

Interactive comment on “Water dimer absorption of visible light” by J. Hargrove

J. Hargrove

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I would like to extend my thanks to the reviewers, the editors and the readers for an interesting and thought provoking experience. In writing the paper, one additional reference that should be included is Arking 2005 where Dr Arking reasserts that there is a discrepancy between modelled surface temperature and air temperatures and the measurements. He concludes that there is a water vapor response with a quadratic dependence that has not been accounted for in the models. He also determines that the response of CO₂ to sunlight is not affected by the water vapor feedback, and remains significant. The result is an enhancement of the CO₂ warming by water vapor feedback with a 15 W m⁻² level. This is at least partly supported by my data.

It is rather remarkable to see the contrast between the conclusions of the two reviewers. While reviewer #1 thought that the paper was constructive and had probable results, the second reviewer terms the first diagram as misleading, the results unfounded, and the supporting data likely the result of noise that I was apparently not capable of mea-

suring properly.

I should consider myself lucky to have been presented with two such distinct reviews. Had both reviewers shown the skepticism of the second reviewer it would seem likely for the editor to consider the paper as difficult to justify publishing.

Some of this skepticism is likely due to the remarkable nature of the discovery, the lack of precedent, and the potential consequences. I would agree with Reviwer #1 that the source of the signal is not absolutely certain to be from water dimer. However I would go so far as to say that there is a quadratic response to water in this region of the spectrum that has important consequenses regardlessly of the source, and that is explained most effectively by the dimer hypothesis. It is unlikely that I will have the opportunity to explore this absorption further now that I have graduated, but I do intend to take the water response seriously in the NO_x analyzer I am currently developing.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 11123, 2007.

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