

Interactive comment on “GLOBAL-FATE: A GIS-based model for assessing contaminants fate in the global river network” by Carme Font et al.

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Received and published: 3 September 2019

Although this manuscript is much improved compared to an earlier submission to this journal, it still is not clearly demonstrating a contribution to new ideas /methods; I would like to see in a revision, significant effort on further positioning it versus other models and methods to demonstrate a uniqueness of GLOBAL-FATE versus other models and software available.

I am in strong agreement with the other referee, that the current main argument does not fully hold - it is not appropriate to consider that GLOBAL-FATE is not associated to a spatial resolution. It may RUN at any spatial resolution, but that is very different to it being methodologically appropriate at any spatial resolution. Not only

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detailed physics, but even very simplified physically based approximations to processes/integration of rates of change understanding break down once space and/or time steps become too large. Please add very strong warnings about upper limits. So what new thing/contribution is being brought? Is it a science contribution, a software contribution that allows others as well as you to take the science further, which is still a contribution, or both?

I also asked a colleague without a specific understanding of contaminant transport, but with a strong computational modelling background, to do a useability review, which I provide below: as per the comments on science and code, note its not damning but not yet convinced if its great worth ...

***** A technical review of

GLOBAL-FATE: A GIS-based model for assessing contaminants fate in the global river network by Carme Font et al. (2019)

Main executable

I was able to get the GLOBAL-FATE executable running on my PC and tested it with the sample data provided. It took approximately 20 minutes to run, but my laptop processor (Intel Core i5-2435M CPU @ 2.40GHz) is not as powerful as the one mentioned in the paper, so this running time seems about right compared with the five minutes given in the paper.

It would be useful to provide Windows binaries in the repository rather than users having to compile them themselves. As I was not familiar with this process this took me quite some time. If you would prefer not to supply the binaries, then some clearer instructions would be helpful, especially with regards to installing Cygwin.

While there are some comments within the C code, these could be improved and added to, to allow users such as myself to gain a better understanding of what the code is doing.

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QGIS plugin

I also tried to use the GLOBAL-FATE QGIS plugin. It would be helpful if you mention that the plugin is only compatible with QGIS 2 and not QGIS 3 as I first installed QGIS 3.6 in order to try this plugin but was told that I had to use QGIS 2 when I tried to install the plugin (I used QGIS 2.18).

It would also be useful to provide some brief instructions on how to install the QGIS plugin for non-expert users such as myself.

When running the plugin I came across the error that the directory 'C:\tmp' had not been created (IOError: [Errno 2] No such file or directory: 'C:/tmp/dir.txt'). This error could be mitigated by either creating the directory for the user if it does not exist, or by asking the user for a temporary directory as one of the inputs. I simply created the directory as a workaround to this problem.

The input parameters are split into two dialog boxes. Could these be combined into one dialog box as this could be more intuitive to the user?

When the GLOBAL-FATE plugin started executing, another dialog box popped up immediately giving the elapsed time. I was unable to determine why the GLOBAL-FATE code was not executing, so I was unable to run the plugin successfully. Also, I was unsure where the data would be saved to, or if maps showing the data would just load within QGIS.

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2019-8>, 2019.