

## ***Interactive comment on “Sedapp: a non-linear diffusion-based forward stratigraphic model for shallow marine environments” by Jingzhe Li et al.***

### **Anonymous Referee #2**

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This work presented the features and application of Sedapp, which is a non-linear open-source R code for Forward Stratigraphic Modelling. The manuscript is generally well written and structured, and the authors did show some interesting ideas of the model. In my opinion, the manuscript is suitable for publication in GMD, after the authors have addressed the following comments and questions: 1. The authors said “Although many advances have been made in the field of forward stratigraphic modelling (FSM), there are still some shortcomings to the existing models.” in the abstract. While I did not find the detailed description in the introduction part. Please modify or rewrite the related part in the manuscript. 2. As the authors said in the text that many existing models are not open to the public. The open-source feature of Sedapp is apparently a good aspect for its availability. There are actually many alternative programming lan-

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guages that can satisfy this feature. For example, some other open source models were written in Fortran, C or python. Why did the authors write Sedapp in R? 3. Fig. 7: This figure is interesting whose subplots show different stages of a river-dominated delta. I also noticed that the river is of a curvy shape. Why was the channel shifting like this? Is there any forces made it so? By the way, the initial segment is not very smooth, Is there any special requirement for that? Or the authors could modify it and make it look better. 4. The Der settings in the model is very interesting, which could distinguish the depositional and erosional two processes. But what geological knowledge support this setting? Also, which variable name in the code corresponds to it? 5. In the code, I noticed a parameter called isostasy. With the default setting, I could get the same figure as in the text. However, when I switched the value, the results became very different. The left part dropped far below the expected place, while the right part also changed a lot. I think the authors should make a brief introduction in the documents about these parameters. 6. Porosity of the strata successions is a very import parameter concerned by resource geologists. The porosity changes at every moment as long as the overlying strata was changed, so does the previously deposited strata. That means whenever a new layer is generated, porosity of both new and old layers would be updated. I wonder how is this process implemented in the code. 7. When I ran the "example.r", I also noticed that, the "fluvial slope" is updated at each step. Like: "Fluvial slope is ...", "Slope angle is ...°". What is it? Why is it needed to be monitored here? 8. For the comments of the code, I think the authors should improve them. There are many subroutine files to the main program. However, the comment styles within these files vary from each other. The authors should put them into a uniform manner.

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