This manuscript describes a modeling study that seeks to understand morphodynamic adjustments to bifurcations that occur due to river and tide interaction. A novel set of boundary conditions is used. The key finding is that as tidal forcing or tidal heterogeneity (the use phase lags) increases, the stability or symmetry of the bifurcation increases through adjustments to the sediment bed. The straightforward modeling approach affords a relatively clear view of the controlling processes. It is well written, and a solid improvement to our understanding of river delta networks.

We thank the Referee for his time to carefully read the manuscript and for his comments that helped us improving the manuscript.

1. **Comment from referee:**

   One important question I have after digesting this manuscript is the following (the subject heading): The explanation of flow regulation is that the tidal flow from the bigger channel pushes flow into the smaller channel (L289, reason one). This sounds like a rising tide phenomenon, where an incoming tidal waves hits the bifurcation from downstream. However, this is probably a relatively low shear stress and sediment transport moment as the tide fights with the river. The paper states that the most symmetric shields stresses occur at peak ebb flow (L264). At this time, I would expect a falling tide in a deeper channel would pull more water and be more asymmetric. Perhaps this could be elucidated with a Psi_tau*max plot over a tidal period? It would help me understand this key aspect of the system.

   Author's response:

   To clarify, in line 264, Ψ_{τ^*max} is the difference/asymmetry between the maximum peak Shields stress in the two downstream channels (which does not necessarily occur at the same time). This parameter has the strongest correlation with the asymmetry of the final depth between downstream channels.

   We also plotted the Ψ_{τ^*} as a function of time for one of the simulations (simulation Depth1_Q500). If we compare the asymmetry during ebb and flood tides, we agree that the asymmetry during ebb tides is larger than during flood tides. However, the highest asymmetry occurs during the transition between ebb and flood as shown in Figure A below. Compared to this transition condition, the asymmetry during ebb tides is much smaller, even though flow velocities and the absolute difference between the two channels are largest. So, the relative difference decreases although the absolute difference increases. This also explains why for largest tidal influence the relative difference of the Shields stress is smallest. Furthermore, during flood tides the sediment mobility in the downstream channels is relatively small and sometimes close to the critical threshold of sediment motion. It means that during flood almost no sediment is transported. For the simulations with higher discharge (2800 and 1596 m^3s^{-1}) the sediment mobility during flood tides is below the critical threshold of sediment motion indicating no sediment transport.

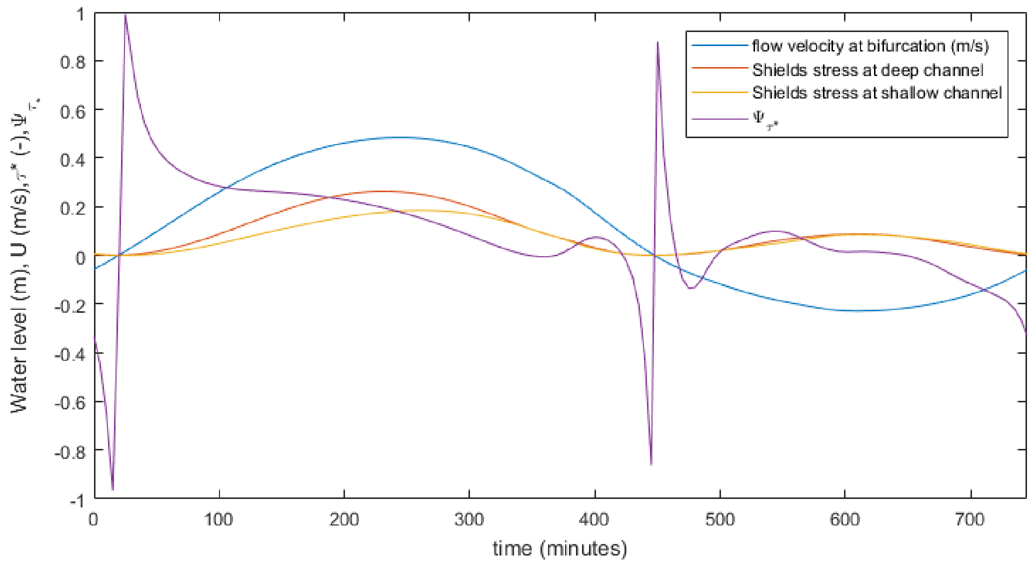

Figure A: Flow velocity in the upstream channel two grids away from the junction (160 m) (blue line), and Shields stress in deep channel (red line) and shallow channel (yellow line) located near the bifurcation (160 m or two grids away) for simulation Depth1_Q500 (simulation imposed by depth difference between branches) overlaid by $\Psi_{\tau*}$ in time. The positive flow indicates ebb flow while negative is flood flow.

Author's changes in manuscript:

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2. Comment from referee:

Figure 8-11 show correlations of various strength between asymmetry and modeling runs. I am quite surprised by the scatter for example in Fig. 9. With a model that is so simply designed, I would like to know where the scatter comes from. Even if the authors suspect is from numerical errors, it would be good to know. The authors' intuition for this is far better than mine (or the average reader). No information was given about initial bed elevation or bed slope, which seems like an important boundary condition for tidal waves and backwater dynamics. If the system was initialized with a uniform elevation, that information will suffice. Modeling 0.25 mm sediment (L104) in a large tidal system seems too large to be characteristic of tidal systems. I am not suggesting to redo the modeling, but can you justify this choice further?

Author's response:

The scatter in Fig 9 is because we use 5 asymmetry conditions: Depth1, Depth2, Length difference, tidal amplitude and phase difference. Most simulations started out of equilibrium because we do not know the morphodynamic equilibrium for these conditions. We picked these different scenarios to analyse how these types of imposed asymmetry, which is typically found in tidal deltas, will affect the morphodynamic evolution of the bifurcations. Even though we successfully found that they have a similar behaviour, i.e. more tidal influence drives a less morphological asymmetry between downstream channels, the quantity of the morphological asymmetry is different with different imposed asymmetry conditions. With changing morphology, the hydrodynamics also changed. So we did not have full control on where the system would finally end. Besides, not all simulations really reached morphological equilibrium.

Though the morphological change of all simulations at the end of the simulation is small, the morphological change in some simulations still develops very slowly.

Regarding, the channel slope, we have provided the streamwise channel slope (3x10^{-5}) in previous version (line 142). Also, we provided the initial depth of all channels in Table 1.

Regarding the grain size, since we are interested in the effect of tides on the asymmetry of the bifurcation for different forcing conditions, we used a single value for the grain size. Thus, we chose a value representative for both more river- and more tide-dominated conditions. Medium sand is a good choice as it is also observed in some deltas such as in Berau River Delta (0.125-0.25 mm) (Buschman et al., 2013), Kapuas Delta (0.22-0.3 mm) (Kästner et al., 2017), Mahakam Delta (0.25-0.4 mm) (Sassi et al., 2011), Mekong Delta (0.074-0.385 mm) (Stephens et al., 2017). However, we do agree that there is no single D_{50} in a system and it differs between systems. The grain size influences the sediment transport mechanisms (bedload versus suspended load) and thereby effect the morphodynamics as shown in the figure below. Therefore, we will study the sensitivity of the model results to the value of d_{50}.

Author's changes in manuscript:

The scatter result in Figure 9 will be further explained as mentioned in Author's response in the Discussion section.

We will motivate our choice of grain size in the model set-up (Section 2.1) as discussed above.

In the discussion section for the new version, we will discuss model results from a simulation with coarser grain size (0.5 mm) and from finer grain size (0.1 mm) using the same settings, asymmetry condition, and forcing as for the Depth1_Q2800 simulation (Table 1). These additional simulations will show how the model results will be affected by the different type of grain size as shown below. Coarser sediment causes the morphology to be less asymmetric, because of the stabilizing effect of the lateral bed slope effect.

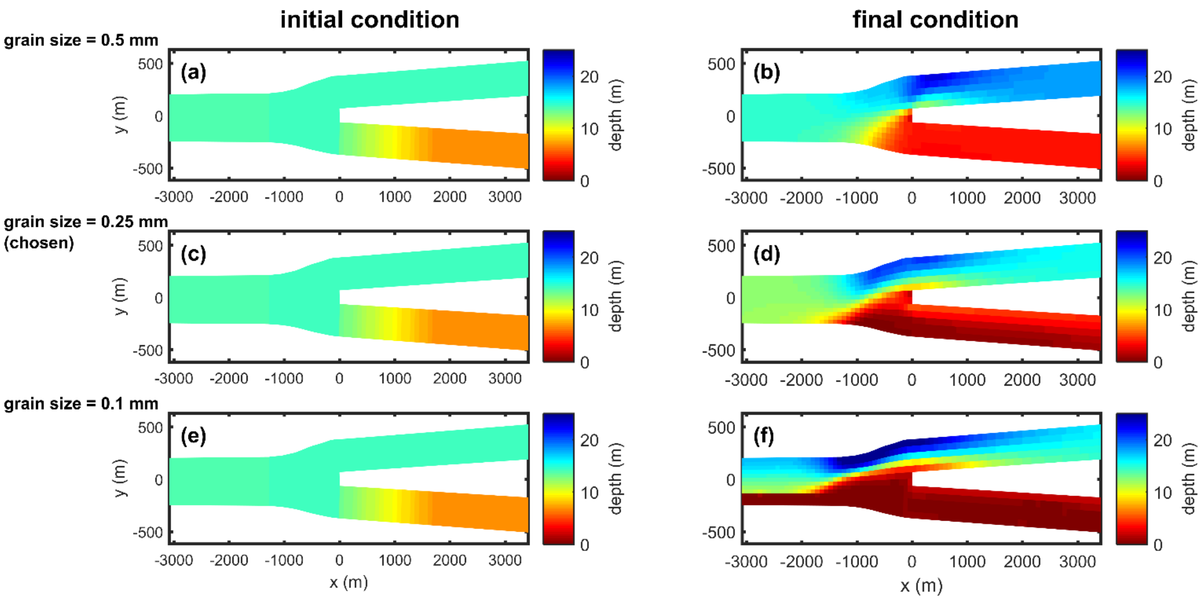

Figure B: Initial (left panels) and final (right panels) depth near the bifurcation for different prescribed grain size. Depth difference between downstream channels was prescribed. One downstream channel has a depth of 7.5 while the other channels were 15 m. At the upstream boundary the river discharge was 2800 m^3s^{-1}. At the downstream boundaries, M_2 tides were prescribed with the amplitude of 1 m.

3. **Comment from referee:**

Minor Comments L110 I appreciate the discussion of the limitation of the non-adjustible widths. I think it is a reasonable simplifying assumption for this study though. L124 within 800 m of L152-153 over 2km is redundant L166 It took some effort to figure out what eta_i means. I found it in figure 1, but perhaps it could also be explicitly defined in the text here.

Author's response:

The statement in Line 124 was about the width of the channels while the statement in line 152-153 is about the distance where the depth is gradually changing in the shallow downstream channel from the default depth (15 m) to 7.5 m for the first depth difference scenario (Depth1 in table 1). This depth change is gradual to avoid a sudden depth change that may affect the local flow condition.

Author's changes in manuscript:

We will explain what eta_1 and eta_2 mean in the section 2.3 of the new version of the manuscript.

4. **Comment from referee:**

L234 The Chezy friction factor was set to be constant, so I do not see how differing friction could matter here. Varying depth and the associated reduction in tidal wave celerity is a much more intuitive explanation here.

Author's response:

Indeed, Chézy is the same for both channels, but the friction force is not because it depends on flow velocity as well. Due to the difference in depth the importance of the friction will be also different in both channels resulting in the different results. That is what we mean in the previous version. We will clarify this in the new version.

Author's changes in manuscript:

We will clarify this reasoning in the result section (Section 3.2) of the new version as follows:

"Because the depth in the channels influences the tidal dynamics (by for example the relative importance of friction and by difference in tidal propagation speed due to the different initial depths), the tide-induced flows were different at the junction and stayed different during the entire simulation."

5. **Comment from referee:**

L289 Processes instead of reasons? L326 Findings L351 asymmetrically L354 "relatively ratio" a word is missing here.

Author's response and changes in manuscript:

We will modify them according to this comment in the new version.

6. **Comment from referee:**

Figure 2-7. The size and colormaps make these figures very difficult to gather information from. I recommend either adding 2-4 contours to the plots or just using 2-4 colors instead of a spectrum. Basically all of the detail in plots like Figures like Fig7a can't be seen by the reader.

Author's response:

We will change the colormap into 4 color contour which is more clearly for the reader to see the deepening and shallowing

Author's changes in manuscript:

The colormap of Figure 3-7 from the previous manuscript will be changed with four colour contour as shown in th example of improved Figure 4 below that show the time-stack of one of the scenario (depth difference 1) below.

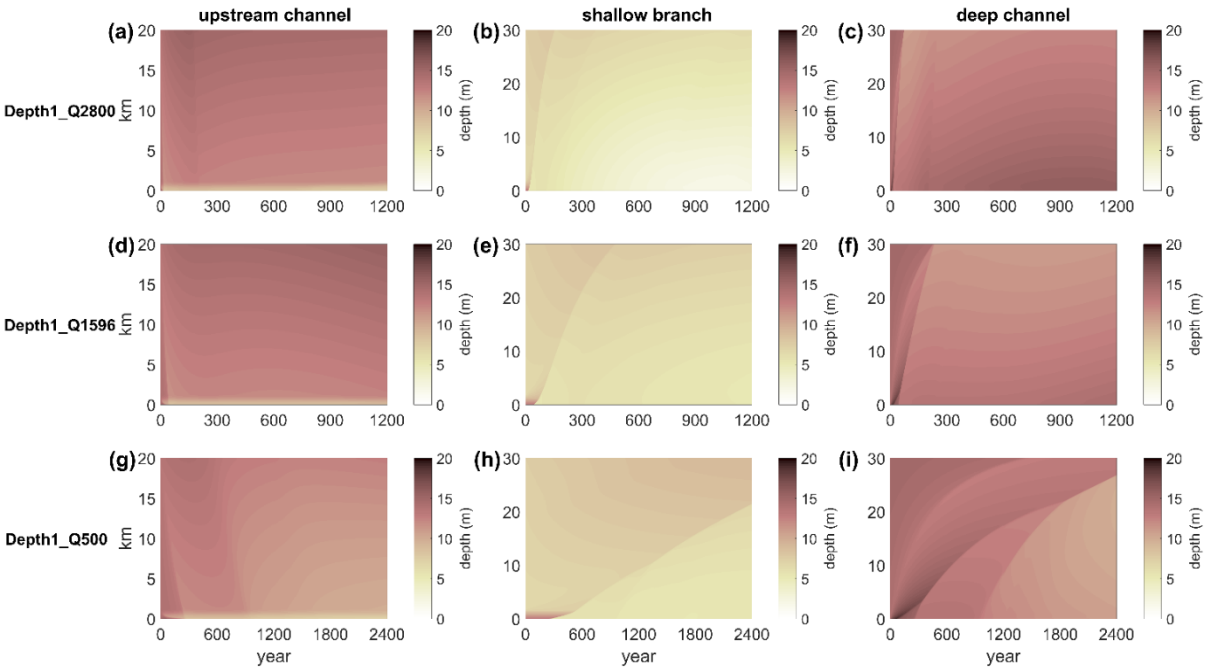

Figure 1: Same plot as Figure 3 but for simulations of Depth1. The panels from top to bottom show the results from different simulation (Depth1_Q2800, Depth1_Q1596, Depth1_Q500, respectively) while from left to right show the upstream channel, shallow branch, and deep branch, respectively. Different scale of colour bar for different channel is applied.