Earth Syst. Dynam. Discuss.,
https://doi.org/10.5194/esd-2017-47-RC2, 2017

Earth System Dynamics
Discussions
Open Access
EGU

Interactive comment on "Fractional Governing Equations of Transient Groundwater Flow in Confined Aquifers with Multi-Fractional Dimensions in Fractional Time" *by* M. Levent Kavvas et al.

Anonymous Referee #2

Received and published: 24 July 2017

The manuscript introduces, develops, analyses and discusses fundamental developments on fractal dynamics in both methodological and geophysical terms. Unlike the traditional fractal-geometric studies or statistical studies on scaling with non-physical considerations that abound in the literature, the present study actually provides governing equations for a highly relevant problem (transient groundwater flow in confined aquifers).

The mathematical formulations are carefully derived, explained and implemented, with a profound physical background revealing a deep understanding of the underlying sys-

Printer-friendly version

Discussion paper

tem.

For the knowledgeable reader with proper theoretical background, the manuscript will be very clear and instructive. And this is what fundamentally matters, since ESD is a scientific journal rather than an outreach magazine.

Some concepts and formulations may, however, be out of reach for soft-science i.e. purely statistical communities. This is because the authors work with proper Mathematics and produce proper Physics to advance the Geophysical Sciences in general and the Hydrological Sciences in particular.

Overall, from the eyes of a hard-line theoretician, I recognize that this is a remarkable piece of work. Congratulations.

Despite the well-deserved praise, a couple of minor remarks are now due:

a) I recommend further elaboration on the implementation and discussion of the theoretical advances introduced in the manuscript - particularly in the context of the broader Geo Sciences. That way, the interdisciplinary readership of the journal can better appreciate the developments and findings.

b) Similarly to what had been noted by the other reviewer, scalar variables or functions should be typeset in italic even in the main body of the text.

Interactive comment on Earth Syst. Dynam. Discuss., https://doi.org/10.5194/esd-2017-47, 2017.