

Interactive
Comment

Interactive comment on “Geometry of the inverted Cretaceous Chañarcillo Basin based on 2-D gravity and field data. An approach to the structure of the western Central Andes of northern Chile” by F. Martínez et al.

F. Martínez et al.

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The geometrical reconstruction of basins is sound, although I am not sure that they can be considered as back-arc basins as the authors state (or at least a large-scale sketch would be welcome to show them within this kind tectonic setting).

Re: Yes that is right. This basin has not a current back-arc position. We have improved the introduction of the manuscript to explain that, this basin acquired a back-arc position only during its Cretaceous tectonic evolution. On the other hand, we have improved

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the figure 11, where we indicated that the current position of the Coastal Cordillera represent the fossilized magmatic arc during its Cretaceous evolution.

The gravimetric modeling shown in the paper is also consistent, although some uncertainties remain with respect to the in-depth geometry of some parts of the basin (an implicit problem in gravimetric surveys). There are minor changes that could be done to improve the quality of the paper, which I expose in the following points:

Re: Along the northern profile a set of magnetotelluric station have been acquired and this data has been used to constraint the depth of the Chañarcillo Group and the gravity regional along the profile. This is included in the new version of the manuscript (see lines 293-297). These models are can be found in the new supplementary material.

Some details about the gravity survey would be welcome, daily drift of the gravity meter, overall estimation of the accuracy of the survey considering corrections, extent to which the topographic correction was applied (only far or also near?), software (if any) used to apply corrections

Re: We included details of the gravity reduction process applied in the new version of the manuscript (see lines 251-267).

In my opinion, presentation of gravimetric data should always include the Bouguer anomaly and the considered regional anomaly, showing in a figure how the regional anomaly was calculated (or taken from previous works). This would be useful for possible re-interpretation of anomalies in the future and also for considering larger-scale anomalies related to changes in crustal thickness, which is also interesting in this case, given the length of the profiles and their tectonic setting. In fact, this is not a question of this particular paper since you can find this (in my opinion) important matter lacking in much of the published material.

Re: In the new version of the manuscript, figures 9 and 10 show the Bouguer anomaly and the considered regional. A short paragraph about the regional definition is included

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in lines 293-296. Additionally we include, in the supplementary material, a section that shows the sensitivity of regional changes on the gravity modeling.

Minor points

Table 1 gravels instead of grabels Substitute Tertiary by Cenozoic throughout, figures Included

Re: It was done

Interactive comment on Solid Earth Discuss., 7, 2311, 2015.

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7, C1314–C1316, 2015

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