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Atmospheric Chemistry and Physics Discussions

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 #2

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This paper employed an global chemical transport model with on-line tracer-tagging method to investigate the long-term trends of surface ozone. This manuscript is interesting and belong to the scope of ACP.. This manuscript is well written. I suggested it can be published after considering the following comments.

General comment: 1. This study used the NCEP renalysis data to drive the Chaser model. Please compared the meteorological parameters with observations(surface or satellite) if possible. For example, cloud information and temperature.This is important to ozone simulation.

General comment 2: The author concluded that CHN contributed a lot to the trends of ozone in Japan. This can be expected because China's emissions are large and increases in last decades. I encourage the authors to analyze the contributing ability

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Discussion paper

of each regions to JPN ozone. For example, how many is the contribution of China per NOx/VOCs emissions increase to JPN O3 trends in unit: ppbv/Gg NOx or VOCs.

Major comment :

The authors should gave a short discussion on the uncertainties of models and its impact on the conclusions. for example, the emission inventory. REAS should be different with other inventories(MEIC or EDGAR4). I wonders if the difference between inventories affected the conclusions.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-1087, 2017.