Reply to reviewer #2

Reviewer's Comment	Author's reply	Action
(1) the resolution of the input geological model is given as granted and no feedback between the modelling inferences and the distribution of stratigraphy and faults geometry. Such a modelling approach should contain feedbacks to known fault kinematic behaviour that may correct and improve the reliability of the modelled predictions. Inspecting the overall geological input model shows that the resolution is coarser that the density of even the root model in many areas. I advise the authors to discuss more the role of the local geological distribution of faults into the modelling results and the rather underestimated impact of (strain) partitioning along the large structural lineaments. This is quite vaguely discussed. I furthermore agree with previous reviewers that the investigation depth is somehow limited given the much deeper extent of the overall process driving the present-day stress distribution;	- We agree with the reviewer on the importance to highlight that our approach is able to handle the inclusion of faults and modified the text accordingly. - The finer resolution compared to the input model is a result of the desire to have smooth surfaces to supress stress peaks at artificial element boundaries. This results in a slightly finer resolution. We improved our wording here. - As pointed out in the reply to reviewer #1 the maximum depth of the model does not mean that the important processes are disregarded. However, the modelling approach founds on the calibration of the static stress state on observed stress data records and not on the derivation of the stress state by the simulation of processes. Hence the underlying deep-seated processes are not simulated but their resulting effect on the stress state is included in the model since the stress data used for calibration is a result of these processes. This approach is beneficial due to the shallow area of interest. We altered the wording to be more precise.	- "The models showed in this work do not include any implicit faults and no strain partitioning is assumed." p13, l17ff. - p4, l14ff - "Dirichlet boundary conditions (i.e. displacements) are applied to the sidewalls of the model to create horizontal differential stresses. The boundary conditions are adjusted in a way that the modelled magnitude of SHmax and Shmin at the calibration points fit the observed magnitudes." p6, l23ff

(2) the overall world stress data work very well to regional estimates of the state of stress, but their reliability significantly decreases at higher resolution due to partitioning and local distribution effects. Although the stress data distribution appear simple in the study area, it would be good to have a discussion in a resolution analysis applied to the modelling results;	We agree with the reviewer and we added some lines on local stress perturbations in the discussion section. Furthermore we highlight the importance of representative calibration data.	"In the presented region the stress field is very homogeneous but in other regions significant local lateral variations exist and need to be accounted for. This can be accomplished for example by lateral variations of the material properties or faults. It is crucial to ensure that the data used for the calibration is representative for the regional material and geometry in the root model." p12, l32ff
(3) the elastic approach considered is somehow limited given the wide diversity of observed scenarios for instance controlling strain weakening and strain hardening in fault (re)activations, generally derived by experimental studies and tested by observations, e.g. in areas affected by induced or triggered seismicity. It would be good to have a better discussion of the link between the model and such a variability of deformation mechanics.	We agree with the reviewer that every model is somehow limited in the amount of processes which are represented. In this situation we consider an elastic approach to be sufficient especially in light of the high uncertainties of the input parameters. Anyway, the processes which are considered are highly dependent on the situation described by the model. We highlighted this in the discussion.	"The inclusion of faults makes sense in situations where detailed information on fault geometry, extent, and parameters are available and a significant impact of the faults on the regional stress field or a (re)activation is expected. However, in this example, the available stress data suggests that no faults with a major impact are located within neither the root model nor the branch model area. The calibration of a model including faults and fault specific behaviour, e.g. strain weakening or hardening or long-term relaxation of the gauge material, is possible as well." p14, l17ff