nagashima et al. submitted to ACP

General comments:

The authors made detailed tag-tracer simulations of tropospheric ozone and assessed the long-term changes in the source contributions to surface ozone in Japan. They also gathered currently available surface ozone data in Japan for the last 25 years (from 1980 through 2005) from the nationwide operational monitoring network by the Japanese EPA. The paper describes the model set-up including the inventories used and the tagging method, which is a key part, followed by the model results and discussions. The experiments were carefully made, and the interpretation was thoroughly detailed. This paper would be a nice piece of work contributing to the ozone commu-

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nity. I only have several minor and/or technical comments that the authors can consider before publication, as listed below.

Major comments:

The paper is thoroughly written, but reads a bit too descriptive and too technically detailed. I would encourage the authors to make a bit more effort in reorganizing the sentences and try to put focus on the major scientific findings in this work.

Why up to 2005? and why surface ozone? Needs a bit of more sentences to justify these points.

Specific comments:

Title: I would prefer to "Long-term changes in the source contribution to surface ozone in Japan", just for your consideration.

Introduction, L49 - : The authors started mentioning the trends in Taiwan, China, and South Korea, but historically the trends over Japan were studied with ozone sondes or surface measurements prior to these areas. Hence, I would suggest the authors to start with Japanese trends then followed by recent reports in other countries.

P8, L318, section 3.3: The authors phrased "IAVs" in several places in the paper. The authors use the term "IAVs" not to mention (single) year-to-(single) year variability but rather decadal changes or changes during several years and the next several years (Explanation of Figure 3, for example). In Figure 3 the observed IAVs are not necessarily correlated with the modeled IAVs, on (single) year-by-year basis. So, I would encourage the authors to come back to this point and rephrase where necessary.

P7, L315-317; 2.70 and 2.58 ppbv/decade are too precise. I would suggest 2.7 and 2.6. But are these precise at 5% risk level?

P9, L374: last decade needs to be more specific. 2000s?

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