

## ***Interactive comment on “The European lightning location system EUCLID – Part 1: Performance validation” by W. Schulz et al.***

### **Anonymous Referee #1**

Received and published: 25 September 2015

**General Comments** This manuscript describes the EUCLID Lightning Location System and the results of efforts over the last seven years to evaluating its performance in terms of Location Accuracy (LA), Detection Efficiency (DE), and peak current estimation. The authors indicate that the results presented in this paper can be used to estimate the performance of the EUCLID network for regions with similar sensor baselines and sensor technology. This manuscript is used to provide important background material for a companion paper addressing climatological observations derived from long-term EUCLID data.

The manuscript is clearly written and logically organized. The content is technically sound, reflecting best practices in this area of study. This reviewer has a small number of specific comments (concerns and recommendations) that need to be addressed

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by the authors, as well as larger number of minor editorial comments and technical corrections.

At this point in the (interactive) review process, I have chosen to post four comments that might impact the scope of the final paper. Lesser issues and suggestions will follow over the next few weeks. If requested by the editor, all comments can be provided in the next few days.

**Specific Comments** 1. The manuscript includes a map of the expected location accuracy (Figure 5), and this is compared to the independent validation studies reported in this paper. It would be very beneficial if a map of flash detection efficiency were also included. The authors have likely thought about this issue, and decided that this was not practical, possibly leading to the nature of the last sentence in the abstract. This issue deserves discussion.

2. This paper might be more valuable if it could be viewed as a “one-stop shopping” for a contemporary review of recent publically-available efforts to validate performance throughout the EUCLID network. The specific changes to the manuscript might be an expansion of the introduction and a table in the discussion where performance characteristics reported by others can be “tabulated” and commented on. A LA map (comment 1 above) might be helpful for these discussions.

3. The authors have chosen to include the requirement of proper type classification (CG vs. IC) as part of detection efficiency assessment. This strict definition causes the issue of type classification accuracy to be “hidden” within the reported DE values. The authors should consider separating these effects, or at least providing a contingency table for type classification (when known). Additionally, polarity errors (when known) should be noted. I do note that type classification errors for positive CG discharges are discussed in the current manuscript.

4. The authors bring up the issue of flash multiplicity and its impact on flash DE, in the context of qualifying the relevance of flash DE derived from upward lightning ob-

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servations. The data are available in their video observations to report video-derived multiplicity, which would strengthen or at least refine this discussion. Regional variations in “true” negative multiplicity may well be important in the interpretation of flash DE values. This is a suggestion and not a requirement.

Technical Corrections/suggestions (to be added later)

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 5325, 2015.

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