Global Simulation Period

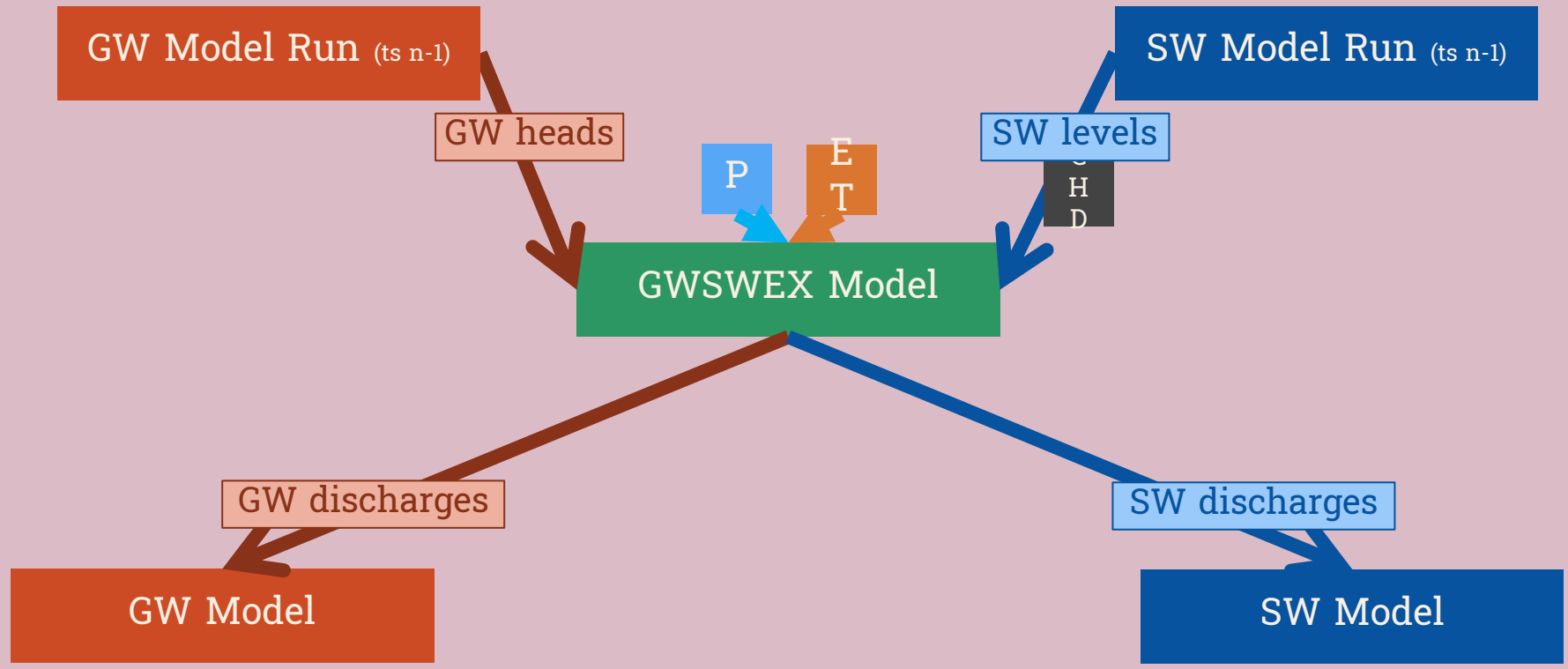
timing control

ts 1	ts 2	ts 3	ts 4	ts 5	ts 6	ts 7	ts 8	ts 9	ts 10	ts 11	ts 12	ts 13	ts 14	…	ts n

Local simulation Period

ts 1
ts 2
ts 3
ts 4
ts 5
ts 6
ts 7
ts 8
ts 9
ts 10
ts 11
ts 12
ts 13
ts 14
…
ts n

elem 1	elem 2	elem 3	elem 4	elem 5	elem 6	elem 7	elem 8	elem 9	elem 10	elem 11	elem 12	elem 13	elem 14	…	elem n



result accumulation and output

Global Simulation Period

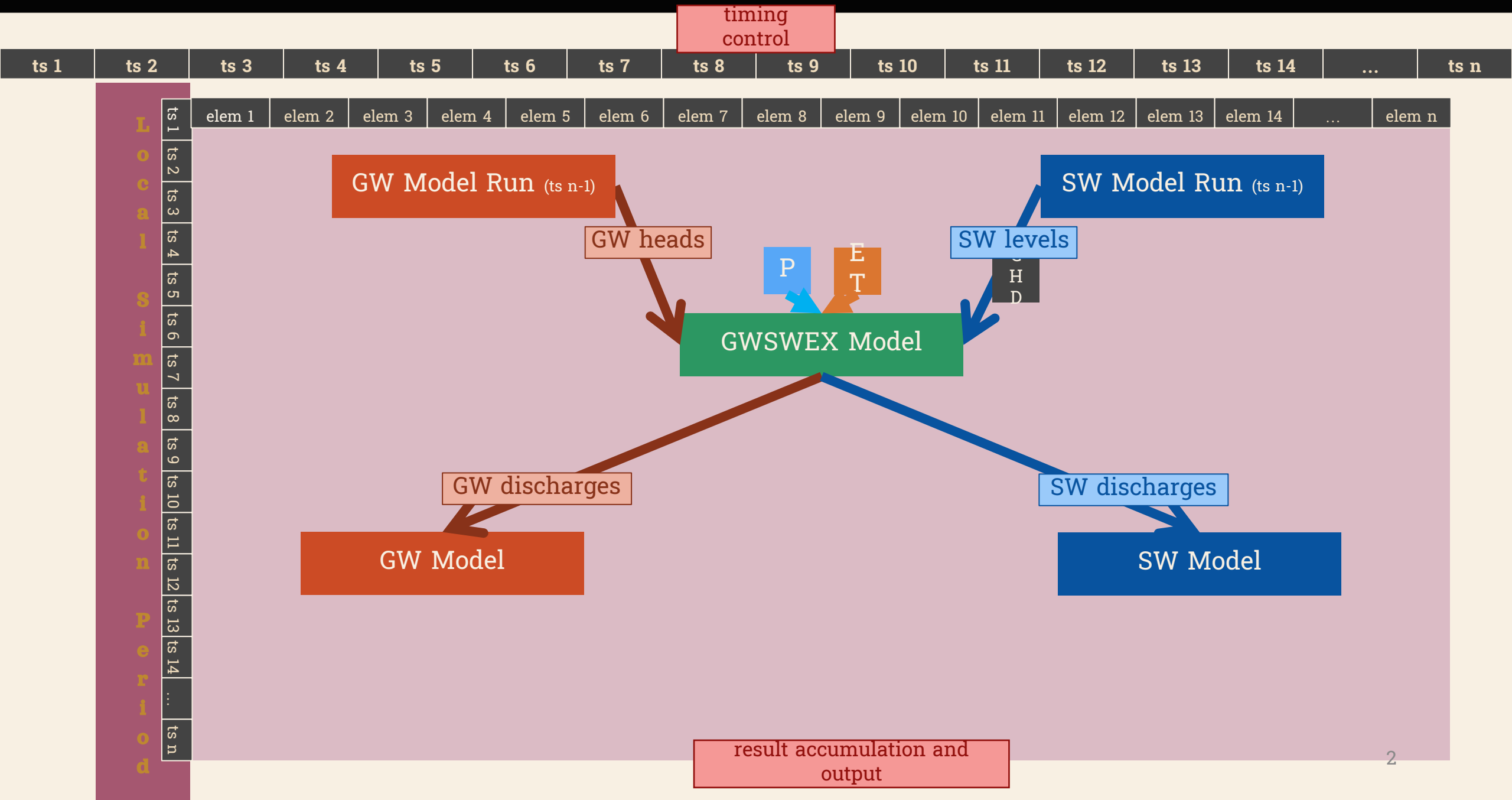
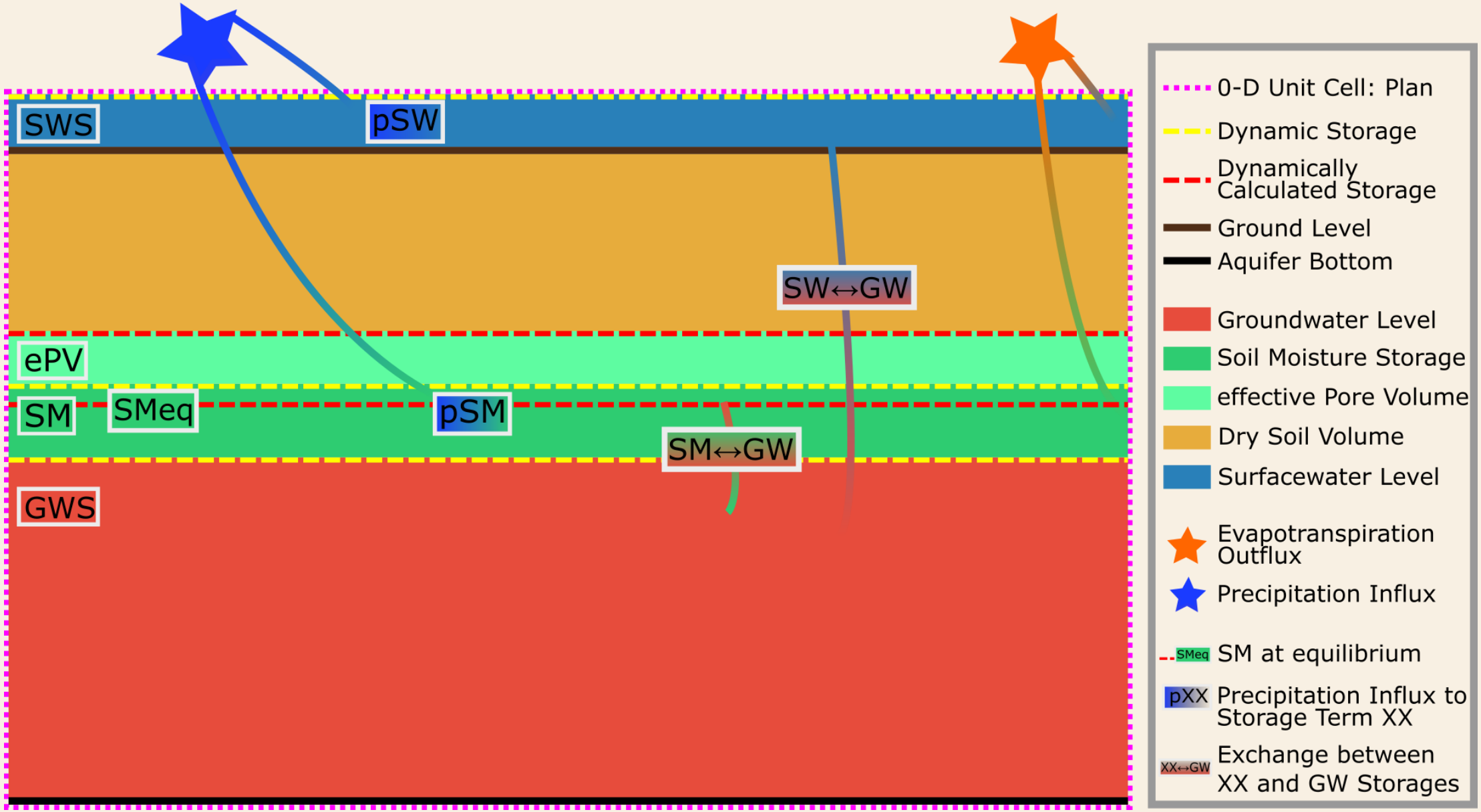
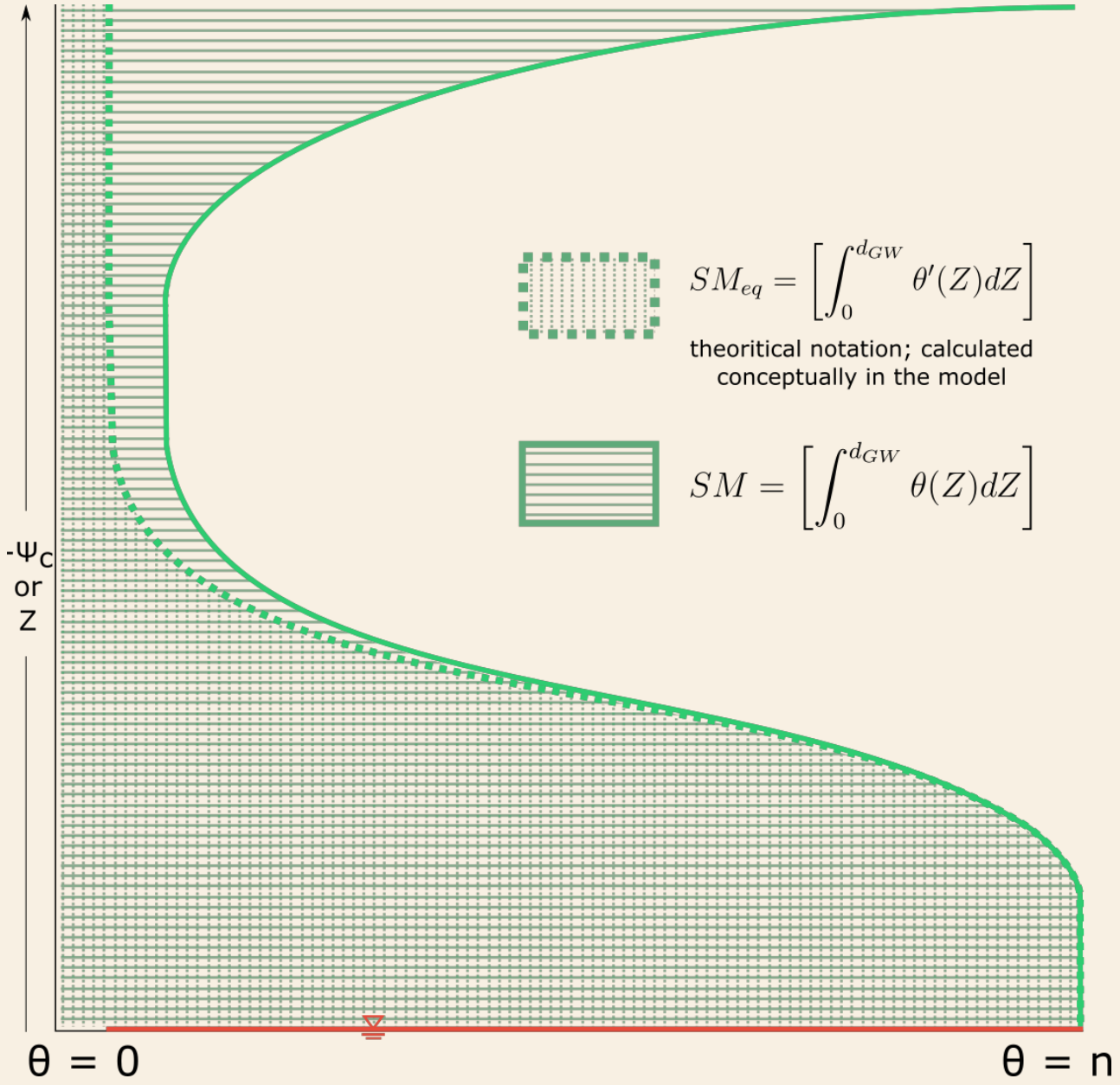
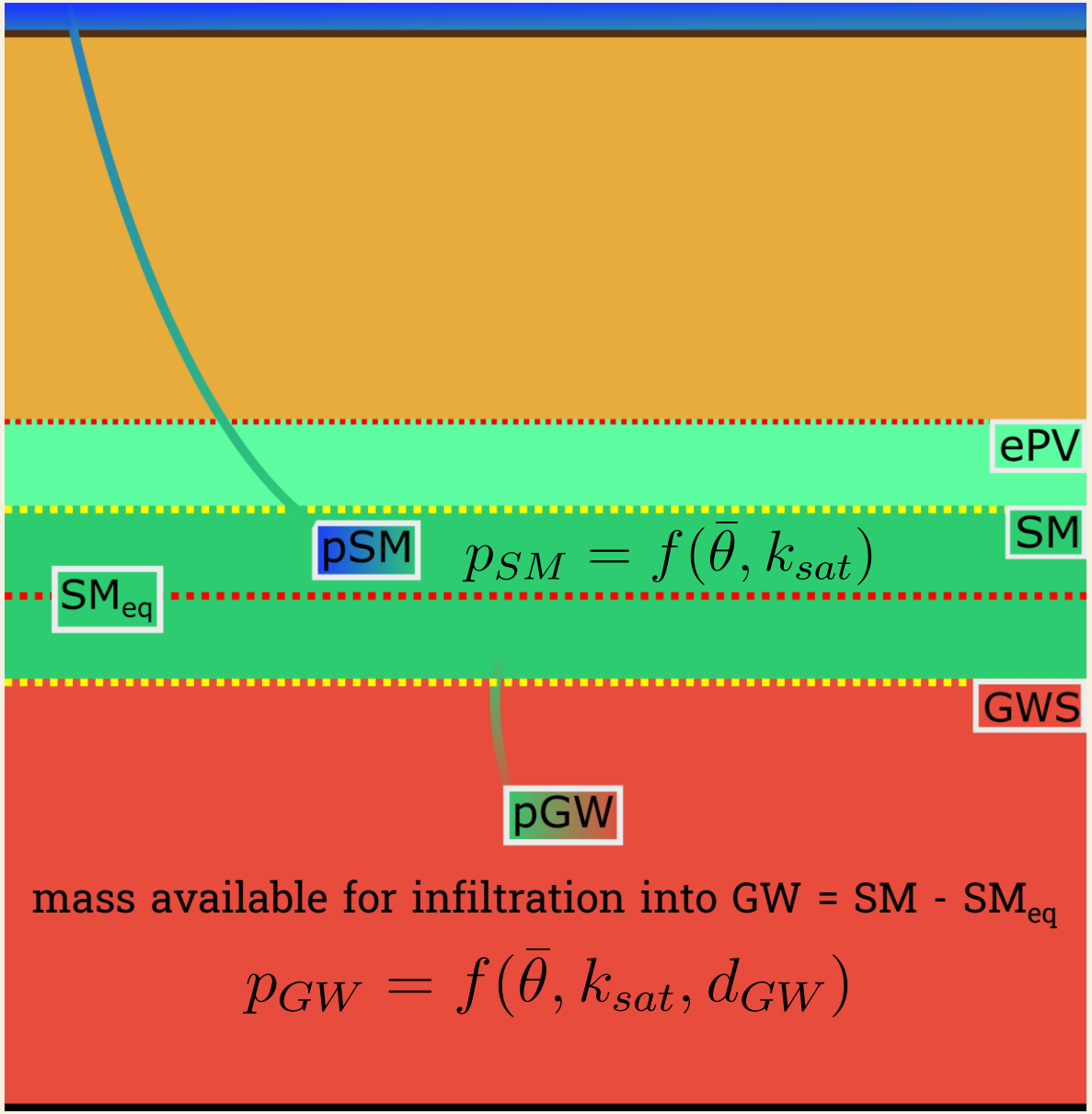


Illustration of the exchange processes per model element: GWSWEX

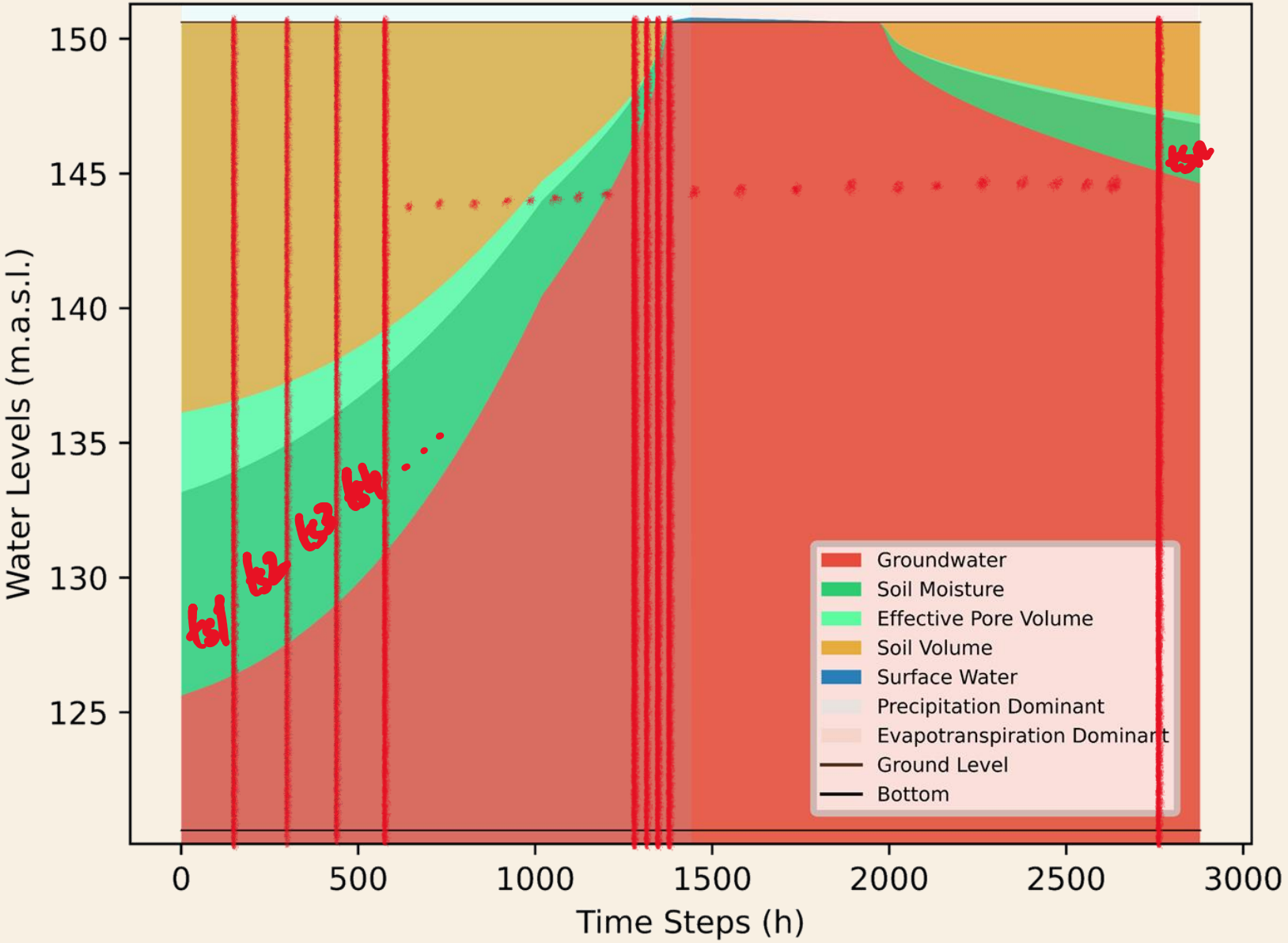


Model Physics: conceptualizing the Van Genuchten[10] – Mualem Model [11]

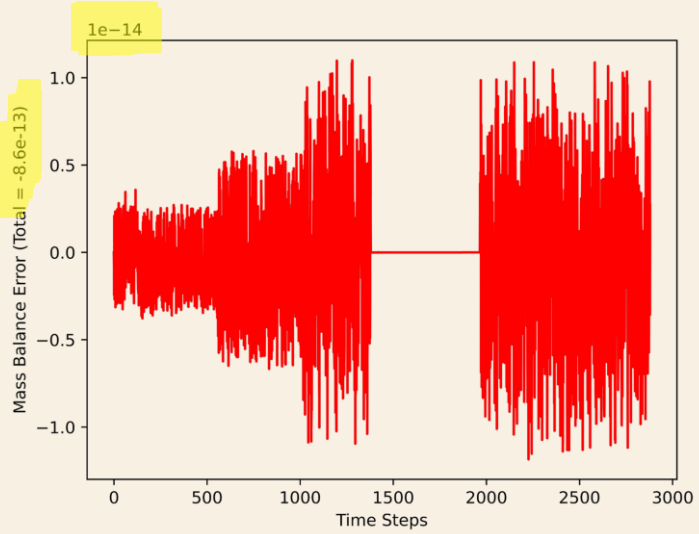


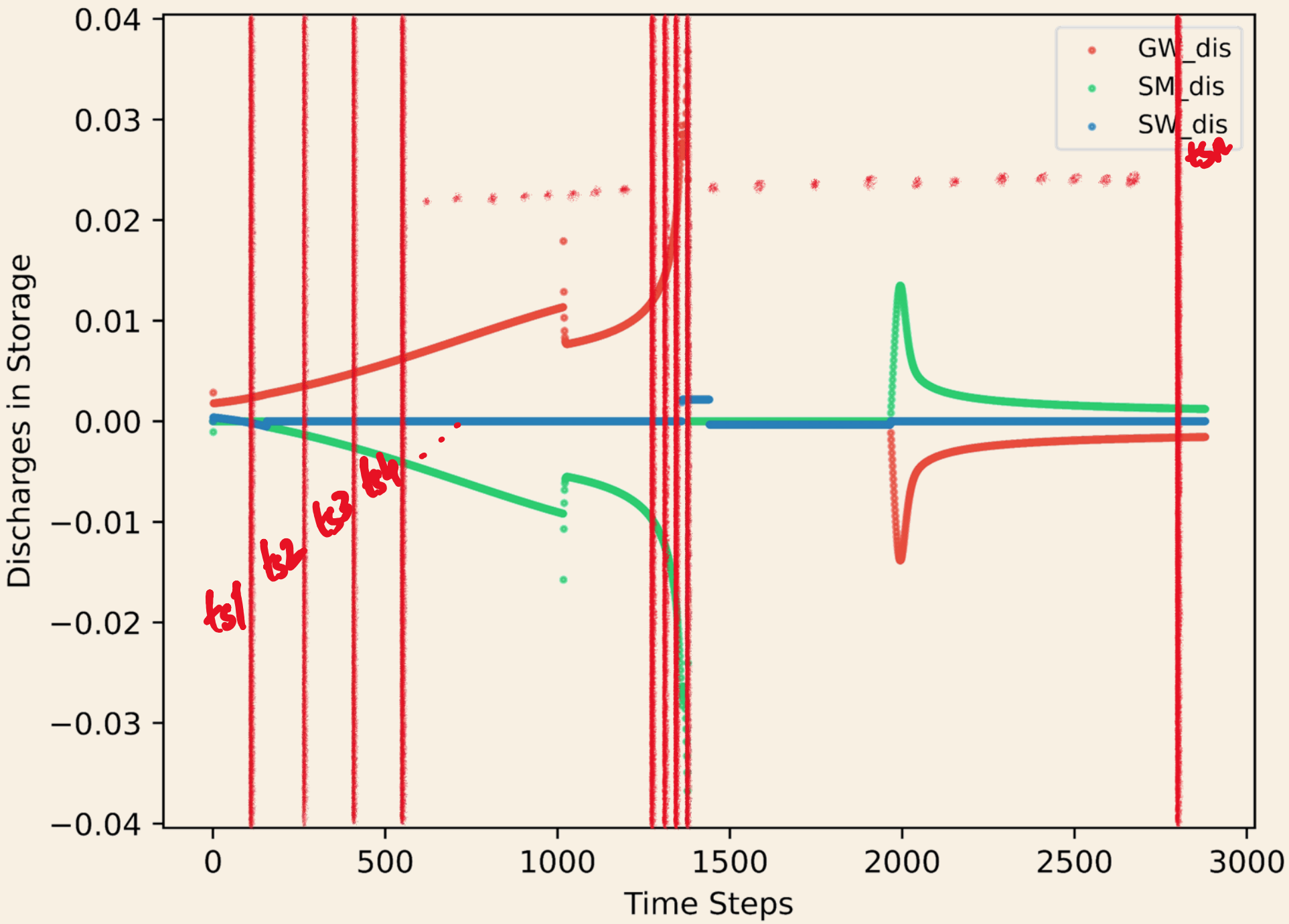


Model Behaviour: Sample model element



- Buildable as a standalone Fortran 90 program ~~or as a python importable Fortran module (f2py)~~
- Average **execution time** for a model with *10,000 model elements, and 3,000 time-steps* is **~36 min** with logging
- Average **execution time** for a model with *50,000 model elements, and 5 time-steps* is **~29 s** with logging




GW_dis
SM_dis
SW_dis
Discharges in Storage
Time Steps
0.04
0.03
0.02
0.01
0.00
−0.01
−0.02
−0.03
−0.04
0
500
1000
1500
2000
2500
3000