

Friday, November 3, 2017, 4:10 pm

COLLOQUIUM TALK

Speaker: Grethe Hystad (PNW)

Old Main 2231

A Bayesian Approach to Estimating Earth's Undiscovered, Mineralogical Diversity

Abstract:

What is our place in the cosmos? Are we and Earth unique, and does life exist elsewhere? These are questions that humans have asked themselves for thousands of years. A population model for the mineral species frequency distribution is introduced. The mineral species coupled with their localities is a Large Number of Rare Events (LNRE) distribution since most of Earth's mineral species are rare, known from only a few localities. A Bayesian approach allows the estimation of Earth's undiscovered, mineralogical diversity and the prediction of the percentage of observed mineral species that would differ if Earth's history were replayed.

What constitutes an Earth-like planet and its requisite life-generating processes is a pervasive theme in planetary science and astrobiology. The mineral frequency distribution of Earth's crust can provide a mineralogy-based statistical measure for characterizing an Earth-like planet. The relative abundances are calculated numerically for all the mineral species in Earth's crust. These population probabilities provide an estimate of the occurrence probabilities of species and can be used to characterize Earth in terms of mineralogy and uniqueness in the cosmos.

SNACKS IN FACULTY LOUNGE AT 3:30 PM.
EVERYONE WELCOME (EVEN IF YOU ARE UNABLE TO ATTEND THE TALK)
