



Influence of local splitting behavior at intersections on infiltration in an unsaturated fracture network

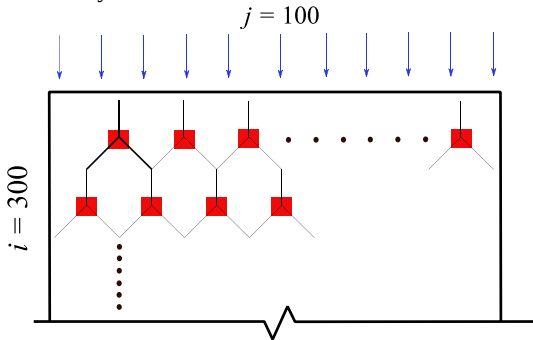
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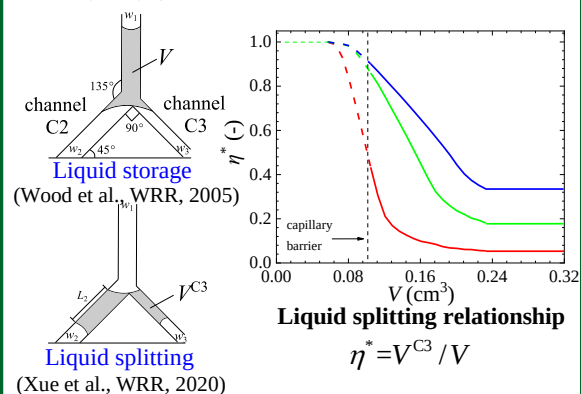


Unsaturated flow model of fracture networks

- Honeycomb-like fracture network

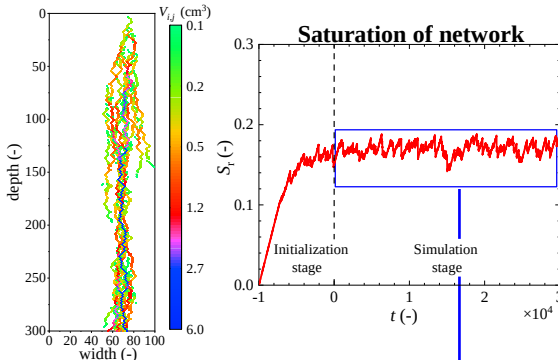


- Liquid flow rules at intersections

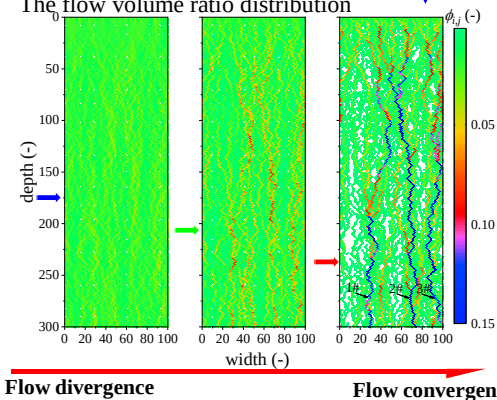


Effect of liquid splitting relationships

- Avalanche infiltration mode



- The flow volume ratio distribution

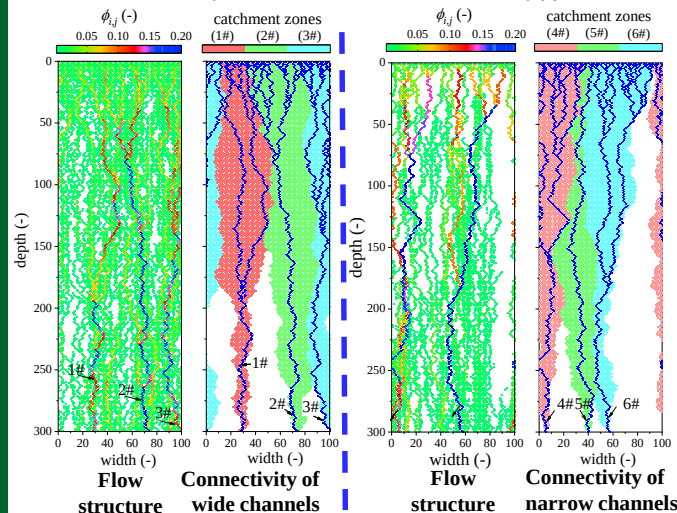


Effect of liquid storage behavior

Ratio of intersections losing liquid storage capacity

$\Omega = 0$

$\Omega = 0.99$



Findings

- An avalanche infiltration mode forms spontaneously in the network
- Unequal/equal splitting behavior at intersections leads to convergent/divergent flow structure
- Preferential flow pathways are controlled by the liquid volume triggered by avalanches and network structures