

Sep 23 10 – 11 a.m.

[Soil Temperatures Rising with Climate Change: Climate Change Group](#)

Lecture, Sciences, Seminar / [Department of Entomology](#)

1063 [Durland Hall](#)

The next Climate Change Group meeting will be held on Friday, September 23rd, at 10 am in Durland Room 1063. Our presenter will be Dr. John Knight, University of Sydney, Australia; visiting the Department of Agronomy, KSU. His seminar is entitled "Long term soil temperature rise: effect and cause of global warming".

Abstract:

Many agricultural research stations around the world made daily measurements of soil temperature at various depths, and some have data series going back over a hundred years. Much of the northern hemisphere data has been analyzed and shows long term warming trends. With colleagues at the University of Sydney, I analyzed a series of soil temperature measurements from 1942 to 2010 at Cowra in Australia, and compared them to other data from eastern Australia. We found a definite warming trend from about 1970 to the present. I will talk about soil temperature dynamics, and explain why the daily temperature peak lags the peak in solar radiation by about three hours.

Most of the soil biochemical and microbial activity resulting in the emission of greenhouse gases such as methane, carbon dioxide and nitrous oxide is temperature dependent, and will increase with increasing soil temperature. When soil emission of greenhouse gases is measured above the soil surface by flux chambers or eddy covariance, there is usually a daily peak which lags behind the temperature peak at the soil surface, and some workers refer to this phase lag as "hysteresis". I will show that this time lag is influenced by the soil thermal properties, the depth of the microbial activity and the soil water content which determines the diffusivity of the gas through the soil.

Cost: 0.00

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Event type: Lecture, Sciences, Seminar

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