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 description of the simulations and results need to be as detailed and transparent as possible, in order to arrive at a meaningful interpretation.

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

Superslab Case (2D cross-section)

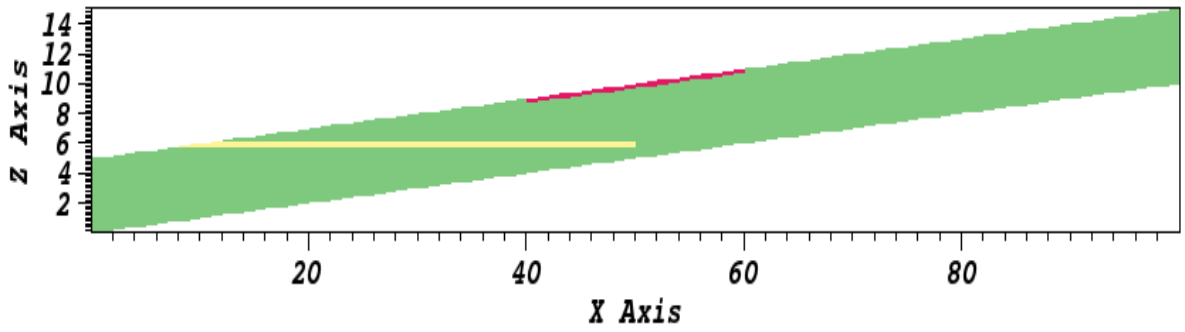

Figure 3. Cross-section of the simulation domain (green) including the 1st slab (yellow) and the 2nd slab (red).

Model geometry

Lateral extensions in *x*:	100m
Vertical extension in *z*:	5m below land surface
Lateral resolution, Δx:	1m
Vertical resolution, Δz:	0.05
1st slab, lateral extension in *x*:	8 – 50m
1st slab, lateral extension in *z*:	5.8 – 6.2m
2nd slab, lateral extension in *x*:	40 – 60m
2nd slab, lateral extension in *z*:	1.3m below the land surface

Boundary conditions

Overland flow:	critical depth
Subsurface lateral & bottom:	no flow
Subsurface top:	overland flow

Initial conditions

Water table 5m below land surface, hydrostatic conditions vertically

Hydraulic parameters - overland flow:

Friction slope in x-direction: $S_{f,x} = 0.1$

Friction slope in y-direction: $S_{f,y} = 0.0$

Manning's roughness: $n_c = 1.0 \times 10^{-6}$ (hour/m$^{1/3}$)

Hydraulic parameters - subsurface

	K_{sat} (m/hour)	Porosity, ϕ (-)	Specific storage, S_s (m^{-1})
Domain	10.0	0.1	1.0×10^{-5}
1st slab	0.025	0.1	1.0×10^{-5}
2nd slab	0.001	0.1	1.0×10^{-5}

Van Genuchten parameters

	n (-)	α (m^{-1})	θ_{res} (-)	θ_{sat} (-)
Domain	2.0	6.0	0.02	0.1
1st slab	3.0	1.0	0.03	0.1
2nd slab	3.0	1.0	0.03	0.1

Simulation period

Simuation period: 12hours

Time step size: $\Delta t = 0.05$hours

Rain duration: 2hours

Rain rate: $q_r = 0.05$ (m/hour)

Recession duration: 10hours

Output

- Time series of
  - Discharge at outlet and downstream end of slab1 and 2
  - Surface storage
  - Soil storage (p < 0m)
  - Groundwater storage (p >= 0m)
  - Integral of surface soil moisture (top model layer) per unit depth
  - Profiles of S and p at t = 1, 2, 4, 8, and 12h at x = 32 and 41m.
- Animations of S and p