The paper deals with the problem of estimating uncertainties for quantities derived by fulfillment of one or more conditions upon a given data set. Typical example is the determination of the Planetary Boundary Layer height by radiosonde data, where using the parcel method or the Bulk Richardson method it is necessary to find the point where a local property of the potential temperature or the Richardson number profiles.

The theory is more general than the examples given and the theory developed and described might result useful in different fields. However, some aspects are not too clear and should be better explained.

The confidence z between two values is introduced by eq. (2), and then the confidence neighborhood U is defined in eq. (4). In eq. (2) f is given as the argument of z, although it was never introduced before. I guess the authors would refer to y, instead. Please, clarify.

At 5115 – line 4 it is stated that U is "the contiguous set of locations surrounding the point x_m that share the relation of confidence to the specific point f(y) with respect to the constant g". But, since the definition (4) only involves the difference between two any points (z_i and z_j) of the dataset, the contiguity is not guaranteed, since other points far from x_i or x_j might be associated to y values close to y_i or y_j. This may be particularly true for noisy data, where spurious values may result in points with high confidence to a given one, but which may far from it. This possibility is actually removed with the introduction of the strict confidence neighborhood, where a condition on the position of the points is posed. Please, comment this fact.

The authors say that γ=2 produces reasonable uncertainties, providing reference of this statement.

In 3.3 the authors say that "the confidence neighborhood as the intersection of the respective confidence neighborhoods of each data series. So in the end, the confidence neighborhood for multiple data series is identical to the smallest confidence neighborhood of x_m for these data series".

It does not seems to me that this assertion is justified, since it may happen that if the neighborhood sets are not completely overlapped the intersection set might result smaller than the smaller one or, even, empty:

1 2 3 4 5 6 7 8	set 1
7 8 9 10	set 2
7 8	intersection set

In 3.4 it is not clear why increasing the resolution the algorithm tends to underestimate the 'right' value, although the uncertainty decreases, as expected. No explanation is given on this effect, which is counterintuitive . Please, try an explanation about that.

After Monte Carlo simulation on a large number of perturbed profiles, the authors find an analogy between the standard deviation of the distribution of the retrieved location and the confidence neighborhoods as from Eq. (4) for $\gamma \approx 2$. The authors affirm that these quantities "correspond at least qualitatively". Finally, the uncertainty on the attribution of the local property is introduced by equation (6), using the definition of confidence neighborhood and the analogy to the standard deviation of the Monte Carlo simulation.

The introduced formula (6) is interesting, but precisely for this reason a better quantification and analysis of the correspondence is desirable. I encourage the authors to better illustrate this point.

After this, the examples are rather well described and conclusions are consistent with the work.

Last remark is about the captions. Almost all labels are too small; in A4 print they are almost illegible. Please, enlarge the labels. Furthermore, I encourage the authors to use more different colors so that also in BW prints the figure are comprehensible.

Apart from the issues described before, I think that the paper describes interesting theory for the determination of uncertainties in localizing local properties inside a given data set and a given algorithm. For this reason, I encourage the publication after solving the points here specified.