

Borden

Model: GEOtop v3.0 Compiler: c++ (gcc 5.4.0 “c++ (Ubuntu 5.4.0-6ubuntu1~16.04.9) 5.4.0 20160609”)
Processor: Intel(R) Core(TM) i7-6700HQ CPU @ 2.60GHz Author: Elisa Bortoli (elisa.bortoli3@gmail.com)
Date: 28-06-2018

Name: Borden05m Description: Borden Experiment (initial waterdepth 20cm below ditch outlet - rainfall intensity 20 mm/hr duration 50 min). Inspired by the Borden test Case a well known small catchment laboratory experiment (Vanderkwaak and Sudicky (2000), Abdul and Gillham (1989)).

Results published in: The GEOtop 2.0 version (branch se27xx) has been tested to simulate runoff and water content in the soil. Results published in Kollet et al. (2017).

The following simulated variables have been simulated and tested against observations:

Output:

- tabs (6): every 1 min (basin, discharge, point, soiltemp, soilwater)
- maps (66): every 6 min (Prec, psiliq, thetaliq, waterchan, watersurf, watertable)

Simulation duration:

InitDateDDMMYYYYhhmm = 01/06/2000 12:00
EndDateDDMMYYYYhhmm = 01/06/2000 12:10

Output:

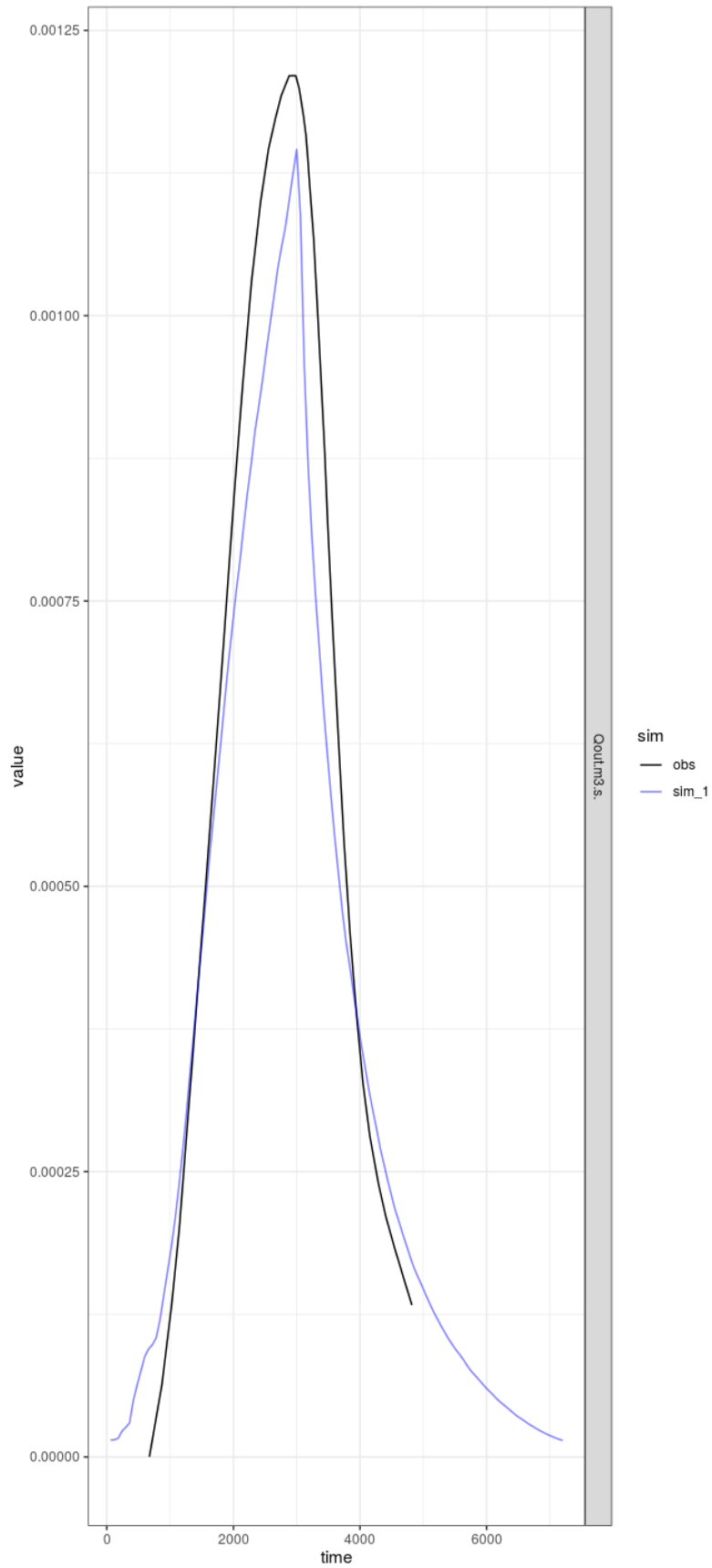
PointOutputFile = "output-tabs/surface"

Observations:

Discharge time series.

Comparison

Here is a comparison plot:



Goodness of fit:

sim	gof	Qout.m3.s.
obs	MAE	0.00
obs	RMSE	0.00
obs	KGE	1.00
sim_1	MAE	0.00
sim_1	RMSE	0.00
sim_1	KGE	0.74

References

- Abdul, A. S., and R. W. Gillham. 1989. “Field Studies of the Effects of the Capillary Fringe on Streamflow Generation.” *Journal of Hydrology* 112 (1): 1–18. [https://doi.org/https://doi.org/10.1016/0022-1694\(89\)90177-7](https://doi.org/https://doi.org/10.1016/0022-1694(89)90177-7).
- Kollet, Stefan, Mauro Sulis, Reed M. Maxwell, Claudio Paniconi, Mario Putti, Giacomo Bertoldi, Ethan T. Coon, et al. 2017. “The Integrated Hydrologic Model Intercomparison Project, Ih-Mip2: A Second Set of Benchmark Results to Diagnose Integrated Hydrology and Feedbacks.” *Water Resources Research* 53 (1): 867–90. <https://doi.org/10.1002/2016WR019191>.
- Vanderkwaak, J. E., and E. A. Sudicky. 2000. “Application of a physically-based numerical model of surface and subsurface water flow and solute transport.” *IAHS-AISH Publication*, no. 265: 515–23.