

General simulation and output requirements for all test cases

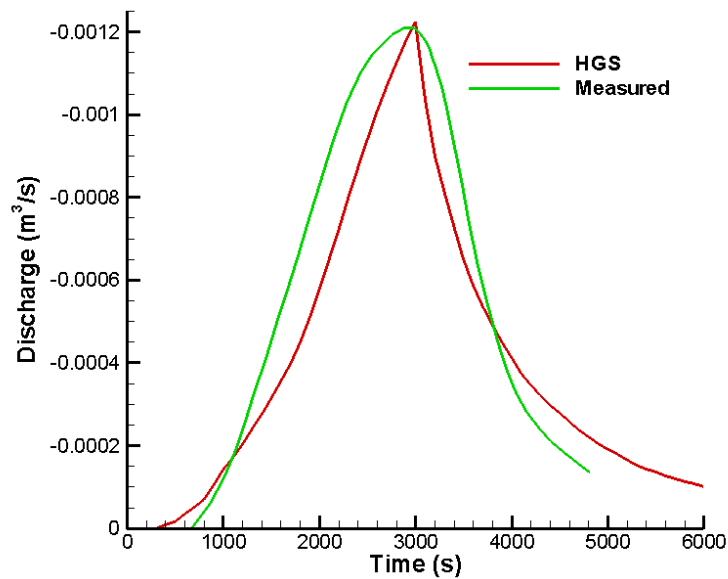
In order to ensure adequate numerical accuracy for each test case and model, a convergence test is required with respect to the applied spatial (lateral/vertical) and temporal discretizations, which are used to generate the intercomparison results. The results of the convergence tests should be briefly summarized in a separate paragraph or document.

The documentation of your simulations and results need to be as detailed and transparent as possible.

Output can be provided in simple CSV, text files or Excel spreadsheets.

- Units
 - All output should be provided in units of meters (m) and seconds (sec) if not otherwise indicated.
- Time series for N variables
 - ASCII format
 - space, comma, or tab delimited columns
 - Column 1 - time (sec) followed by simulation time
 - Column 2 to N : model abbreviation and variable name followed by values
- Cross sections
 - ASCII format
 - Space, comma, or tab delimited columns
 - Column 1 - x-location followed by values; specific locations are provided for the respective test cases
 - Column 1 - z-location followed by values; specific locations are provided for the respective test cases
 - Column 2 - N : model abbreviation and variable name followed by values
- Maps
 - ASCII format
 - Space, comma, or tab delimited columns
 - Column 1 - x-location followed by values; specific locations are provided for the respective test cases
 - Column 2 - y-location followed by values; specific locations are provided for the respective test cases
 - Column 2 - N : model abbreviation and variable name followed by values
- Transects
 - ASCII format
 - Space, comma, or tab delimited columns
 - Column 1 - x-or y-location followed by values; specific locations are provided for the respective test cases
 - Column 2 - N : model abbreviation and variable name followed by values
- Profiles
 - ASCII format
 - Space, comma, or tab delimited columns
 - Column 1 - z-location followed by values; specific locations are provided for the respective test cases
 - Column 2 - N : model abbreviation and variable name followed by values

The Borden Experiment



Model geometry

ca. 80x20 m, ditch with 2 m depth, aquifer bottom at 0 m

DEM, 0.5 m resolution: dem0.5m

DEM, 1 m resolution: dem1m

Vertical resolution increasing with depth

Boundary conditions

Overland flow: critical depth everywhere

Subsurface lateral & bottom: no flow

Subsurface top: overland flow

Initial conditions

Water table 20 cm below ditch outlet ($z = 2.78$ m), hydrostatic conditions

Hydraulic parameters overland flow

Manning's roughness: $n = 0.03 \text{ s/m}^{1/3}$

Hydraulic parameters subsurface flow

Saturated hydraulic conductivity:	$K = 10^{-5} \text{ m/s}$
van Genuchten:	$n = 6$ and $\alpha = 1.9 \text{ (1/m)}$
Res. & sat. vol. water content:	$\theta_{\text{res}} = 0.067 \text{ (-)}$ and $\theta_{\text{sat}} = 0.37 \text{ (-)}$
Porosity:	$\varphi = 0.37 \text{ (-)}$
Specific storage:	$S_s = 3.2 \times 10^{-4} \text{ (1/m)}$

Simulation period, time stepping and scenarios

Simulation period:	100 min
Time step size:	$\Delta t = \text{variable}$
Rain duration:	50 min
Rain rate:	$q_r = 5.5556 \times 10^{-6} \text{ m/s}$
Recession duration:	50 min