

Interactive comment on “Field deployable diode-laser-based differential absorption lidar (DIAL) for profiling water vapor” by S. M. Spuler et al.

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We realized there was an error in equation 5. The term $\frac{1}{mk}$ needs to be changed to $(\frac{1}{mk})^{0.5}$. In addition, since the equation describes the % relative error as a function of range, the left side of the equation needs to be changed from σ_n to $\frac{\sigma_n}{n_{wv}}(r)$. The complete corrected version follows.

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$$\frac{\sigma_n}{n_{wv}}(r) = \frac{1}{2\Delta r(\sigma_{on}(r) - \sigma_{off}(r))n_{wv}} \left(\frac{1}{mk}\right)^{0.5} \times \left[\frac{N_{S,on}(r) + N_B}{N_{S,on}(r)^2} + \frac{N_{S,on}(r + \Delta r) + N_B}{N_{S,on}(r + \Delta r)^2} + \frac{N_{S,off}(r) + N_B}{N_{S,off}(r)^2} + \frac{N_{S,off}(r + \Delta r) + N_B}{N_{S,off}(r + \Delta r)^2} \right]^{0.5} \quad (1)$$

The corrected $(\frac{1}{mk})^{0.5}$ term changes the performance model results shown in Fig. 6-8. The new figures are attached.

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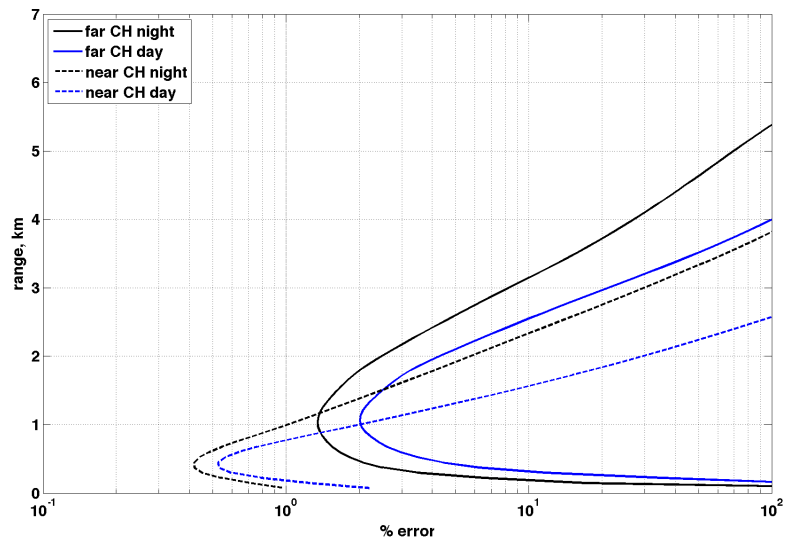


Fig. 1. Performance estimate for day and night with 150 m range resolution and 10 minute averaging for the near and far range channels for an online column OD of 1.5. For a 10% error, the instrument has

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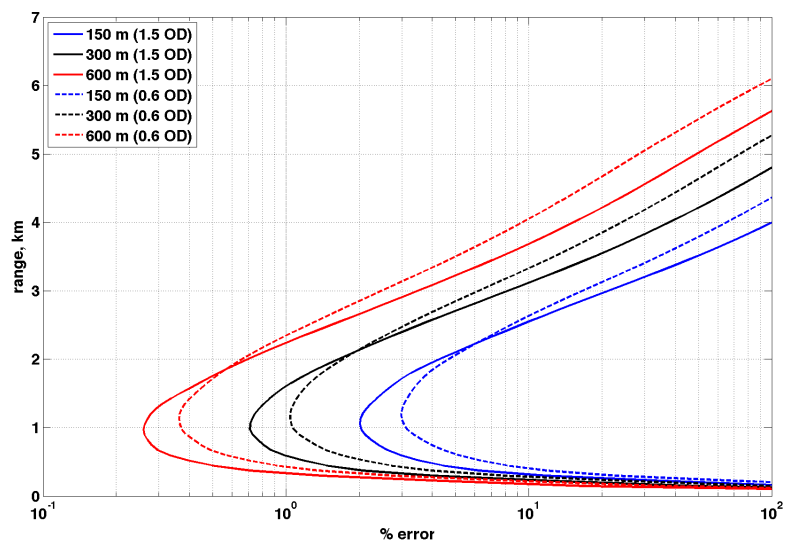


Fig. 2. Daytime performance estimate for resolutions of 150 m, 300 m, and 600 m with integration time of 10 min and column optical depth at 5km range of 0.6 and 1.5.

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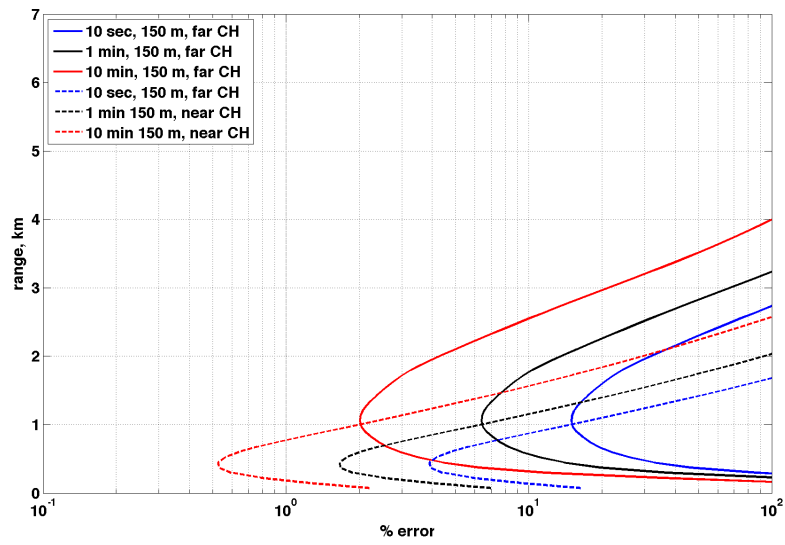


Fig. 3. Daytime performance estimate in % error for temporal resolutions of 10 s, 1 min, and 10 min with a spatial resolution of 150 m for an online column OD of 1.5 The model results indicate that 1 min