Hydrol. Earth Syst. Sci. Discuss., 12, C6710–C6711, 2016
www.hydrol-earth-syst-sci-discuss.net/12/C6710/2016/

Hydrology and Earth System Sciences
Discussions

Interactive comment on "On the validity of effective formulations for transport through heterogeneous porous media" *by* J.-R. de Dreuzy and J. Carrera

J.-R. de Dreuzy and J. Carrera

jr.dreuzy@gmail.com

Received and published: 13 February 2016

We thank the reviewer for the positive assessment of our work.

We will include his editorial comments in the revised version.

The reviewer requests clarification regarding the slope (m) of breakthrough curves defined as the exponent of the power law decrease with time t of the concentration c such as c∼t-m. Unfortunately, it is not well established what controls it. Willmann et al (2008) found some correlation between the degree of connectivity and the slope. The more connected the field, the smaller the slope. In this context, fractured media

represent the lowest bound (m=1.5), which is controlled by diffusion into immobile regions. A slope of 2.5 may therefore represent a heterogeneous but poorly connected hydraulic conductivity field, where late time arrival is controlled by slow advection. We will expand the discussion in the revised version.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 12281, 2015.