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Solid Earth Discussions

Interactive comment on "Bilinear pressure diffusion and termination of bilinear flow in a vertically fractured well injecting at constant pressure" *by* Patricio-Ignacio Pérez D. et al.

Anonymous Referee #1

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Dear Editor:

This paper contains novel ideas about well-test analysis. In this work, the authors attempt to provide type curves for well-test analysis of fractured vertical wells at constant injection pressure using a numerical technique. Obtaining the time of termination of bilinear flow and spatiotemporal evolution of isobars are main outputs of this work. The application of the analysis proposed in this work, for instance, was shown in determination of hydraulic-fracture length. Various criteria are listed to determine the time for termination of bilinear flow; out of these criteria, reflection criterion lacks proper explanation of the mechanism for isobar reflection at fracture tip.

The authors have highlighted the advantage of well test under constant injection pressure, as it leads to almost constant well storage coefficient and it improves analysis of early-time pressure data. However, they have not clearly explained, at an early section of this manuscript, why the time of termination of bilinear flow matters from industry point of view.

The numerical technique is not explained in this manuscript. Also, to demonstrate the quality and transition of the results through various flow regimes, the authors should show a sample result of pressure contours through domain (e.g., in a 2D cross section) for a specific dimensionless fracture conductivity at various times (e.g., at three different times).

Numerous verbal and technical comments including the above shortcomings are mentioned in the attached pdf file. The authors are encouraged to edit the manuscript based on these comments and resubmit the manuscript to the editorial office.

Sincerely, Reviewer 1

Please also note the supplement to this comment:
https://www.solid-earth-discuss.net/se-2019-170/se-2019-170-RC1-supplement.pdf

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