Review Comments

    The author attempts to use RF, CNN and migration learning methods to solve the problem of expanding the application of data-driven models. This problem is very valuable for urban flooding research, and is also the direction of machine learning and physical model development. Taking three typical regions in Berlin, Germany as the research object, the author constructs a waterlogging depth prediction model using CNN and RF. The results show that the CNN models had significantly higher potential than the RF models to generalize beyond the training domain. But there are still some problems to be solved.

1. Table 2: I have not found the indicators related to the drainage pipe network in the in the table. The urban flood not only depends on the rainfall, terrain, slope and elevation, but also the drainage capacity of the drainage pipe network is an important factor. Please consider whether it is better to add the relevant indicators of the drainage pipe network.

2. Why to select a rainfall event with a rainfall duration of 1 hour? It is suggested to give a reasonable explanation on the basis of statistical regional rainfall characteristics.

3. As far as I know, recent floods will be easier to collect and more valuable. Why is the flood inventory only collected in 2017? If so, suggestions can be collected and supplemented.

4. The data of hydrodynamic simulation was selected as the sample data of the data-driven model to establish the water depth prediction model. Therefore, if the reliability of the hydrodynamic simulation results can be verified, the data-driven model established will have high value for urban flood control.

5. In Figure 7 (a), it can see that the altitude and roughness have the same value. If the decimal places are more accurate, can this be avoided? In addition, the author mentioned that adding roughness will reduce the performance in SA2. Therefore, whether it is possible to delete roughness directly?

6. The analysis in Section 3.3 is an intuitive feeling. It is suggested to add some statistical indicators to make it more convincing.

7. Although Berlin is large, the research area selected by the author seems to be small, and the model training time is from 20 minutes to 48 hours. If a large city (more than 1000km2) is modeled, the calculation cost seems too high.

8. Transfer learning should be the focus of this study, but the analysis of transfer learning methods and results in 2.5 and 3.2 is insufficient and needs to be supplemented.