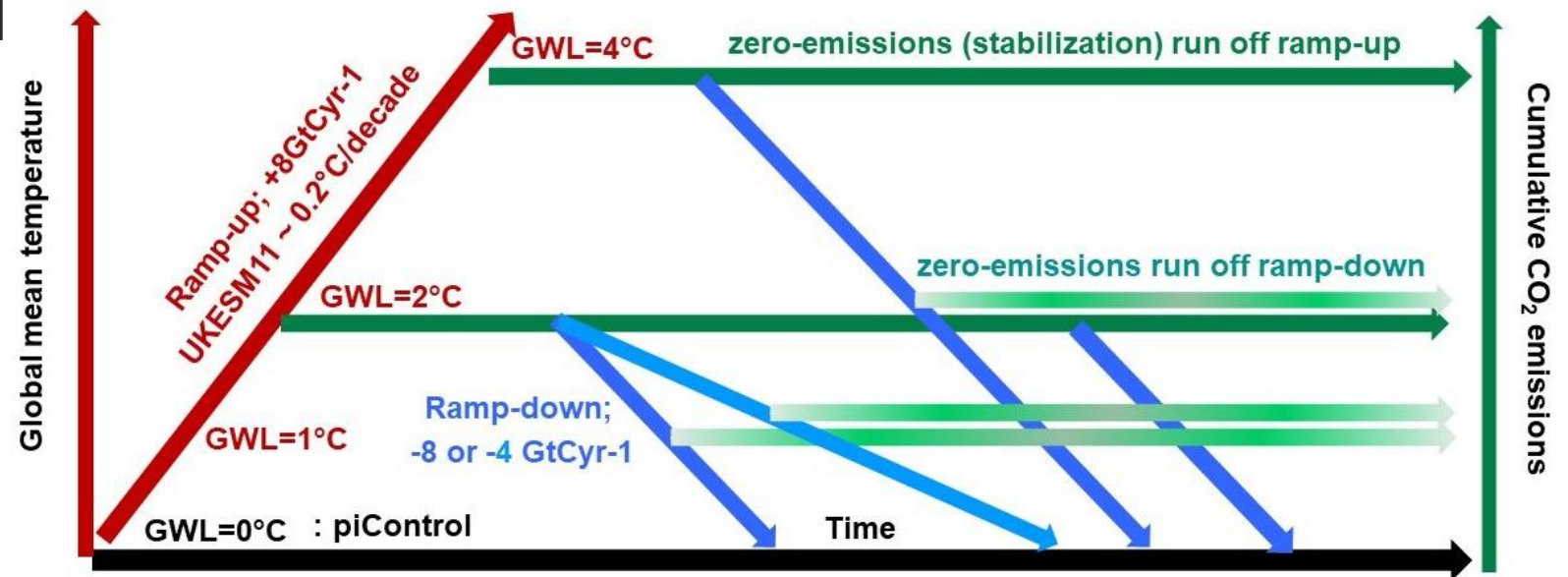


Accessing TerraFIRMA data

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TerraFIRMA experimental protocol

- framework to investigate climate overshoot and tipping points
- specifies rate of global warming, and warming levels
 - ramp-up @ 0.2 °C/decade (= observed 1976-2020 rate), GWL=1,2,4...°C
- experiments forced by CO₂ emissions only
 - emissions needed for 0.2 °C/decade depend on model's TCRE
 - for UKESM, this is 8 GtC/yr



Experiment names (1)

- Facets in composite name denote prior history of expt, e.g.
- up2p0 = ramp-up at 2 °C/century
- gwl5p0 = stabilization (zero emissions) at 5 °C
- 50y = duration of 50 years
- dn1p0 = ramp-down at 1 °C/century

Experiment names (2)

- e.g. esm-up2p0-gwl4p0-50y-dn2p0-gwl2p0 =
ramp up @ 2 °C/century, then
stabilize @ 4 °C for 50 years, then
ramp-down @ 2 °C/century, then
stabilize @ 2 °C
- data provided for final step of experiment
 - in this example, second stabilization step
- So, for complete overshoot & stabilization scenario, also need
 - esm-up2p0
 - esm-up2p0-gwl4p0-50y
 - esm-up2p0-gwl4p0-50y-dn2p0
 - esm-up2p0-gwl4p0-50y-dn2p0-gwl2p0

Accessing the data (1)

- Usually around 540 variables per experiment
- CMORized filenames
 - `tas_Amon_UKESM1-2-LL_esm-up2p0_r1i1p1f1_gn_185001-194912.nc`
 - Variable name
 - Mip table
 - Model name
 - Experiment name
 - Experiment variant
 - Grid label
 - Date range
- Currently using CMIP6 naming
 - e.g. `tas_Amon` =
monthly mean near-surface atmospheric temperature

Accessing the data (2)

- Downloadable from webpage:
<https://gws-access.jasmin.ac.uk/public/ukesm/TerraFIRMA/>
- Accessible from JASMIN:
`/gws/ssde/j25b/terrafirma/TerraFIRMA/MOHC/UKESM1-2`

Output from TerraFIRMA experiments

This page contains results from the TerraFIRMA runs using UKESM1.2. The model output has been CMORized so there are separate files for each variable and frequency.

Experiment	variant	start date	end date	# years	# variables	# files
esm_piControl	r1ilp1fl	2100-01-01	2899-12-30	800	544	8768
esm_hist	r1ilp1fl	1850-01-01	2014-12-30	165	545	1660
esm_hist	r2ilp1fl	1850-01-01	2014-12-30	165	545	1660
esm_hist	r3ilp1fl	1850-01-01	2014-12-30	165	539	1642
esm_hist	r4ilp1fl	1850-01-01	2014-12-30	165	25	48
esm_ssp245	r1ilp1fl	2015-01-01	2025-12-30	11	545	1074
esm-up2p0	r1ilp1fl	1850-01-01	2139-12-30	290	539	2828
esm-up2p0	r2ilp1fl	1850-01-01	2139-12-30	290	25	65
esm-up2p0	r3ilp1fl	1850-01-01	2139-12-30	290	25	65
esm-up2p0	r4ilp1fl	1850-01-01	2139-12-30	290	25	65
esm-up2p0-gwl2p0	r1ilp1fl	1944-01-01	2444-12-30	501	539	10625
esm-up2p0-gwl2p0-50y-dn1p0	r1ilp1fl	1994-01-01	2053-12-30	60	539	1354
esm-up2p0-gwl2p0-50y-dn2p0	r1ilp1fl	1994-01-01	2127-12-30	134	545	5256
esm-up2p0-gwl3p0	r1ilp1fl	1992-01-01	2349-12-30	358	545	24360
esm-up2p0-gwl3p0-50y-dn2p0	r1ilp1fl	2044-01-01	2126-12-30	83	542	5477
esm-up2p0-gwl4p0	r1ilp1fl	2044-01-01	2544-12-30	501	545	22833
esm-up2p0-gwl4p0-50y-dn1p0	r1ilp1fl	2096-01-01	2406-12-30	311	539	9431
esm-up2p0-gwl4p0-50y-dn2p0	r1ilp1fl	2095-01-01	2343-12-30	248	542	10927
esm-up2p0-gwl4p0-50y-dn2p0-gwl2p0	r1ilp1fl	2233-01-01	2394-12-30	162	538	10175
esm-up2p0-gwl5p0	r1ilp1fl	2082-01-01	2394-12-30	313	539	19370

For more information on the TerraFIRMA project, please see the [TerraFIRMA project page](#).

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