**Atmospheric
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Interactive comment on "Tomographic retrieval approach for mesoscale gravity wave observations by the PREMIER Infrared Limb-Sounder" *by* J. Ungermann et al.

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Received and published: 17 November 2009

I am glad to see that the work on tomographic retrievals is further pursued. However, it seems that the authors have misunderstood the paper by Steck et al. (2005). The approach described there is not based on individual profiles as stated on p 2822 line 3 of Ungermann et al., but is a retrieval of the full 2D state vector, exactly as in the approach of Ungermann et al.. The term 'sequential' in Steck et al. refers only to the fact that the measurement information is – contrary to the Ungermann et al. approach – exploited limb-scan by limb-scan. During each of these steps, however, the entire 2D field is optimized, and the knowledge on the 2D state vector x gained in prior steps

is conserved by using the x-field of the ith step as x_a (i.e. the a priori) of the $i + 1$st step, and the S_x of the ith step as S_a of the $i + 1$st step. The advantage of this decomposition is a significantly reduced dimension of the F' matrix with respect to number of measurements to be considered during each step.

Interactive comment on Atmos. Meas. Tech. Discuss., 2, 2809, 2009.

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