

I ♥ Poroelasticity: A Review of Poroelastic Theory and its Application to Seafloor Hydrothermal Systems

Abstract

A wide range of geophysical processes are governed, at least in part, by the theory of poroelasticity. In this talk I will review the basic theory of linear poroelasticity and discuss the roles of various poroelastic parameters on a poroelastic system, emphasizing the development of an intuitive understanding of the problem. I will then discuss use cases of poroelasticity theory to understand several processes at mid-ocean ridges, including tidal modulation of fluid flow, earthquake triggering, and possible feedbacks between permeability and pore pressure to explain periodic seafloor displacement.