

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

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Received and published: 22 December 2015

The manuscript submitted by G. Chen et al. presents a new method on the basis of collocation and multi-quadric equation to establish the velocity field for mainland China. The method has a merit that does not need the signal covariance equation. I believe that the topic is interesting and the method proposed is valuable for the geophysics community. However, I have a few comments and remarks on the presentation of the manuscript.

1) Some of sentences are too long, for example:

1.a: In Abstract, “To establish the horizontal . . . must be carefully constructed” is too long. The sentence can be modified as “To establish the horizontal crustal movement

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velocity field of the Chinese mainland, a Hardy multi-quadric fitting model and collocation are usually used. However, the kernel function, nodes and smoothing factor are difficult to determine in the Hardy function interpolation. Furthermore, the covariance function of the stochastic signal must be carefully constructed in the collocation model, which is not trivial.”

1.b: In Introduction, “For simply fitting . . . smoothing factor and node” is too long and not smooth. The sentence can be modified as “The multi-quadric functions (Hardy, 1978) can be used for fitting the parameters of measured points and estimating the parameters of unmeasured points. The mathematical methods are used in this case, while their physical meaning is not clearly considered. The key issues and difficult problems in their application are the choice of kernel function, smoothing factor and node.”

1.c: P3370, those sentences with Scheme1-4 need to be further smoothed.

2) Some others minor issues

2.a: P3362, Line 21: “ $n \times 3$ ” should be “ $2n \times 3$ ”, according to Eq.3
2.b: P3362, Line 22: “station quantity” may be “station number”
2.c: P3363, Line 5: “easterly” -> east;
Line 6: northerly -> north
2.d: P3365, Line 7: the error equation -> the observation equation
2.e: P3368, Line 16: “calculated by different functions”, what are the “different functions”?

3) Maybe the manuscript could include the estimated velocity field of mainland China, as it is the main result of the manuscript?

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

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