

Response to the Reviewers Comments

Paper title: Identification of nighttime urban flood inundation extent using deep learning

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We are grateful to the reviewers and the editorial staff for your valuable comments on this manuscript. We will respond to each of them and the relevant corrections are listed below. The relevant corrections have been highlighted in blue in the revised manuscript, and the responses to the detailed comments are provided below.

1. Expand the discussion on real-world applications and limitations.

Response: Thank you for your valuable suggestion. We have revised and expanded Section 5 “Discuss” in the the revised manuscript. The added content is as follows:

Discussion on limitations:

“In addition, the current model is primarily designed for nighttime flood extent recognition and is not yet capable of sensing or estimating flood depth. It also lacks the ability to perform reliably under all-weather conditions. Furthermore, although the NWseg model can identify flooded areas more accurately, it is still difficult to achieve accurate modeling and area quantification of inundated areas. Finally, the dataset used in this study is mainly collected from some typical cities in China, and although it has covered diverse nighttime environments and lighting conditions, the model's generalization ability may be limited by the influence of geographic concentration and the dependence on surveillance cameras, and there is a certain identification bias when facing areas with different urban structures and lighting conditions.”

Discussion on real-world applications:

“In subsequent practical applications, the NWseg model can be widely deployed in key scenarios such as urban emergency management, intelligent transportation monitoring, and disaster prevention and mitigation, especially for emergency response needs under extreme weather at night.”

2. Clarify how the model could be integrated into emergency response workflows or smart city infrastructure.

Response: Thank you for your valuable suggestion. We have clarified the potential integration of our model into emergency response systems and smart city infrastructure in Section 5 “Discuss” of the revised manuscript. The added content is as follows:

“By interfacing with existing traffic monitoring systems or urban sensing platforms, the model can automatically extract flooding information from the monitoring screen, and realize rapid identification and early warning push for waterlogged areas. Combined with the city scheduling platform, NWseg can assist government departments in flood risk assessment, dynamic allocation of emergency resources, and trend analysis of disaster evolution, which significantly improves the efficiency of urban response and risk management capabilities in extreme weather events.”

3. Briefly comment on dataset generalizability and potential bias due to lighting or geographic scope.

Response: Thank you for your valuable suggestion. We have revised and expanded Section 5 “Discuss” in the the revised manuscript. The added content is as follows:

“the dataset used in this study is mainly collected from some typical cities in China, and although it has covered diverse nighttime environments and lighting conditions, the model's generalization ability may be limited by the influence of geographic concentration and the dependence on surveillance cameras, and there is a certain identification bias when facing areas with different urban structures and lighting conditions.”