

## ***Interactive comment on “3-D tomographic reconstruction of atmospheric gravity waves in the mesosphere and lower thermosphere (MLT)” by Rui Song et al.***

### **Anonymous Referee #2**

Received and published: 19 February 2018

This paper by Rui Song et al outlines a technique for retrieving 3D gravity wave structure in the MLT measuring O2 A-band airglow using an observation strategy that sweeps the line of sight of the limb sounder horizontally across the orbital track during flight from a nano-satellite (cubesat) platform. I find the paper well written, the literature review comprehensive, the sections are being logically organised and the simulations and retrievals presented compelling to illustrate the technique. I recommend the paper be accepted and only offer the following suggestions for consideration by the authors. 1) The literature review can be strengthened by adding some references of gravity wave detection from SABER instrument onboard TIMED satellite, 2) GW detection from the SOFIE instrument onboard the AIM satellite and GW detection from the CIPS instru-

C1

ment which images gravity waves in PMC's with horizontal wavelengths not detected by any other instrument in the MLT. 2) Figure 1 is confusing and can use a better figure to illustrate the sweep mechanism along the line of sight strategy. 3) This consideration is probably beside the scope of the paper, but the paper can be improved by a discussion on stray light considerations for the instrument and stray light effects on retrievals. A discussion on the radiances required for accurate estimation of GW parameters from the O2 airglow emission may be included. How do errors in slew rate, positioning accuracy and jitter affect the retrievals?

---

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2017-424, 2017.

C2