

Interactive comment on “Has dyke development in the Vietnamese Mekong Delta shifted flood hazard downstream?” by Nguyen Van Khanh Triet et al.

Anonymous Referee #3

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The paper shows an interesting finding about the correlation between the dyke system and the flooding in Vietnam Mekong Delta by observing the changes in flood characteristics to high-dyke constructions and other possible causes. The paper was well organized and mechanism of the flooding in VMD was explained clearly by the trend analysis and hydrodynamic flood model though there are some other factors than large-scale dykes that can cause the hazard, especially in downstream. The findings of the paper will be very useful not only for the academia but also the local governments in the deltaic regions.

The authors used Monte Carlo experiment for uncertainty analysis of the detected trend. However, it seems that more explanation about the method of analyses measurement error should be clarified, for example, the Reliability Method with median

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value and variation of error.

Inundation levels in the Mekong Delta are predominantly determined by ocean tides, sea-level rise, and land subsidence. Although the authors took in account the changes in the tidal dynamics, it is hard to understand well about the tidal propagation model, how it effects to the inundation level in Mekong Delta by tidal harmonic analysis. The land subsidence in VMD is obviously significant following previous research (eg. Erban et al., 2014) and will be the predominant factor leading to more serious floods over the low-lying areas (downstream) (Takagi et al. (2016): Sea-Level Rise and Land Subsidence: Impacts on Flood Projections for the Mekong Delta's Largest City, Sustainability, 8, 959; doi:10.3390/su8090959).

In the conclusion, the authors confirm the claims that the high-dyke development has raised the flood hazard downstream. However, it is not the only and not the most important driver of the observed changes (sea level rise in combination with the widely observed land subsidence and the temporal coincidence of high water levels and spring tides have even larger impacts). Therefore, it should be very carefully considered about the main factor that causes more serious flood in the downstream and need to have more research on this.

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