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Interactive comment on “Spatial evolution of Zagros collision zone in Kurdistan – NW Iran, constraints for Arabia–Eurasia oblique convergence” by S. Sadeghi and A. Yassaghi

C.L. Fergusson (Referee)

cferguss@uow.edu.au

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Spatial evolution of Zagros collision zone in Kurdistan – NW Iran, constraints for Arabia–Eurasia oblique convergence

S. Sadeghi and A. Yassaghi

General Comments

This is a well-illustrated manuscript that presents structural evidence for deformation partitioning during Late Cretaceous to Recent Zagros Orogeny in the Zagros Orogen in Kurdistan of NW Iran. The authors illustrate the structural styles across a mountainous

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area in NW Iran. The main data presented by the authors are field data including structural measurements on faults and folds, map interpretations of new strike-slip faults and the construction of a balanced cross section across the region. The arguments for dextral transpression along the Zagros for the Late Cretaceous and Cenozoic should take into account global and local plate reconstructions given in Seton et al. (2012, Earth-Science Reviews 113, 212–270, doi:10.1016/j.earscirev.2012.03.002) and by McQuarrie and van Hinsbergen (2013, Geology 41, 315–318, doi: 10.1130/G33591.1), respectively.

Specific Comments

P. 2738 – line 10 – why cannot it be considered a suture zone? It is a zone with discontinuous ophiolite fragments which is typical of suture zones. You need to explain what you are getting at – I cannot see your point.

P. 2739, line 5 – explain what you mean by “middle décollements” and the differences in basal décollement rheology between the Lurestan and Dezful Embayment (i.e. what are the differences or difference?).

P. 2739, line 20 – place the details relating to the figure in the figure captions (including the source citations).

P. 2740, line 15 - Figure 3 – I eventually found “C” on this figure after a long search (C needs to be made much more visible) – at the scale produced the readability of all figures is difficult given the size of much of the text on figures. Is the lettering on figures at the right size for the journal requirements?

P. 2740, line 23 – give a reference in regard to unconformities in the Folded Belt.

P. 2742, line 6 (also line 12) – what are these “drag” folds – are they genuine drag folds or are they fault-propagation folds (i.e. formed by ductile deformation preceding fault propagation)?

P. 2742, last paragraph – how does the last sentence of this paragraph relate to the rest

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of the paragraph? I found this confusing and could not see what you mean? Please clarify. Are the “narrow bedding parallel shear strips” a 3rd domain? P. 2746 – Section 5.1 – add a reference to global plate motions indicating oblique convergence in the Late Cretaceous in this part of Neo-Tethys (see Figure 24 in Seton et al., 2012, Earth Science Reviews).

P. 2748, section 5.3 – include reference to the timing for collision provided by the plate reconstruction of McQuarrie and van Hinsbergen (2013, *Geology* 41, 315–318). At the end of the paragraph also include reference to predications of global plate reconstructions in regard to oblique convergence across the Zagros part of Neotethys (see Seton et al., 2013 and McQuarrie and van Hinsbergen (2013).

P. 2763, Figure 8a – I am confused by your arrows – are these slip directions – if they are strike slip faults they need a sense (dextral or sinistral)? Please explain in your figure caption. Figure 8b – for Fig. 13, a, b, c on the map – do you mean Fig. 11?

P. 2764, Figure 9 – location of these photographs needs to be shown clearly on a previous figure (Fig. 8).

Comment on Discussion and paper in general – the problem is that there is no direct indication of the timing of deformation in the Radiolarite and Bisotun zones in the region studied – the timing of deformation is poorly constrained but in the regional context (e.g. uplift and deposition of radiolarite clasts in foreland basin deposits associated with the Cretaceous obduction) seems to have occurred in the Late Cretaceous. It is intriguing that 2 sets of structures developed by dextral transpression have developed alongside each other in the Late Cretaceous and late Cenozoic collisions.

Technical corrections

The manuscript requires considerable editorial input to improve the written expression (there are far too many minor issues to list individually). The manuscript is reasonably short so I have attempted to improve the expression in an attached edited word

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document.

P. 2743, last line – Fig. 17f?

P. 2757 – in Figure 2 legend – gabbro is mis-spelt.

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/7/C1231/2015/sed-7-C1231-2015-supplement.zip>

Interactive comment on Solid Earth Discuss., 7, 2735, 2015.

SED

7, C1231–C1234, 2015

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