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Interactive biogenic isoprene emissions modelling with HadGEM2-ES

Federica Pacifico (1,2), Gerd Folberth (1), Chris D. Jones (1), and Sandy P. Harrison (3)

(1) Met Office Hadley Centre, Exeter, UK (federica.pacifico@metoffice.gov.uk), (2) School of Geographical Sciences, University of Bristol, Bristol, UK, (3) School of Biological Sciences, Macquarie University, North Ryde, Australia

Biogenic Volatile Organic Compounds (BVOCs) affect the lifetime of some greenhouse gases (e.g. methane CH4; Hofzumahaus et al., 2009) and are precursors of others, such as tropospheric ozone (O3; Hofzumahaus et al., 2009) and biogenic Secondary Organic Aerosol (SOA; Clayes et al., 2004).

Isoprene (2-methyl-1,3-butadiene, C5H8) has the largest emission flux of all BVOCs, with estimates of about 500 TgC/yr (Guenther et al., 2006).

In order to get a better understanding of the effect of environmental conditions on isoprene emissions and the impact of changes in isoprene emissions on atmospheric chemistry, we need to couple mechanistic isoprene emission schemes within Earth System models.

We implemented a process-based isoprene emission scheme (Arneth et al., 2007) into the Hadley Centre Global Environmental Model with Earth System (HadGEM2-ES) which includes dynamic vegetation and complex atmospheric chemistry schemes.

We model isoprene emissions interactively with HadGEM2-ES for pre-industrial, present-day and future climate conditions. We analyse the factors contributing to isoprene emissions and the impact of isoprene emissions on atmospheric chemistry.

Arneth et al., 2007, Atmos. Chem. Phys., 7, 31-53
Claeys et al., 2004, Science, 303, 1173-1176.
Guenther et al., 2006, Atmos. Chem. Phys., 6, 3181-3210.
Hofzumahaus et al., 2009, Science, 324, 1702-1704.