

GC-Carbon Kick Off Report

RT1

CO₂ fertilization and nutrient limitations

Proposal to seriously evaluate CMIP6 models against Obs, FACE, etc

Improving the modelling carbon-feedback using estimates of land carbon transit time and age

Proposed workshop on turnover time and 14C

RT2

What is the effect of ocean stratification on carbon uptake?

Workshop on the ocean boundary layer and its impact on the carbon cycle

How is the export flux of carbon responding to changes?

Workshop on model parameterizations combining experimentalists, process modellers and earth system modellers.

RT3

Historical Observations

Need to synthesize and standardize data (land and ocean)

Go beyond mean state evaluation (variability, extremes)

Facilitate (enforce) evaluation of C-cycle in addition to physical state in CMIP6 ESMs

Decadal time scale (hindcast/forecast)

Is the evolution of the ocean and land carbon sink predictable (decadal time scales)

RT4

Improved beta-gamma framework

Focused workshop (<20 people) to derive an extension to the (β, γ) approach, which includes turnover times and other system timescales, and which makes connections to other recent analyses.

Analysis of sources of uncertainties in CMIP6 projections