

## ***Interactive comment on “Mixing height determination by ceilometer” by N. Eresmaa et al.***

### **Anonymous Referee #1**

Received and published: 19 December 2005

#### General comment:

The paper describes advantages and shortcomings of retrieving mixing heights from ceilometer by comparing them to mixing heights derived from radiosoundings, several diagnostic formulas and from a meteorological pre-processor. Although the inherent uncertainties in these comparisons which are properly addressed remain necessarily unsolved, the contribution is important, especially with respect to boundary layer field studies, and merits publication. However, a few clarifications are necessary to improve the manuscript.

#### Specific comments:

Section 2.1.2: Explain the methodology to separate convective from stable radiosonde profiles.

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Section 2.3.3: Explain the choice of layer to determine the Brunt-Vaisala frequency. The determination of the friction velocity is considered uncertain. Was the impact on the MH results investigated, or is this just a statement?

Section 3: Inconsistency in equations/table/figures: Explain (or drop) the bandwidths given in equations 6 and 7, and the statistical parameters in the adjacent text (only  $r$  is explained). Explain why the range is not reproduced in Figs. 6 and 8 as well as in the regression formulae of Table 2.

Technical corrections:

Section 2.3.1, first paragraph, line 3: replace "dry adiabatic" by "dry adiabate"

Section 2.3.1, last paragraph, line 1: replace "in absence" by "in the absence"

First paragraph after equ. 4, line 3: replace "in literature" by "in the literature"

Table 2: the second "hpar1" is probably "hpar3"

Caption of fig. 2: replace "of parameter A1" by "of the parameter A1"

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Interactive comment on Atmos. Chem. Phys. Discuss., 5, 12697, 2005.

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