Guide to ZECMIP globally averaged data

The Zero Emissions Commitment Model Intercomparison Project (ZECMIP) is intended to estimate how much, if any, warming is expected to occur following complete cessation of CO2 emissions.

The ZECMIP protocol requested modelling groups to conduct three idealized simulations of two different types each – A and B. The three type A simulations are initialized from the 1pctCO2 simulation when diagnosed cumulative emissions of CO2 reach 750, 1000, and 2000 Pg C. After the desired cumulative emission is reached the models are set to freely evolving atmospheric CO2 mode, with zero further CO2 emissions. A consequence of the protocol is that for the type A simulations each model branches from the 1pctCO2 simulations in a different year, contingent on when a model reaches the target cumulative emissions, which in turn depends on each model's representation of the carbon cycle and feedbacks.

The three type B simulations are initialized from pre–industrial conditions and are emissions driven from the beginning of the simulation. Emissions follow bell–shaped pathways wherein all emissions occur within a 100 year window. In all experiments land–use–change and non–CO2 forcings are held at their pre–industrial levels.

A small set of core outputs were collect from participating models for the initial ZECMIP analysis. These are scalar quantities (mainly global means) provided annually in csv format. Data was submitted as separate files for each variable and each simulation following the following convention:
•   Filename = variable_model_experiment_yearstart_yearend.csv
        Eg: cLand_UVicESCM2.10_esm–bell–1000PgC_1850–2849.csv
•   Files have two columns one for time and one for the variable. This format follows the standard CMIP format and embeds the metadata in the name of the file.

Note that compliance by modelling groups with the prescribed format was weak. Thus two data directories are included DATA_Raw, which is the data as submitted by each modelling group, and DATA_Final, where all of the files have been changed to the correct format.

Meta–data for each model is included in the accompanying 'Model Metadata for ZECMIP Final.docx' file. Including the experiments that each group completed, branch years for the type–A experiments and standard model metrics.

The 18 requested globally averaged variables documented in the accompanying spreadsheet 'Variable_Request_Final.xlsx'