The climate modeling community's "storylines" for scenario experiments:

CMIP3 (IPCC TAR): SRES scenarios, "what if", no policy, possible future climate outcomes

CMIP5 (IPCC AR4): RCP scenarios, mitigation scenarios with policy actions to produce possible future climate change stabilization

CMIP6 (proposed): Pairs of SSP and RCP scenarios to compare possible future climate outcomes with and without mitigation

It may be useful to consider NARCAPP-like matrix design for CMIP6:
1. advantages: enable exploration of many more pairs of scenarios by dividing the experiments up among the modeling groups (e.g. Detlef's four pairs plus others); many more ensemble members for each model
2. disadvantages: requires all participating modeling groups to agree to commit to making a subset of runs at the same time; must know which modeling groups will be participating beforehand; lose the advantages of a uniform large multi-model ensemble; requires buy-in from modeling groups and strict control and enforcement by CMIP Panel

Possible scenarios for CMIP6 (each paired with at least one RCP):

1. **New peak and decline scenario** (2015-2300; Reversibility properties and explore resilience of various parts of the climate system—ice sheets, ocean acidification, ecosystems, sea level rise; requires emissions and concentrations)

2. **New short-lived species SSP** (How do pollutants affect weather; what are near-term climate benefits of cutting short-lived species; one experiment 2015 to 2100 or two experiments 2015 to 2050, ACCMIP-type)

3. **New land use change SSP** (Isolate effects of land use and land use change on climate: 1) IAM cost of mitigation and energy system dynamics under a different land use option; 2) ESM effect on temperature, precipitation, biogeochemistry, and regional patterns under a different land cover scenario; 3) IAV effect on ecosystem productivity and disturbances under a different land cover scenario; Integrated: implications for REDD and other strategies; 2015-2100)

4. **Re-run RCP8.5 with all new model versions** (calibration simulation with interim model versions to connect to other parts of CMIP6; compare model response to relate to other previously run RCP simulations; 2015--2300)

Use existing RCP2.6, RCP4.5 and RCP6.0 simulations from CMIP5 for pairing with SSPs, along with existing and new RCP8.5 runs

Comments