

2.062 The impacts of land-use change on air quality and climate.

Early Career Scientist

Presenting Author:

Jamie Wilson, Institute of Climate and Atmospheric Science, Earth and Environment, University of Leeds, Leeds, North Yorkshire, United Kingdom, eejmw@leeds.ac.uk

Abstract:

Forests cover over 30% of the Earth's land surface and play a key role in the global climate. Extensive land-use change has occurred over the past few decades, converting forests to agriculture, pasture and urban areas. This land-use change impacts global climate through changes to surface albedo (biophysical impacts) and through altering emissions of carbon dioxide and other trace gases and particles (biogeochemical impacts). Both the biophysical and biogeochemical impacts of land-use change are poorly constrained. We combine data from different satellites to quantify the impacts of land-use change on surface albedo and atmospheric composition. Using data from the Landsat satellite, we identify regions of land-use change over the period 2000 to 2014. Using data collected by the Moderate-Resolution Imaging Spectroradiometer (MODIS) instrument and Ozone Monitoring Instrument (OMI) we assess the impacts of forest cover change on surface albedo, aerosol optical depth (AOD) and NO_2 . The results from these findings will act as a base to evaluate the effectiveness of the coupled chemistry climate model, UKCA, to capture biogeochemical and biophysical processes associated with land use change.