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Title: dfnWorks-PFLOTRAN: Fracture flow and reactive transport simulator

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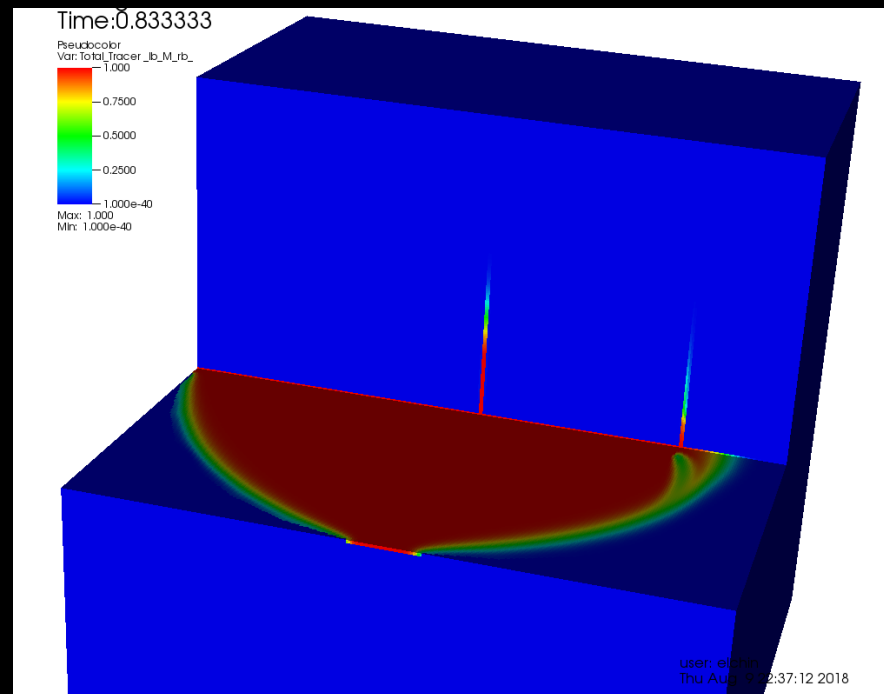
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dfnWorks-PFLOTRAN: Fracture flow and reactive transport simulator

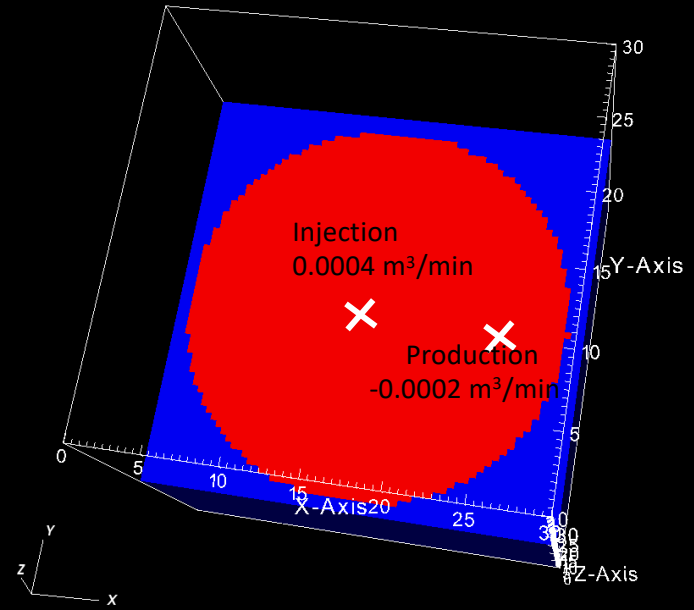
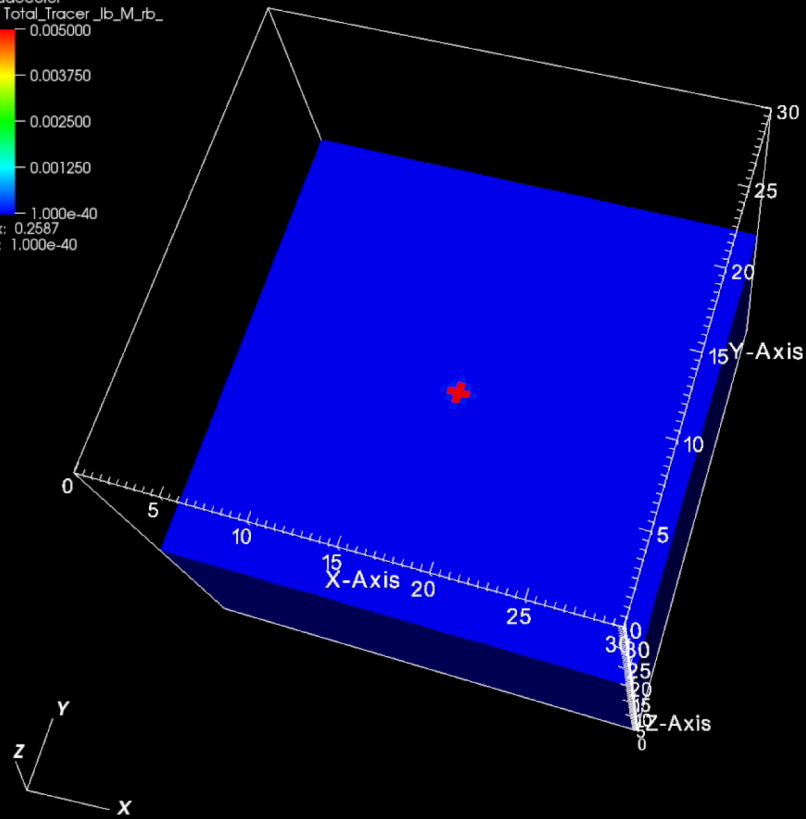
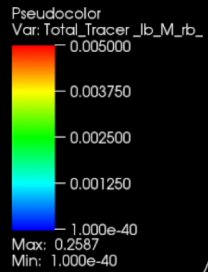
Elchin Jafarov and Nataliia Makedonska

Earth and Environmental Sciences, EES-16, Los Alamos National Laboratory



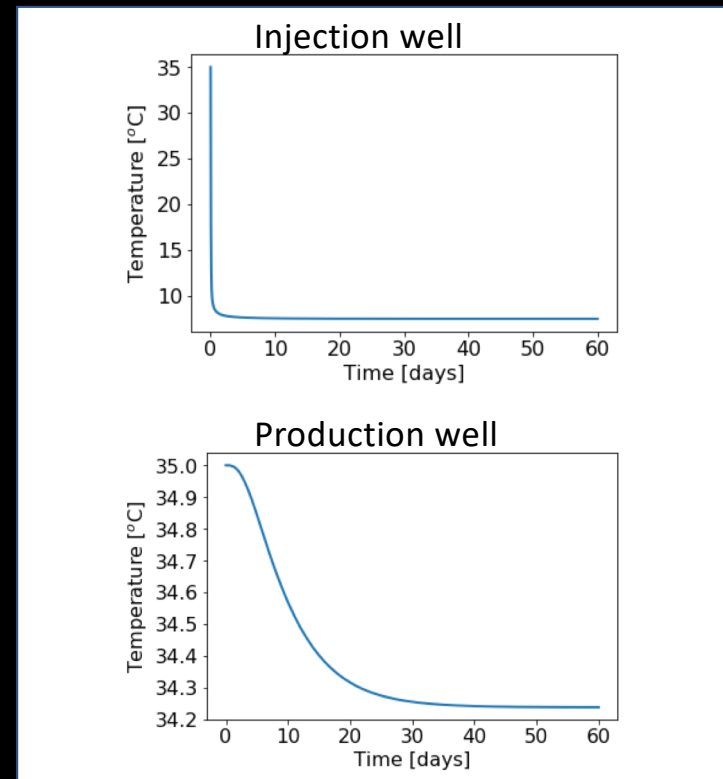
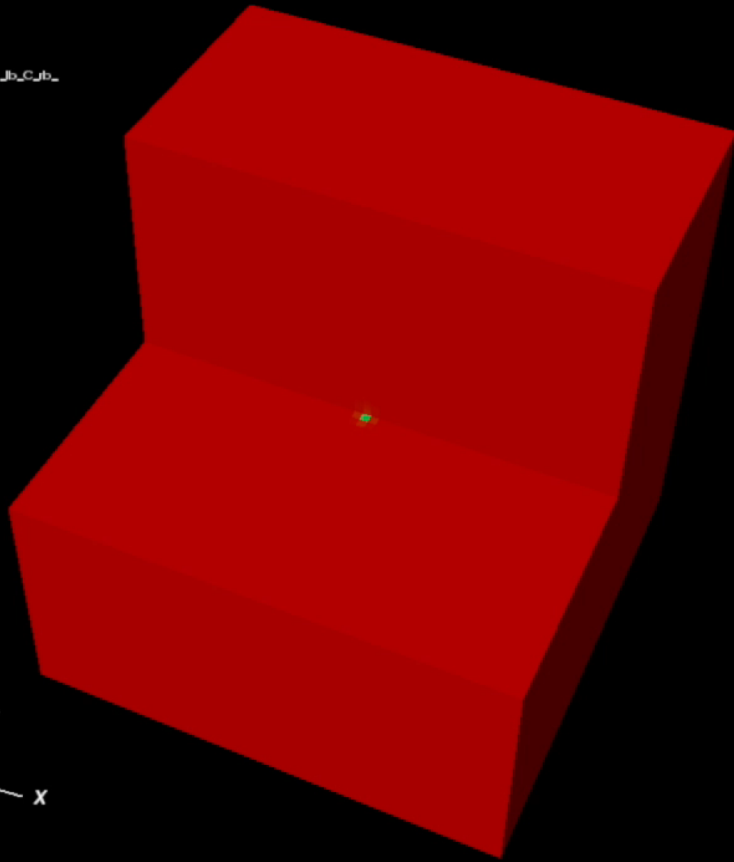
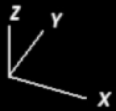
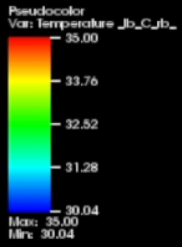
Pulse tracer transport in the saturated closed fracture

DB: th-60-base-001.h5
Time:0.01

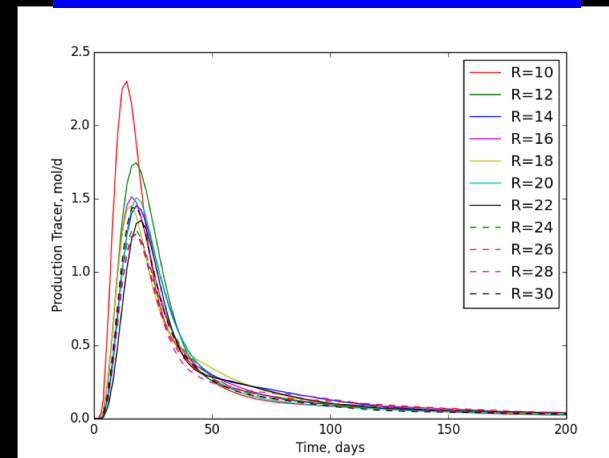
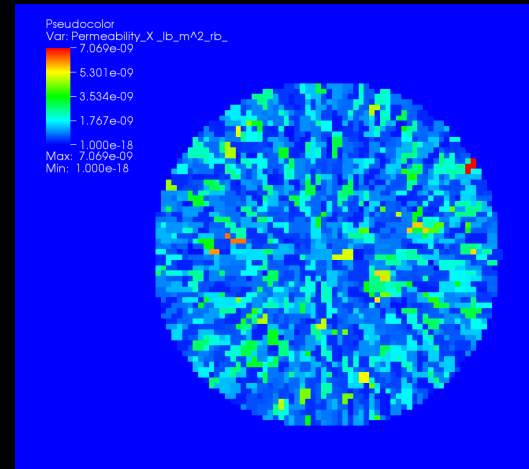
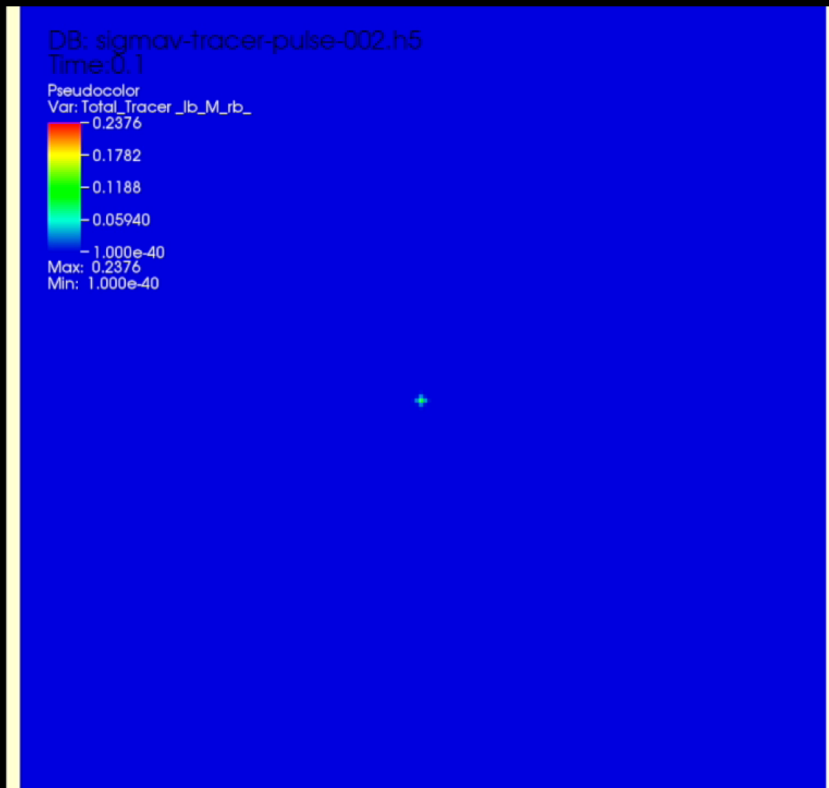


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Mon Apr 8 18:59:47 2019

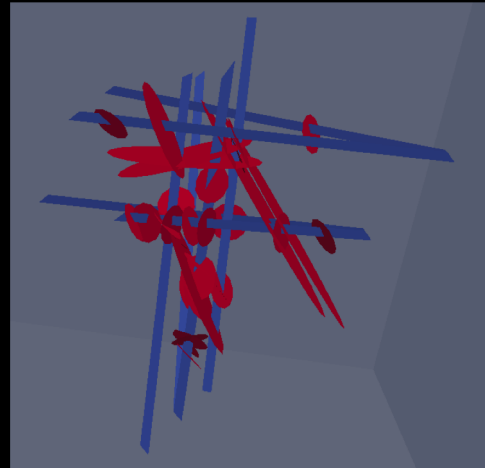
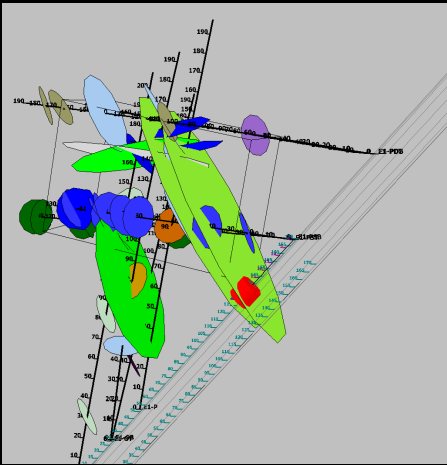
Cooling at the injection well



Varying permeability fracture



Future work: Common DFN + Chemistry



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PFLTRAN Input File

#Description: 1D ion exchange problem

SIMULATION
SIMULATION_TYPE SUBSURFACE
PROCESS_MODELS
  SUBSURFACE TRANSPORT transport
  GLOBAL_IMPLICIT
/
END

SUBSURFACE

# m/s
UNIFORM_VELOCITY 5.69333e-4 0.d0 0.d0

#===== runtime =====
#CHECKPOINT 100
#WALLCLOCK_STOP 11.75

# == chemistry ==
CHEMISTRY
#OPERATOR_SPLIT
PRIMARY_SPECIES
  Na+
  #K+
  Ca++
  Mg++
  H+
  HCO3-
  Cl-
  Tracer
/
SECONDARY_SPECIES
  OH-
  CO3--
  CO2(aq)
  CaOH+
  CaCO3(aq)
  CaHCO3+
  CaCl+
  MgCO3(aq)
  MgHCO3+
  MgCl+
  HCl(aq)
  #KCl(aq)
  NaCl(aq)
  NaOH(aq)
/
GAS_SPECIES
  CO2(g)
```