**Editor comments**

In section 2, Methodology, could you add the mechanical equations that you are solving? That is, how is stress computed? The constitutive equations are in section 2.3, but i cannot seem to find the underlying mechanical equations. Also, could you describe your sedimentation approach and give its equation and relevant parameter values?

In addition, i would suggest to consider dividing the introduction in sub-sections as it is a fairly long section. In your revision, please also take into account the comments under "Notification to the authors from review file validation".

**Response:** The authors appreciate the concerns raised with editor.

The governing geomechanical equilibrium equations are added as:

$$\frac{\partial \sigma_x'}{\partial x} + \frac{\partial \tau_{xz}}{\partial z} = 0 \qquad\qquad\qquad\qquad \text{Eq.2}$$

$$\frac{\partial \tau_{xz}}{\partial x} + \frac{\partial \sigma_z'}{\partial z} = (\rho_b - \rho_w)g \qquad\qquad\qquad\qquad \text{Eq.3}$$

in which $\sigma_x'$, $\sigma_z'$, $\tau_{xz}$, $\rho_b$, and $\rho_w$ shows horizontal-, vertical- effective stress, shear stress, bulk-, and water- density respectively.

Regarding the sedimentation approach, the following text is added to the manuscript:

For deposition type, deposition by morphing is selected in 2 sublayers during 2 Ma. The top horizon for the deposition stage is assigned as the top surface of the Layer 0 in Figure 1. Implementing deposition by morphing would insert the new sediment in a way its upper surface is smoothly graded between the initial topographic profile (i.e., the original top of the domain) and a user-defined horizon.

The introduction section is divided into 3 subsections as:

1.1 Geological and theoretical background

1.2 Influencing factors on back-thrust development

1.3 Geomechanical forward modelling and study goal

The raised concerns during the review file validation are addressed in the revised version. The supplementary sections are numbered with S1 & S2. Also, author contributions is added to the manuscript.