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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Stationary planetary wave propagation in Northern Hemisphere winter – climatological analysis of the refractive index" *by* Q. Li et al.

Anonymous Referee #4

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Overall, I like this paper's main point, which suggests using the likelihood of a negative refractive index instead of some long-term average. I think the paper is a bit long, and would probably read better without the strong and weak vortex regimes section. The diagnostic is novel, and I think that it will be useful to other researchers. The title seems appropriate.

In the abstract it is stated that probability density is used. But the diagnostics seen to be of likelihood, not the PDF.

I think the paper would be stronger if the calculations were repeated using 1-1/8 degree ERA-40 data.

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Interactive Discussion
Discussion Paper

I think that Section 1 is clear and well written. The argument for the new diagnostic is convincing. This Introduction is very thorough, and I think tat readers will find it useful.

Many of the figures are far too small to read, so I had difficulty interpreting them.

P9042 line ˜15. This is convincing.

This diagnostic has potential application to studies at higher levels in the stratosphere, such as seasonal development of the vortex and likelihood of warmings.

I did not get much out of the strong/weak vortex regime discussion. Is my understanding correct that the weak/strong vortex regimes are not self reinforcing?

I am having trouble understanding Figure 10. This may be in part because it is too small to read. But I do not think that I would be the only reader to need more explanation. The figure is called both a scatter plot and a correlation. I believe that it is a scatterplot, but I do not understand how each cross is defined (what time interval). A few sentences of explanation would help here.

P9051 line 13. It is hardly surprising that there is "a strong correlation between wave activities indicated by extratropic upward EP flux at 70 hPa and probability of stationary wave propagation."

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 9033, 2006.

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Interactive Comment