1075-86-213 **Kenneth M. Golden*** (golden@math.utah.edu), University of Utah, Department of Mathematics, 155 S 1400 E RM 233, Salt Lake City, UT 84112-0090. *Sea ice and the climate system.*

Sea ice is a porous composite of pure ice with brine inclusions. Fluid flow through sea ice mediates a broad range of processes, such as melt pond evolution and nutrient replenishment for microbial communities. We will discuss recent work in using ideas of composite materials and phase transitions to study sea ice processes which are important in understanding Earth's climate. We'll also discuss the development of electromagnetic methods for monitoring such processes. Our results are helping to improve climate models, and also lend insight into the microstructure of bone, which is similar to that of sea ice. (Received August 30, 2011)