

Stratosphere-biosphere links through UV and ozone

P. J. Young (1), C. Huntingford (2), N. D. Paul (1), and A Martinez-de la Torre (2)

(1) Lancaster Environment Centre, Lancaster University, Lancaster, United Kingdom (paul.j.young@lancaster.ac.uk), (2) Centre for Ecology and Hydrology, Wallingford, UK (chg@ceh.ac.uk)

Quantifying the impact of enhanced UV-B (280-315 nm) radiation on the biosphere is of clear importance to understand the environmental consequences of stratospheric ozone depletion. Of the many effects of increased UV-B on terrestrial ecosystems, several meta-analyses point to an inhibition of biomass accumulation. This inhibition would have several knock-on effects, impacting the carbon cycle, hydrological cycle, dry deposition, and many other atmosphere-biosphere interactions. Such interactions are seldom included in global climate models, meaning that there is no clear indication of the nature and magnitude of the UV-B impact on terrestrial ecosystems.

We are addressing this gap through the use of a global land surface model together with ozone and climate data from chemistry-climate models. This presentation will focus on our initial work, which considers what the impacts might have been had the Montreal Protocol not been adopted (the “world avoided”).