HESS-2016-270 "*Advantages of Analytically Computing the Ground Heat Flux in Land Surface Models*" by V. R. N. Pauwels, E. Daly

The reported analysis contains fatal physical and mathematical flaws that make this study useless.

1. The governing equation as in (A1) implies the soil column is moving at the speed of water velocity v in z direction. Of course the soil does not move at all. The entire analysis is based on an incorrect governing equation.

2. The solution of the equation (A1) as in (A5) is mathematically incorrect since y on the left-hand-side of (A14) is a branch point, which cannot be equal to the pole on the right-hand-side of (A14). As a result, (A15) does not hold. Then all the derivations after that are useless.

3. There is no demonstration of the performance of the reported analytical solution, which looks rather complex, compared with the exiting analytical solutions such as that of Wang et al. (2011), which is much more concise.

4. Section 4 "The Parameter Estimation Algorithm: Particle Swarm Optimization" is not closely related to the ground heat flux model, the focus of this paper.

Wang, Z., E. Bou-Zeid, and J. A. Smith (2011), A Spatially-Analytical Scheme for Surface Temperatures and Conductive Heat Fluxes in Urban Canopy Models, *Boundary-Layer Meteorol.*, 138: 171. doi:10.1007/s10546-010-9552-6.