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Atmospheric Measurement Techniques Discussions

Interactive comment on "Raman Lidar for Meteorological Observations, RALMO – Part I: Instrument description" *by* T. S. Dinoev et al.

Anonymous Referee #2

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The paper is relevant and worth to get published after improvements in AMT.

The authors could put the technical information in more tables to ensure more easy information to the readers.

Following proposals/thoughts:

Introduction:

Page 6870, Line 12: difficult => difficulties

Pager 6870, Line 19: new => delete this word: H2O Lidar is not new, also not in the sense of operational. (for the periode at ARM-site 1998.03.01 - 2012.06.12

http://www.arm.gov/data/vaps/rlprof/10rlprofmr1turn; Reichardt, J. ; Wandinger, U. ; Klein, V. ; Mattis, T.; Hilber, B. ; Engelbert, D. ; Begbie, R. ; Berger, F. H.: RAMSES , das Wasserdampf-Ramanlidar des Deutschen Wetterdienstes. In: Promet 37 (2011), Nr. 3, S. 119-128)

Page 6870, Line 19: Input between instruments and for => using different measurement techniques Page 6870, Line 20: instead of "needed" => developed

Page 6871, line 5: "expensive", "sophisticated", and "complicated" => this can be stated by everybody and tells nothing. Please, name what you compare, cite and give some numbers.

Page 6871, Line 15, after cross sections => and instrument functions (for instance the filter curve for taking into account the temperature dependence of the rotational-Raman lines and their suppression)

Page 6877, Line 6 and 7: This is the motivation for using gratings? Did you think about possible additional effects by using gratings? Gratings may cause that the passed light is not equally distributed around the optical axis? This effect may also be wavelength-dependent.?.

Page 6884, Line 3: The number 1% is clearly to low (compare for instance Whiteman, D. N.: Examination of the traditional Raman lidar technique. I. Evaluating the temperature-dependent lidar equations, Appl. Opt., 42, 2571-2592, 2003; page 2574, Fig. 2). So the calculation values in Fig. 8 are questionable and should be shown in more steps.

Page 6891: The equation (10) is not retraceable. Please, explain in detail using also N_measured = N_x + N_Bx and sigma=sqrt(N).

Page 6891, line 22 - 24: The radiosonde measurements are also not free of errors. The main errors are listed for instance in Herold et al. (doi: http://dx.doi.org/10.1175/2011WAF2222448.1). So, it should also be noticed which

errors of the radiosonde measurement have been regarded.

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 6867, 2012.