

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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Received and published: 6 January 2015

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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The DIAL random relative error is given by

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

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

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 11265, 2014.

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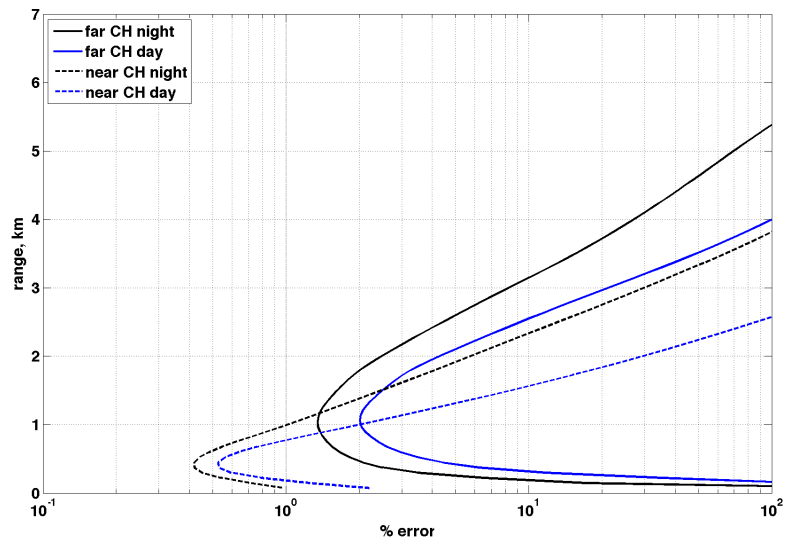


Fig. 1. Performance estimate for day and night with 150 m range resolution and 10 minute averaging for the near and far range channels for an online column OD of 1.5. For a 10% error, the instrument has

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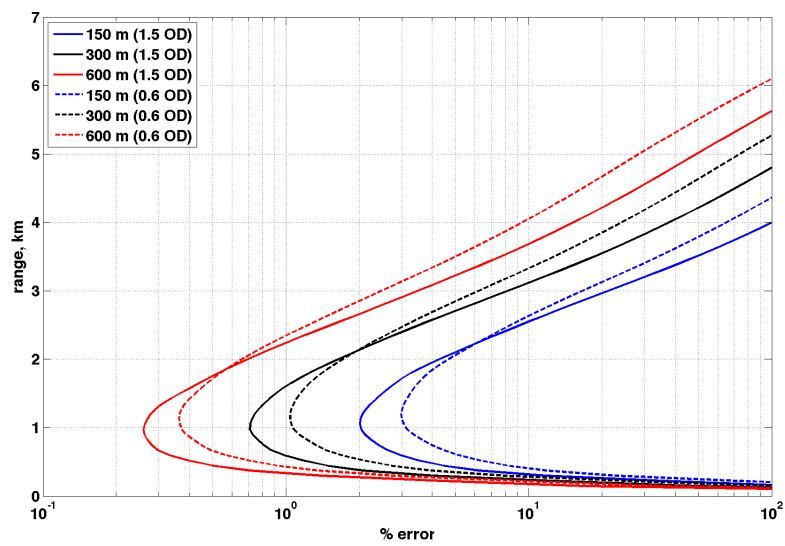


Fig. 2. Daytime performance estimate for resolutions of 150 m, 300 m, and 600 m with integration time of 10 min and column optical depth at 5km range of 0.6 and 1.5.

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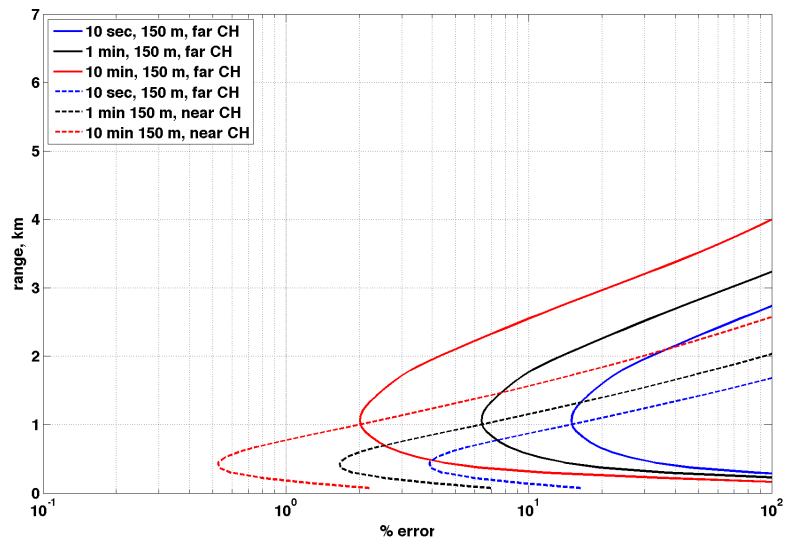


Fig. 3. Daytime performance estimate in % error for temporal resolutions of 10 s, 1 min, and 10 min with a spatial resolution of 150 m for an online column OD of 1.5 The model results indicate that 1 min