


Chair of Global Change Ecology

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I study the interaction of terrestrial ecosystems with the climate system, disturbance and management. My goal is to understand the dynamics of the carbon cycle, plant growth, and to support sustainable management of the global landscape.

You can find out more about my research group, the Global Change Ecology Lab [here](#).



My Research

My research is on understanding the terrestrial carbon cycle and its links to global change. The carbon cycle links the biological processes of living things to the physical environment and climate. Carbon, through its links to natural resources such as food and wood, is fundamental to our society and its sustainability. I study carbon cycling of plants and soils, and their interactions, across environmental and biodiversity gradients from the tropics to the arctic, to understand carbon sinks and sources across the globe. I explore feedback processes between soil, vegetation and the atmosphere, over timescales from days to years, to improve modelling of climate change. I use process based modelling and data assimilation methods to extract information from detailed

ecosystem measurements. Linking to earth observations, I use models to upscale field measurements and ecological experiments, to investigate landscape processes and predict their sensitivity to disturbance and climate. I focus particularly on issues relating to the drought sensitivity of forests, the role of disturbance (fire or anthropogenic) on forest biomass, the sensitivity of Arctic ecosystems to warming, and the yield of crops. Understanding and simulating the non-steady state behaviour of ecosystems is a current focal interest.

You can watch my inaugural lecture, April 2012, entitled "Seeing the forest for the trees, a journey from Plant to Planet" [here](#).

You can listen to a podcast by myself and Shaun Quegan, from NERC's Planet Earth, entitled "Space Mission to measure biomass" [here](#).

You can view my publications [here](#).

You can view my funding sources and project [here](#).

Latest blog: February 2019

Understanding the Amazon rainforest through a UK-Brazil science partnership