

## ***Interactive comment on “Flooding in the Mekong Delta: Impact of dyke systems on downstream hydrodynamics” by Vo Quoc Thanh et al.***

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Dear Referee #1, Thank you so much for taking time to review and comment. We will consider your comments on the manuscript to revising the manuscript. The following section is our responses to your comments. Authors' response: The number of the annual flood volume at Kraie is estimated by about 416 km<sup>3</sup>. The reviewer#1 suggests the flood volume of 475 km<sup>3</sup> is an estimate of the whole Mekong River. 1. what is the problem of dyke ring with mixed heights (obviously the lowest point determines the level of protection) 2. Why it happens in this methodology (or what exactly happens: mixed height dyke rings misidentified as single height in the nodel?) 3. What is the relationship to ignoring small canals? Authors' response: The lowest elevation of a dyke ring determines the level. The canal system in the Vietnamese Mekong Delta

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is dense, but the model considered the primary and secondary canals. The tertiary canals was excluded. Figure 1 presents an example of high dykes and low dykes. Unfortunately, the canal between low dykes and high dykes was excluded. The areas protected by high dyke is smaller than those protected by low dykes in the blue polygon (Figure 1b), so we assume that the blue polygon is defined as a low dyke in modelling.

Figure 1. An example of high dykes and low dykes; (a) high dykes in orange and low dykes in green; (b) the blue line presents a low dykes in modelling. (After Triet et al. 2017) is the kurtosis discussion necessary? This is useful if you do statistics of hundreds of hydrographs, but in this case we can clearly see that slipstream's are flatter by looking at the hydrographs. Authors' response: Although the different shapes of hydrographs are recognised by looking, the kurtosis helps to determine the differences. In this study's context, there is little value in doing a tidal harmonics analysis in my opinion. What you wanted to show is the high dyke development will affect the tidal impact on the river level in inland locations, while dykes do not affect it much in the coastal locations, as far as I could understand. A single graph showing the change in tidal range under different scenarios in various stations would show this adequately. Authors' response: As we responded to the comment 4, the results of tidal harmonic analysis help to understand tidal propagation which is indicated by the diurnal constituents (K1, O1, P1 and Q1) and the semidiurnal constituents (M2, K2, N2, and S2). In my opinion, using these indexes to present tidal variation is better than tidal ranges at which water levels are influenced by the annual floods. QLPH - is it a region or the project name? Please mark this area/infrastructure on a map (not at a new figure but in figure 4 or 1) and refer to it here. Authors' response: QLPH is a project which was constructed for water management in the coastal Mekong Delta (Hoanh et al. 2012). It is on the Figure 1.

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Fig. 1.