

The Use Of Radiocarbon Analysis In Terrestrial Ecosystems: An Example From The Fast Changing Arctic

Speaker: Dr Massimo Lupascu
Dept. Earth System Science, University of California, Irvine

Chair: Assoc Prof Matthias Roth, Department of Geography, NUS

Date/Time: Wednesday, 21 January 2015, 10.00am – 12.00pm

Place: Earth Lab (AS2 02-03), Department of Geography, NUS

Abstract

The rapid increase in atmospheric CO₂ concentrations and associated rise in temperature observed in the last century have led to a need for a more accurate understanding of the link between the global carbon cycle and climate change. The radiocarbon content (¹⁴C) of carbon dioxide (CO₂) provides a unique tracer to gain insight into carbon (C) cycle dynamics.

On a long time scale (millennia), radiocarbon can be used to address the effect of global warming on soil organic C stocks and their potential as a positive feedback to climate change. One of the major challenges is defining whether CO₂ derived from decomposition of soil organic matter (SOM) originates from C pools derived from recent plant activity, or from larger and older pools (such as arctic permafrost). Decomposition of old C that was not part of the active C cycle for millennia results in an increased flux of C to the atmosphere while rapid cycling of young C between plants and microbes has a near zero effect on the atmospheric C pool. In this talk, I will present recent results from the effects of increase in temperature, precipitation and snowpack on C dynamics of NW Greenland and Svalbard.

About the Speaker

Massimo (Max) Lupascu, originally from Italy, holds a BS in Biology (2002) and MS in Ecology (2004) from Roma Tre University, Rome, Italy, and a PhD in Physical Geography from the University of Bristol, UK (2009).

His master's thesis project in aquatic microbial ecology was carried out at the Water Research Institute-National Research Council in Rome. After a period of traveling in Argentina and Southeast Asia, Max started his PhD investigating the controls of methane production and consumption in the permafrost active layer at Stordalen, Sweden, using lipid biomarkers and incubation studies. Max then briefly worked at the Food and Agricultural Organization of the United Nations on climate change issues related to the agricultural sector and financing mechanisms before joining the Earth System Science department at the University of California Irvine in April 2010.

Here, he has focused his research on the effects of precipitation, snowpack and temperature on carbon dynamics in the High Arctic of Greenland and Svalbard.

ADMISSION IS FREE – ALL ARE WELCOME