**SW and LW Effective Radiative Forcings**

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IPCC AR5 forcing time series were extend and updated as is Dessler et al (Dessler and Forster, 2018), using new GHG forcing estimates (Etminan et al., 2016), new aerosol and ozone time-series (Myhre et al., 2017) etc.

Then split into shortwave (SW) and longwave components based on assumptions taken from a lot of my previous papers, which were a lot of fun to back and read. Note that split makes a difference if TOA or tropopause ERF wanted. I’ve tried to take TOA estimates where I have them but not possible for all forcings, so tropopause is used for some. This is likely a wrong assumption but for the major forcings I have TOA numbers, so probably not a major issue.

CO2 . 80% LW and 20% SW split assumed for NET ERF , taken from TOA ERF kernel estimates (Smith et al., 2018).

Non\_CO2 GHG 73% LW 27% SW assumed for NET ERF, taken from TOA ERF kernel estimates for methane (Smith et al., 2018).

Aerosol ERF . -17% LW and 117% SW split assumed for NET ERF , taken from TOA ERF kernel estimates for SO2 (Smith et al., 2018).

Stratospheric ozone ERF: 200% LW and -110% SW split assumed for NET ERF , taken from tropopause RF estimates (Forster and Shine, 1997)

Tropospheric ozone ERF: 80% LW and 20% SW split assumed for NET ERF , taken from tropopause RF estimates (Forster et al., 1996)

Land use albedo change ERF assumed 0% LW, 100% SW

Stratospheric water vapour ERF: 90% LW and 10% SW split assumed for NET ERF , taken from tropopause RF estimates (Forster and Shine, 1999)

Black carbon on snow ERF, assumed 0% LW, 100% SW

Contrails and aviation induced cirrus ERF: 200% LW and -100% SW split assumed for NET ERF , taken from tropopause RF estimates (Stuber and Forster, 2007)

Solar ERF, assumed 0% LW, 100% SW

Volcanic ERF: -33% LW and 133% SW split assumed for NET ERF , taken from TOA ERF estimates (Schmidt et al., 2018)

Time series are shown in Figure 1

Figure 1. Timeseries of TOA ERF components. Note TOA matters for SW and LW split but not the NET

**References**

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