



**Institut de Mécanique des Fluides**  
2 Allée du Pr Camille Soula, Toulouse

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**Jeudi 20 Juin à 10 h 30 • Amphithéâtre Nougaro**

## **Fluids, Fingers, Fractures and Fractals: Patterns in Porous Media**

### **Abstract:**

The displacement of one fluid by another in a porous medium gives rise to a rich variety of hydrodynamic instabilities. Beyond their scientific value as fascinating models of pattern formation, unstable porous-media flows are essential to understanding many natural and man-made processes, including water infiltration in the vadose zone, carbon dioxide injection and storage in deep saline aquifers, methane venting from organic-rich sediments, and fracturing from fluid injection. This lecture will provide insight into some of these hydromechanical instabilities, elucidate the key physics at play, and point to modeling frameworks at either the pore scale or the continuum (Darcy) scale that permit quantitative assessments of their impact at the geologic scale.

