Response to Referee #1:

Congratulations for your article is very interesting and well treated. The paper is an important example of using alternatives to solid precipitation measurements in operational networks taking into account cost-value decisions. It is well suited to the audience of the journal and worth being published.

I like to remark the good experimental design and the strong methodology with 3 different sites for intercomparison. In my opinion, this is very important because it shows that replication in other sites is possible. The results are clear and the quality control of data is consistent with other similar studies

- Thank you.

However, some details and explanations are required in order to reproduce the LPDF in other sites, either for other intercomparisons or just for operational measurements.

I would suggest to include a more detailed description of the LPDF including a complete diagram (i.e cross section) and some details how the slats are installed within the chain link fence panels (before/after), how to avoid displacement of LPDF under strong winds, approximate dimensions of concrete footing and how to anchor and elevate the LPDF etc

- Some of the finer details of the engineering and components of the LPDF are still being worked out; the bracing, supports, mounting, and anchoring of the shields will be evaluated and potentially improved for longer-term installation, but we can provide more information and a drawing of the shield in the revised manuscript. Here is a rough draft, if we can't find a good spot for it in the manuscript itself, we will just provide a summary, and a more complete description in a supplement to the manuscript:

  The fence panels themselves are a standard gate panel that is available from construction supply and hardware outlets. The Supplement (to be provided with the revised manuscript) will include a list of the components of the LPDF, including the standard chain link hardware used to mount the fixed panels, and the two hinged openable panels (one on the interior fence, and one on the exterior fence). The clamps used to attach the panels to the supporting poles should be reinforced using metal screws, to keep the clamps in place and prevent movement in high winds.

  The slats were installed per the manufacturer's instructions, and easily slid and locked into place. They are vinyl and designed to be outdoors indefinitely, so weathering is not anticipated to be a significant problem. Furthermore, the slats can easily be replaced easily if they are damaged or subject to weathering over time.

  No concrete was used in the construction of the LPDF - the shield was designed to sit on top of the soil surface. Each pole supporting the panels sits on a reinforced 30 cm x 30 cm section of Geoblock. This is in part to ease installation. It also minimizes the effects

of frost heave. After the LPDF is assembled and braced, it is rigid, and is held in place by short guy wires anchored in the ground. The anchoring can be modified based on the soils at the site.

The panels are attached to the poles by clamps that can be loosened, allowing the height of the fence to be adjusted by sliding the loosened clamps up or down the poles. Once the desired height is reached, the clamps are tightened and additionally screwed in place."

Another important point for discussion is to analyze if given the objective of 25% of porosity the design can/could be slightly different (i.e panel dimensions, slats width, etc) obtaining similar results

- This is a good point! In the manuscript, we will acknowledge that more research may reveal alternative designs that would result in similar (or better) results that meet (or improve upon) design constraints. We did not have the resources to test different variants of the shield; testing many variants of the shield over the course of several years at three different sites would be a significant undertaking. Instead, we designed and tested a shield that met our design criteria, and was easy to find materials for in the US. A full examination of all of the possible effects of porosity, slat width, size, and shield height (with respect to the gauge inlet) was beyond the scope of this manuscript. But the authors agree that this is a worthwhile subject of discussion and future research. For several years prior to designing and testing the LPDF, we tried (and failed) to get support for numeric experiments focussed on testing the efficacy of different shield designs and shield heights, but we never succeeded in acquiring this support.

Another important point is a more detailed discussion about durability of LPDF compared with SDFIR and the approximate price different on material and time for installation

- We agree that this is another important point, especially as cost and ease-of-use is one of the main reasons for this research. In the revised manuscript, we will provide an estimate of the current costs of both the LPDF and the SDFIR.

  Regarding durability, the LPDF is assembled out of chain link fence material, thus it is designed by fence manufacturers to exist outdoors for an extended period of time. The SDFIR is made of pressure treated wood, which weathers over time. Some of the SDFIRs in the USCRN are 20 years old, but many require repair and replacement (of slats as well as supporting members) on a regular basis. Additionally, there are several fences in the USCRN that need to be completely replaced. In addition to the cost of building a new SDFIR, the replacement of an entire fence involves the disposal of close to 1000 kg of wood, which is not a trivial undertaking. We will summarize this in the manuscript.

Also some minor comments are provided below that I would ask the authors to consider before the paper can be accepted for publication.

1) Remove DFIR on the caption for figure 6 y 8

- Good catch! Thank you. We will remove the caption.

2) Percentage of cases Ugh> 9 m/s

- We will include that in the manuscript. This is also addressed in more detail in the response to Referee #2.