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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Case studies of ozone transport between North America and Europe in summer 2000" *by* G. Guerova et al.

Anonymous Referee #1

Received and published: 30 August 2005

SUMMARY: Based on a comparison of measurements and model simulations, the paper presents long-range transport events of ozone and related species from North America to Europe in summer 2000 and estimates their impact on the atmosphere over Europe.

ASSESSMENT AND GENERAL COMMENTS: I appreciate that the previous very ambigious title of the manuscript has been changed. Now, the title fits much better to the content.

However, the conclusions on the impact of long-range transport on ozone over Europe have already been found by Li et al. (2002) and Auvray and Bey (2005) both using

also the GEOS-CHEM model. Both studies present numbers that are very similar to the numbers presented here. In their conclusions the authors should focus more on findings that are really different in comparison to other existing studies, e.g. the characterization of the different transport events with respect to the different transport pathways (WCB, zonal transport or transport via the Azores anticyclone). A discussion of the results with regard to the role of transport time, convection, chemistry, and the NAO index in 2000 would be delighting.

In addition, already existing studies on long-range transport between North America and Europe (other than Li et al 2002 and Auvray and Bey 2005) should be considered much morei and should be compared to the findings here.

A discussion with regard to other important ozone sources (not only stratosphere) like boreal forest fires would also be very delighting.

SPECIFIC COMMENTS:

p. 6139, lines 16-20: What about the NO2 enhancements in the mid-Atlantic at around 40deg N and 60 deg N seen in fig 5d?

p. 6141, lines 6-8: An anticyclone does not have a cold front. Please describe the pathway more precisely.

p. 6141, lines 14-15: How did the pollution get to Iceland? And why did it accumulate there?

p. 6142, section 5.1: Figure 9 shows also the GEOS-CHEM stratospheric ozone contribution, but I miss a discussion of this contribution in the text.

p. 6144, line 24: Replace June by July

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 6127, 2005.