

45th FEFCCO

**Dr. Eric Hobbie, Research Professor
University of New Hampshire**

Thursday, 15 November 2018,
13:00-14:20

Faculty of Agriculture Main Building N-283

Insights into ecosystem functioning from global databases of plants, fungi, and soils

Global data sets of ecosystem parameters are increasingly common and their analysis has produced numerous insights into what controls ecosystem function across broad gradients of climate and vegetation. Here, we compared datasets of nitrogen isotopes and concentrations in plants (~40,000 measurements), soils (~1500 measurements), and fungi (~1000 measurements) to examine whether these ecosystem components respond to similar factors. Climate (mean annual precipitation and temperature) was a primary driver of plant nitrogen isotopes whereas mycorrhizal type and nitrogen-fixing ability were primary drivers of plant nitrogen concentrations. Responses to temperature and year had significant non-linear responses. Location (continent) and its interaction with other parameters were also important factors for both nitrogen concentrations and isotopes. Continents integrate numerous processes that may not be directly included in data bases, including weathering patterns, plant evolution, glaciation history, and nitrogen deposition, and we discuss the likelihood of plants, fungi, and soils reflecting those processes. In large databases, numerous parameters and their interactions may be statistically significant, and we therefore discuss some of the pitfalls in such analyses, but also how such analyses can generate useful hypotheses for mechanistic or site-specific studies.

Forest Ecosystem Function Colloquium
京都大学・森林生態系機能コロキウム

