1. Lack of information about the accuracy of the gravity data. You mentioned micro-mGal and 0.5 cm elevation accuracy in geodetic surveying but this is too good to be justified based on my own practical experience although very little. Do you really have 0.5 cm elevation accuracy? How did you obtain this number? At best using DGPS systems in open field areas we obtain 1-3 cm accuracy, this then assumes a hard-flat ground surface? How about the location of the gravity-meter (what kind/brand was used)? How did you level this to have on average less than 0.5 cm difference from one station to another?

As it is stated in the manuscript, the data was acquired by a contracted company. As it stands in their final report, they did construct 78 concrete control points, 71 topographic stations and 7 gravimetric control stations. All of the control points have a vertical accuracy of 0.5cm. This was achieved using a leveler NIKON AE-3 with a precision of 1.5mm.
Although the control points have a high accuracy, the 1600 gravimetric stations actually have a vertical accuracy of 1cm or less. The device used to measure the topographic elevation was a LEICA GPS9000.
The gravimetric data were measured with a Scintrex CG-5 2008 gravity-meter with a resolution of 0.001 mGal.
More detailed explanations have been made in the manuscript now to clarify these points (page 6, L5-14) as follows,

"*Microgravity data were acquired between August and December 2010 by Implemental System Company. A high density mesh covering an area of 4x4 km2 was recorded, with measurements taken at every 100 m, which resulted in 1600 total measured points (Figure 2). The measurements were carried out using a Scintrex CG-5 2008 gravity-meter with a resolution of 0.001 mGal. The acquisition parameters ensured a resolution lower than 4µGal, with over 3 measurements per grid point on average. 71 of those gravimetric measurement points were concreted, along with the seven gravimetric stations used to calibrate the gravity-meter, delivering an accuracy of 0.5 cm. The positioning of the 1600 measured points was performed with a LEICA GPS9000 and have an accuracy of 1cm or less. The calibration of the topographic instrument was carried out with respect to a geodesic vertex located within the study area. This ensures that measurement points were within the high quality range of the device*"

2. Explain how you found the Bouguer density correction in detail. Did you test other values? What was the error in this? What is the summed error of all the single corrections (including the terrain correction). Have a look at an in-discussion paper in SE by us, Malehmir et al. (2015 or 2016) about our way of presenting the summed errors. We came up with an almost one mGal and measuring at 10 m intervals. Of course the topography is different there.

The Bouguer density correction was tested for different scenarios. It is worth to say that the contractor for the acquisition of the microgravity data delivered a small study on the better reduction density for the area. In our case, as we started from "raw" data, we did assess which was the better density to use.
We chose the density reduction according to the correlation with the topography. Three maps were assessed for different reduction densities, 2000, 2400 and 2600 $kg \cdot m^{-3}$. Checking the maps, it is clear that 2400 $kg \cdot m^{-3}$ shows the lesser correlation between the data and topography thus improving the geological meaning of the signal. Two limestone outcrop samples were analyzed in the laboratory to calculate their density. Unfortunately the outcome of the study was not of much use since the densities of the samples were higher than the Bouguer density due to the existence of dolomitizization in the area that increased the average density.
The text has been updated with this information (page 6 L17-20).

"*The reduction density used was 2400 kg·m-3 although several values were tested to assess the better reduction density to perform the Bouguer slab correction. Anomaly maps obtained using densities of 2000, 2400 and 2600 kg·m-3 were compared with topography, being the one achieved with a density 2400 kg·m-3 which showed less correlation with the relief.*"

3. Regional field: Why does this look like first-order polynomial while the observed complete Bouguer has two highs on the sides of the map? I would have guessed this should have been 2nd-order polynomial. Please explain.

Yes, in fact the residual after removing the sediments signature has a strong component dominated by the effect of the Triassic thickening and we did not want to remove that since it is part of what we want to model.
Having that in mind, the simplest regional component of the residual dataset is a first order polynomial and that is what we used as a filter. Several attempts to invert the data without this filter were made and they all failed due to the presence of this deep component. These attempts led us to a misplacement of the basement topography, which reached average depths of 40-50 km. The use of the filter was, thus, compulsory. Again, we think this filter, represents the simplest, and deepest gravity contribution in the dataset and it is probably related to a feature with a wavelength bigger than the study area. We believe that its source is some kind of relatively shallow crustal discontinuity whether it's compositional or structural. A dataset with larger extension would be needed to discuss this further.

Clarifications have been made in the manuscript to avoid confusion when reading (page 7 L 25-26).

"*Analysis, calculation and removal of the long wavelength/deep signal corresponding to first-order polynomial (Figure 7b and 7d). This filter was selected in order to avoid removing signal from the Keuper succession.*"

4. In the 2D and 3D modeling, what did you assume for the background? What did you really model (BA: after removal of the regional)? Did you include topography? In the inversion then you should have obtained density contrasts not the absolute density. I kind of missed this.

The 2D profiles were modeled using the complete Bouguer anomaly.
The gravity inversion was performed to get the geometry of the basement, not the density. Well-logs provided good information about the density of the sedimentary succession and they were used for the forward calculation of the sedimentary cover. After subtracting this signal, the inversion was performed with a background density equal to the mean density of the signal removed. Topography was included in the model.

5. Sensitivity for the basement offset. Did you check this to see how sensitive the gravity data is to the basement offsets? You did not mention in the 2D modeling results what contributes to the gravity highs. I assumed this was the basement! You fail to say what were really inverted and how did you constrain the inversion model. Did you invert for the geometry or density? I kind missed the hard constraints here? Density bounds?

When modeling the 2D profiles, basement offsets where the key element to look at. The long wavelength component present in the anomaly accounts for the depth and shape of the basement topography. In contrast, the Jurassic layers showed a small influence in the gravimetric signal when modeling due to their small density contrasts. Therefore, the most important contributors to the gravimetric signal were the basement and the top-most layers of the stratigraphic succession.

As we have pointed out in comment number 4, the inversion process was carried out to derive the basement geometry not density. We agree that this point was not properly explained in the manuscript.
With the geometry of the top-most sedimentary sequence, as derived from 3D seismic data, we forward calculated their gravity signal down to an internal flat boundary within the Triassic Keuper salts. So, the gravimetric signal subtracted from this procedure leave just the anomaly generated by the density contrast between the remaining Triassic Keuper layer and the basement. Then that anomaly was inverted using one surface and the density contrast between salts and basement, a contrast 500 $kg \cdot m^{-3}$.

The explanation of the inversion procedure has been now modified in the text to make it more understandable (page 8 L5-12).

"*The forward calculation of the sediments gravity anomaly was performed using a constant density (Table 1) for each of the five layers described above, including the topography, down to the top of the anhydrites. To solve the ambiguity generated by the unknown depth of the base of the anhydrites we used the constraints provided by the 2D gravity models and the seismic profile shown in Figure 5a. These datasets support the use of a constant thickness (100 m) layer of anhydrites. Furthermore, the seismic profile presented by Alcalde et al. (2014) shows a general homogeneity in the thickness of the layers for the study area. A bottom flat imaginary boundary for the Keuper rocks was used in order to avoid cutting the overlaying strata so no errors were carried into the inversion process. Finally, the long wavelength/deeper contribution to the BA was removed by using the simplest first-order polynomial.*"

6. I agree the inversion method you used is reasonable for layer-based structures but perhaps you should refer to other ways of doing this. See for example a work by Hedin et al. (2014-Geological Society) and many others that use voxel type inversion.

Thanks for the reference. That is of course an interesting procedure and it has been included as a reference in the manuscript.

7. Other minor comments: figure legends and decimal presentations of the basement is not professional. Please correct this and make them visible for the final presentations. Do not let Geosoft to dictate the legend and labels!

Figures have been modified to avoid decimals.