

Interactive comment on “On computation of Hough functions” by H. Wang et al.

Anonymous Referee #1

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General comments

The authors compare the two methods for computing Hough functions: the one using normalized associated Legendre functions (ALF) and the other using the Chebyshev collocation. I don't see the authors' contributions either on scientific insights on Hough functions or on technical improvements for their computation. The manuscript, however, provides a good review on this subject and MATLAB code provided for the latter method may have educational value. Therefore, I recommend major revisions to elucidate the value of this paper.

Major comments

1. As discussed in the general comments, author's contribution is not clear. What is new from Boyd (1976)? 2. Discuss advantages and disadvantages of Chebyshev method. Your results clearly show that the method using normalized ALF is superior.

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What are the problems with the ALF methods? 3. The ALF method lacks the code and the Chebyshev method lacks the details of computation (equations). 4. Comparisons deserve a separate section. Which method is used to compute the reference? I believe the ALF method should be used. How do your results compare with previous studies?

Minor comments

Page 1, Line 7: MATLAB rather than Matlab. Page 2, Line -5: This paragraph is not easy to understand before the equations are shown in the next section. Page 3, Line 1: What is “ $x = 1$ ”? Page 5, Line 5: I suggest to rewrite the sentence in either forms below. We found that form (6b) rather than (11b) is advantageous . . . It is advantageous to use . . . Note that “advantage” is a transitive verb and requires an object. Form (6b) is chosen to advantage what? Page 7, Line 19: We can use a general-purpose method to solve eigenvalue problem (in the ALF methods). I don't understand why the authors refer the Chebyshev method as general-purpose, implying the ALF methods to be special-purpose or tailored methods.

Interactive comment on Geosci. Model Dev. Discuss., doi:10.5194/gmd-2015-282, 2016.

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