My current research interests are on the flux of trace gases, such as CO₂, CO and volatile organic compounds, and particles between the biosphere and atmosphere and the mechanisms controlling these fluxes. Trace gases and particles have significant impacts on air quality and climate and subsequently on plant, animal and human wellbeing. My research in this area involves making laboratory and field studies of emissions directly from vegetation and determining how and why different biotic and abiotic stresses affect the biosynthesis and emission of these compounds. These stresses include herbivory, transient high temperatures, reduced and elevated CO₂, and elevated ozone. More recently, my work focuses on trace gas emissions as a consequence of wildfires and understanding the factors controlling the composition of smoke. Results from these studies allow us to better parameterise the observed responses and improve trace gas emission models. As trace gas emission models are used within Earth System science models we can then attempt to assess how changes in fluxes impact all the interconnected components of the Earth system now and in the future.