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Hydrology and Earth System Sciences
Discussions

Interactive comment on "A parsimonious analytical model for simulating multispecies plume migration" *by* J.-S. Chen et al.

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Our manuscript develops a novel analytical model that considers different species-specific retardation factors for describing two-dimensional multispecies reactive transport coupled by a series of first-order chain reactions. Three example applications are considered to demonstrate the wide applicability of the derived parsimonious analytical model. We understand and fully agree the comments that some of the decay networks may not be consecutive. We appreciate the constructive suggestion that add acknowledge on analytical solution development for branching and converging decay networks and state the limitation of our solution. Thus, we have included the review of the analytical solution development for branching and converging decay network in the

introduction and clearly indicate the limitation of our solution in the conclusion in the revised manuscript. Besides, we elaborate on the detailed mathematical manipulations and procedures to obtain the Eq. (34) in the revised manuscript for better readership.

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/12/C4806/2015/hessd-12-C4806-2015-supplement.pdf

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 8675, 2015.