

Regional variation in the effectiveness of methane-based and land-based climate mitigation options

This repository contains datasets and output from the python scripts used to process the IMOGEN-JULES ensemble outputs and in some scripts to optimise the land-based mitigation options. The figure and table numbers refer to those in the published paper in Earth System Dynamics.

1. Time series of methane emissions for the following IMAGE scenarios, broken down by IMAGE region and source sector:
 - IMAGE SSP2 Baseline: SSP2_CH4emissions_Region_Ref.csv
 - IMAGE SSP2 RCP1.9: SSP2_CH4emissions_Region_RCP19.csv
 - IMAGE SSP2 RCP2.6: SSP2_CH4emissions_Region_RCP26.csv
2. Time series of radiative forcing and concentrations for the following IMAGE scenarios from 1850 to 2300:
 - SSP2-baseline_IMAGE_concs_co2_vn3p0.txt
 - SSP2-baseline_IMAGE_concs_ch4_n2o_vn3p0.txt
 - SSP2-baseline_IMAGE_qnonco2_vn3p0.txt
 - SSP2-1.9_IMAGE_concs_co2_vn3p0.txt
 - SSP2-1.9_IMAGE_concs_ch4_n2o_vn3p0.txt
 - SSP2-1.9_IMAGE_qnonco2_vn3p0.txt
3. AFFEBs and Mitigation Potentials for the different scenarios, using BECCS scale factors = 1, 2, 3, 4. In each folder, there are 5 csv files:
 - Mitigation_Summary_FullUnc.csv: Summary statistics of the AFFEBs and Mitigation Potential for the different scenarios from the 136-member ensembles for the 2 temperature pathways
 - Mitigation_Summary_Global.csv: Summary statistics of the AFFEBs and Mitigation Potential for the different scenarios, provided for each of the four factorial experiments (High/Low Q10, High/Low Ozone vegetation sensitivity) and 2 temperature pathways
 - Mitigation_Summary_Region.csv: Median of the mitigation potential for the scenarios ("BECCS", "Natural", "Optimised") broken down by IMAGE region, provided for each of the four factorial experiments (High/Low Q10, High/Low Ozone vegetation sensitivity) and 2 temperature pathways
 - Mitigation_Summary_FullUnc_Reg.csv: Median and interquartile range of the mitigation potential for the different scenarios from the 136-member ensembles, broken down by IMAGE region, with separate blocks for the 2 temperature
 - Mitigation_Summary_Sink_FullUnc.csv: Summary statistics of the Carbon stores (atmosphere, land, BECCS and ocean) from the 136-member ensembles, for the different scenarios for the 2 temperature pathways