

## ***Interactive comment on “Multi-quadric collocation model of horizontal crustal movement” by G. Chen et al.***

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On behalf of my co-authors, thanks a lot for your positive and constructive comments and suggestions on our manuscript. Those comments are all valuable and very helpful for revising and improving our paper, as well as the important guiding significance to our research. The responds to your comments are as flowing:

Short Comments: And there are some comments for authors to think about: (1) As we know, the whole Chinese mainland consists of many blocks or subblocks. In other words, is it appropriate to regard it as a rigid body with some internal deformation for testing these methods? I suggest authors to test some regional areas, such as South China Block, which has more rigidity, to see if the results would change a lot. (2) The

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horizontal movement of each GPS site is always regarded as the addition of the whole block rotation and local deformation within the block. Here, authors regard the former as a systematic process, while the latter a stochastic signal. However, the latter is actually also linked with some specific geophysical process, such as the postseismic deformation, seasonal changes and so on. What is the influence of these 'unreal' stochastic processes on the results?

Authors' Reply: (1) Yes, mainland China does consist of many blocks or subblocks. When to consider these blocks or subblocks should be consistent with the actual case. If the crust motion and deformation of a specific block/subblock, the surrounding blocks/subblocks needs to be considered. Here, we tend to explore the crust motion of the whole mainland China, which is a part of the rigid Eurasia Plate, by using the preferred method. The result shows the reliability of the method presented by us.

(2) If we focus on the motion and deformation of a specific block or subblock, the inner deformation is very related to the activity of its boundary faults, in addition to the block rotation. But if we take the whole mainland China as our research subject, the inner deformation of each block is different for nonuniform influence caused by the varied boundary faults. So we regard that as a stochastic signal for simplicity.

Special thanks to you for your good comments.

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Interactive comment on Solid Earth Discuss., 7, 3359, 2015.

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