Reply to the specific comments of Reviewer 1

P7 (the full number is 5607, omitted for conciseness), line 9: here and everywhere in the text, write "Hazenberg" and not "Hazenber"
Fixed.

P8, l5-23: this is a summary rather than an introductory paragraph, you should describe the structure of the paper; we don't know well where we are heading.
Fixed.

P8, 14: "the distribution of skewness is strongly peaked": this "peakedness" character could (should?) be quantified.
This is precisely what we do with the introduction of the concept of skewness class and the aid of table 1 as properly reported in Section "Results".

P8, 23: "associated" and not "associates"
Fixed.

P9, 9: the instantaneous bulk variables "or power functions of those bulk variables"
Fixed.

P9, 15: if I understand well the index "G" stands for "ground", is it really useful?
Yes, we would like to stress we are adopting the distribution observed at the ground instead of the concentration which is the most commonly adopted.

P9, 18: maybe add "total" drop count
Fixed.

P9, eq.(3): this equality holds e.g. for the Normal and the double exponential pdfs, but not for the exponential and gamma pdfs. . . any comment? Mention the units of the 2 pdfs: p(Dr) is unitless and p(D) is in [L-1]
See answer in reply to major point. Yes Dr is dimensionless as it should be, since Dr= (D-mu)/sigma.

P10, 14: "check of self-consistency" what do you mean?
This phrase was eliminated .

P10, 15 – P12, 20: what are you doing?
Both paragraphs were re-written to improve clarity.

P10, 23: pG(DR) is defined much later by equation (5)
See previous comment

P12, eq (6): the raindrop diameter range does not extend to infinity
Of course. This is a common expression in Literature: it is implied that for D larger than a maximum diameter the probability density is null.

P12, 5: the term "quantization error" between comas is a bit surprising (just like "check of consistency" before)
Fixed.

P13, eq (8): why don't you consider also the kurtosis as a parameter of interest for checking the similarity of the scaled spectra?
See answer in reply to major comments.

P13, 3: before "measuring" the invariance, it could be interesting to have a figure with all the scaled spectra displayed together, just to see. . .
See answer in reply to major comments.

P13, 19: "< ": what is meant?
"< " means less.

P13, 3 – 14, 2: this "verbose" paragraph should be compressed / suppressed.
This paragraph is essential to explain why we adopt the skewness as a measure of the invariance between instantaneous renormalized spectra. The rationale is the standard statistical techniques such as the Kolomogorv-Smirnov test are not applicable in our case.

P14,16 and 22: January, February
Fixed.

P16, 1-12: I am not convinced this procedure allows you to "verify that the class gaps are due to sampling fluctuations and not to some real dynamical property of rainfall"; the choice of the 90% threshold has little justification. I don't understand also your justification for suppressing the drop counts following a gap! You have no good reason to consider those counts as "defective". A solution to minimize the class gaps problem is to increase the time interval l.
The phrase "verify that the class gaps are due to sampling fluctuations and not to some real dynamical property of rainfall" has a not clear meaning and has been removed. This said, the rationale for the removal of the gaps is clearly stated and this issue has been addressed in all details in Ignaccolo and De Michele (2010). The text has been changed to properly refer the interested reader to a detailed discussion. Also increasing the time intervals to 2,3, 5 minutes can introduce non stationary effects: the mean and the standard deviation may not be any more constant. Please note that also this aspect has been fully discuss in detail in Ignaccolo and De Michele (2010) (online material).

P16, 10-12: something is missing in this sentence
Fixed.

P16, 23: Better use "histogram" instead of "probability". These are the empirical distributions. Wouldn't it be interesting to model these histograms just to see the kind of distribution the skewness coefficient follows?
We do not think the "probability" to "histogram" change to be necessary.
Yes it would be interesting but of marginal relevance for the results presented in the manuscript.

P16, 26: "With respect to the entire. . ."
Fixed.

P17, 1: "this figure indicates the existence of a substantial degree of invariance"; one could say "this figure indicates the existence of a substantial degree of variability" as well. I am sorry but the skewness of the distribution of the reduced diameter has little physical significance for the standard reader (!) and it is difficult to follow you. . . Again, why don't you show the normalized spectra?
We did introduce the concept of skewness class to quantify this variability, see table I and text.
Other Issues have been addressed in the reply to major comments.

P18, 16-20: what is the practical significance of this result? Interactive Discussion
That there exist a most common distribution. (~60% of the cases). We think this to be a relevant result. To the best of our knowledge there is not such a "quantification" of the equality/variability of instantaneous renormalized spectra available in literature.

P18, 22 –p19, 14: not clear to me after several readings. . . Discussion Paper
We test if the "variability" observed in Fig. 1 for the skewness parameter is due to sampling limitations. We think the text to be clear.

P18, 26: standard distribution = Normal pdf with 0 mean and 1 standard deviation?
No. The definition has been given just 8 rows above. It is what we call also "the most common distribution".

Reply to the dryness of the text.

Sections 2.1,2.2, and 2.3 have been largely modified in order to improve the presentation. All issues regarding data processing have been addressed in detail in Ignaccolo and De Michele (2010) online material and hereby we present a short summary.