Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., community comment CC12
https://doi.org/10.5194/acp-2020-1266-CC12, 2021

Comment on acp-2020-1266

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Community comment on "Opinion: Papers that shaped tropospheric chemistry" by Paul S. Monks et al., Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2020-1266-CC12, 2021

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February 19, 2021

I commend the authors for undertaking this endeavor, which will serve as an excellent historical reference for our field of research. I will limit my comments and suggestions to Section 2.16

Section 2.16 provides a short review of key papers on Chemical Transport. It starts out well with a discussion of STE and recognition of Danielsen 1968 and Holton et al. 1995, but it needs a better connection to the STE review article by Stohl et al. 2003, which appears much further down (on Line 887), after the concept of long range transport is introduced. This paper should appear in the paragraph on STE.

Before recognizing the important study by Jacob et al. 1999 (which is based on a model rather than observations) some key observational studies should be recognized, for demonstrating that long-range and intercontinental transport clearly occurs.
These studies are as follows:

Merrill et al. (1985) (cited 124 times) used isentropic back trajectories to link transport from Asia and North/Central America to the Marshall Islands

Moody et al., 1995 (cited 114 times) also used isentropic back trajectories to link transport from North America to Bermuda.

Stohl and Trickl, 1999 (cited 214 times) were the first to show that a warm conveyor belt can transport pollution from one continent to another, in this case, ozone from the boundary layer of North America to the free troposphere above Europe.

Forster et al., 2001 (cited 225 times) used kinematic back trajectories (FLEXTRA) to show that smoke from biomass burning in Canada could reach the boundary layer of Europe,

and they showed that due to the thermal structure of the atmosphere, this transport has to occur at low levels behind cold fronts rather than in warm conveyor belts.

In addition to being great, groundbreaking studies, the papers by Moody et al. 1995 and Forster et al. 2001 are also notable because they were led by women at a time when the field was still dominated by men.

Regarding the discussion of trajectory methods, the earlier and more simplistic isentropic trajectory method (Merrill et al., 1985) should be mentioned before HYSPLIT.

Forster, C., Wandinger, U., Wotawa, G., James, P., Mattis, I., Althausen, D., Simmonds, P., O'Doherty, S., Jennings, S.G., Kleefeld, C. and Schneider, J., 2001. Transport of boreal forest fire emissions from Canada to Europe. Journal of Geophysical Research: Atmospheres, 106(D19), pp.22887-22906.

Merrill, J. T., Bleck, R., and Avila, L. (1985), Modeling atmospheric transport to the Marshall Islands, J. Geophys. Res., 90(D7), 12927– 12936, doi:10.1029/JD090iD07p12927.

Moody, J.L., Oltmans, S.J., Levy, H. and Merrill, J.T., 1995. Transport climatology of tropospheric ozone: Bermuda, 1988–1991. Journal of Geophysical Research: Atmospheres, 100(D4), pp.7179-7194.

Stohl, A. and Trickl, T., 1999. A textbook example of long□range transport: Simultaneous observation of ozone maxima of stratospheric and North American origin in the free troposphere over Europe. Journal of Geophysical Research: Atmospheres, 104(D23), pp.30445-30462.