**Response letter to the reviewing process, submitted to the Anuário de Geociências for the manuscript named: "Evaluation of The Rio De Janeiro State Flood Alert System: A Case Study for The Hydrographic Region of The Middle Paraíba Do Sul (RJ)".**

Dear Reviewer,

The authors would like to thank you for the valuable suggestions that have been made since the beginning of the reviewing process for this manuscript. Indeed, the suggestions were enlightening regarding a better understanding of the scientific questions that gave birth to this scientific manuscript. In the following topics, the authors politely present a selection of arguments on the main points raised by the reviewer in the last step of reviewing process. However, it must be clear that the main objective of this work was to evaluate the performance of the INEA-RJ flood warning system and not to propose a new methodology, which in reality, would require other studies that will undoubtedly be carried out in the future.

***Response to item 4.*** Limitations, constraints and characteristics related to the flood warning system are still not completely stated or discussed, even it is aimed in the introduction section.

The authors thank the reviewer for the suggestions and fully understand that some aspects still need to be addressed, mainly the analysis of the Flood Alert System (FAS) performance. The authors understand that increasing the analysis of some characteristics of FAS still susceptible to failures would profoundly contribute to its improvement. A FAS with fewer flaws would provide both governmental agencies and the population with a reliable non-structural tool that is a fundamental part of the flood prevention policy in Rio de Janeiro State. Notably, the authors would like to highlight two main issues: (1) Options for optimizing data transmission and availability in FAS. Although the Flood Alert System is considered efficient based on its purpose, optimizing data transmission and availability would help reduce false alarm messages, which is still a persisting gap in system accuracy. (2) Identifying rainfall threshold patterns that trigger floods by using weather radars which can improve the system, helping to issue the alerts, which can contribute to removing the subjectivity that involves some stages of the Operational Protocol (as occurs with the Attention and Alert stages). Apart from the two topics previously presented, a significant amount of work could be addressed in this manuscript. However, to the author’s knowledge, this is the first scientific investigation of the FAS to be published in a peer-reviewed scientific journal. Therefore, we believe that this study presents the first analysis of FAS, and the topics analyzed here were pointed out by the authors as the main topics to be evaluated so far. The authors believe that further analyses could be better tackled in future studies, encompassing a comprehensive analysis of the particular issues already raised in this manuscript.

***Response to* item 9.** Perhaps the manuscript could have a deeper discussion by mentioning other characteristics that still limit the performance of the Flood Warning System.

We thank the reviewer for pointing out the specific question on discussing FAS limiting characteristics. As previously stated, the authors believe that deeper analysis can be the object of particular studies that adequately encompass each of the reviewers' questions. However, as a way of considering the issues presented by the reviewer, a detailed response to each question will be addressed below, discussing the direction in which the authors will propose future studies.

***Response to* item 9. (Question 1)** The assessed Flood Warning System is sufficient enough for its purpose?

As previously pointed out by the authors, the Flood Warning System (FAS) has remaining issues that need proper solutions to increase its reliability. However, considering its primary purpose, which is avoiding severe human impact due to recurrent floods in Rio de Janeiro State, FAS has a high degree of success, mainly because of the decrease in the number of human deaths since the start of the system. However, the proper response to this question would only be accomplished by a comprehensive study, which would address the significant amount of quantitative and qualitative variables necessary to reach the purpose of a FAS.

***Response to* item 9. (Question 2)** Are the existing dams and reservoirs interfering the Flood Warning System?

There are, in fact, dams within the course of some rivers in the studied watershed. It is noteworthy that the construction of a dam impacts the river flow and, consequently, would impact the flooding process in the study area. However, within the analysis carried out in this manuscript, no impact was observed. The authors believe that to better understand the impact of dams on the flooding process, hydrological modeling is imperative to consider and control all hydrological processes. This study has, in its starting scientific development, tacked hydrological modeling. However, at that time, a broader analysis was to be carried out at first due to the need for more knowledge of FAS performance. The analysis carried out in this manuscript will serve as the basis for future studies on carefully analyzing the hydrological processes within the proposed studied area.

***Response to* item 9. (Question 3)** If RAI does not play a crucial role in triggering the alert emission, is there another potential parameter to consider?

The authors understand that using the Rainfall Anomaly Index (RAI) does not directly trigger alerts, but it is related to evaluating the behavior of precipitation that has occurred. However, identifying precipitation threshold patterns that trigger floods is still worth it, mainly through the reflectivity of a weather radar. The information from a weather radar can assist in directing the alerts, significantly reducing the subjectivity of some stages of the Operational Protocol. As weather radars have a shorter time interval for transmitting information and processing data, it is the ideal tool to support the operational team in issuing alerts. In its present configuration, the Flood Alert System relies on the operation of two radars that cover a complete sweep of the Rio de Janeiro State, which could enable a nowcasting meteorological service. However, there is still a lack of knowledge on treating information generated from Flood Alert System radars. Therefore, radar experts and connections to local scientific centers can fill this gap that needs better exploration.

***Response to* item 9. (Question 4)** It is possible to better analyze/process Cold Fronts information to tackle the issue of false alert emission?

The authors agree that a better analysis of the processes that involve not only the cold fronts, but also the other meteorological systems considered in this research, would increase the knowledge about the emission of false alarms. However, these interaction of cold fronts and other meteorological systems considered with local processes, would need a deeper analysis, with information from meteorological stations, and meteorological radars, in order to more efficiently represent the performance of these systems that induced the occurrence of floods, knowledge that should be addressed in future works.

***Response to* item 10.** Try to avoid the use of redundant words (like “due”) or terms like “flood trigger event”, in this case, maybe an acronym would help. Get the english/writing, syntax and structure checked once more.

The authors thank the reviewer. An English/writing, syntax, and structure check was made with a focus on avoiding redundant words and verbose terms.