

Biology Seminar



Western
UNIVERSITY · CANADA

12:30 - 1:30 pm
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BGS 0153



Alistair Rogers

Group Leader, Terrestrial Ecosystem
Science & Technology Group
Environmental Sciences Department
Brookhaven National Laboratory

From the Arctic to the tropics, improving the representation of photosynthesis in Earth system models

The primary goal of Earth system models is to improve understanding and projection of global change which is driven principally by the elevation of atmospheric carbon dioxide concentration resulting from the use of fossil energy. Many of the observed and projected impacts of global change portend increasing environmental and economic risk, yet the uncertainty surrounding the projection of our future climate remains unacceptably high. Although annual carbon dioxide emissions associated with anthropogenic activity are notable, they are a fraction of the size of the carbon fluxes associated with the global carbon cycle. Terrestrial photosynthesis (gross primary productivity) is the largest of these carbon fluxes and is the gatekeeper process for the uncertain subsidy of fossil fuel use provided by the terrestrial carbon sink. Therefore, increasing confidence in model representation of photosynthesis is an essential part of reducing uncertainty in projections of global change. Focusing on leaf level physiology, I will discuss the how parametric and structural representation of photosynthesis impacts model responses to key environmental drivers and show how data from recent field work in the Arctic and the tropics is aiming to inform model parameterization and representation of photosynthesis in next generation models.

