

Subsurface Biogeochemistry

Objective: Numerical modeling of hybrid, multi-scale subsurface biogeochemical processes.

Implications: Protection of water resources, more economical extraction of fossil fuel, possible carbon dioxide sequestration

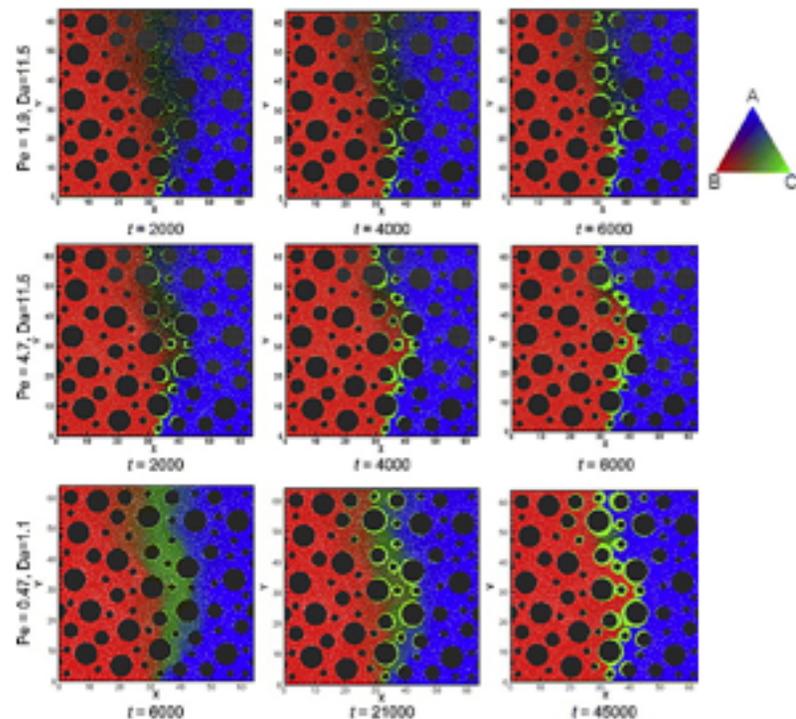
Accomplishments: Lagrangian Smooth Particle Hydro (SPH) methods developed, validated, for pore-scale reactive transport flow and biomass growth.

- Accurately estimates changes in solute concentrations due to homogenous and heterogeneous reactions during precipitation of minerals.
- Successful application to biofilm/ biomass growth.

NERSC:

- .7M hour alloc.; runs using 2k-4k cores

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SPH simulation of flow and precipitation. Black particles represent soil grains. Color scale represents the concentrations of solutes A, B, and C, with bright green corresponding to solid C.

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