RESPONSES TO REVIEWER #4 COMMENTS ON "*ASSESSING THE QUALITY OF DIGITAL ELEVATION MODELS OBTAINED FROM MINI-UNMANNED AERIAL VEHICLES FOR OVERLAND FLOW MODELLING IN URBAN AREAS*"

(1) **page 1, line 2: You should explain traditional sources of DEM. The traditional way is changing rapidly**

Answer: by "traditional sources of DEM" we meant conventional methods used to generate DEMs, such as, for example: airplane LiDAR DEMs, point and contour surveying. Nevertheless, we will include some additional information to make this clear in the text.

(2) **5637 line 5: I don't agree with the vertical accuracy with a standrad Deviation of 7,5 cm for a manhole**

Answer: the source of this standard deviation value is a document cited in the text. As mentioned in the text, we do not know the elevation accuracy of these type of points in our case study area. Due to the lack of better information, we adopted this reference value. If the reviewer has complementary or different information, we would be very grateful if he or she could suggest other references or sources of "default" values.

(3) **5637, line 8: it is not the reality that only for large overland flow events the runoff flows over sidewalks. This could be in a traditional assumption, that the manholes and inlets are flooded and the runoff is mainly on the streets. In the real world it Comes from everywhere**

(4) **5637, line 18: more or less the same comment as before. It assumes that the runoff mainly occurs on the street**

Answer: We totally agree with the reviewer. What we meant by this sentence was that overland flow in urban areas tends to concentrate on streets because they are approximately 10 cm lower than the surrounding areas. This assumption is no longer valid if the amount of overland flow is large enough to "fill" the streets and consequently flow over the surrounding areas too.

We will revise this sentence and include its revised version in the manuscript.

(5) **5644 line 18: you should not compare nationwide available DEM with a one which is collected by an UAV. There are also other possible solutions.**

Answer: This critique touches on the same point as comment (4) of reviewer #3. We agree that there are indeed solutions to generate DEMs other than nationwide and UAV DEMs, such as: ground-based LiDAR, which are capable of producing very-fine resolution DEMs along streets and are flexible too. However, this method also has disadvantages: such as the limitations to cover the areas behind the buildings. Furthermore, this should not be considered a conventional DEM source, as it is not frequently used (available for) in urban flood modelling.

Based on this, we consider that the comparison is valid in order to show the advantages and limitations of DEMs produced based on mini-UAV imagery when compared to conventional

and commonly used DEMs (such as the ones generated based on LiDAR and provided nationwide).

(6) 5647, line 15: why don0 t you use a hydraulic model instead of delineation the flow paths. It would be a bit more correct

(7) 5649: line 15: same as before

Answer:
This is an interesting point. We have been thinking of using a shallow-water equation-type model and then discarded the idea during our study. Our main criticism was that it was difficult to assess how "correct" and uncalibrated overland flow model with default parameters is. To avoid this discussion, we agreed to "keep it simple" and focus on flow paths, which is common practice.

(8) 5649 line 22: they deliver basic data and no satisfactory results

Answer: Good point. We will revise this sentence in the revised manuscript.

(9) 5650 line 28: the problem of the presence of Vegetation and trees is in any Approach present

Answer: we agree with the reviewer. However, due to the UAVs flexibility one can chose the appropriate time of the year (i.e., season) and fly without tree leaves. Of course, in areas with perennial trees, this assumption is no longer valid and the UAV flexibility is not an advantage when compared to other less flexible DEM generation methods or other methods that are not influenced by tree leaves (e.g. ground-based methods).

(10) 5651 line 4 ff: once again the trees..., beside UAV there are other Solutions possible, which deliver more accurate data mainly on the streets and are also very flexible

Answer: please refer to response to point (5). In the revised version of the manuscript, we will mention the advantages of other sources of DEMs (e.g. ground-based LiDAR) that do not have problems with tree leaves or vegetation.