Idealized Runs
CMIP6
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CMIP6

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Core CMIP5 Idealized Runs

- 1% per year CO2 increase to doubling
- 1% per year CO2 increase to doubling

- Patterned and uniformly delta SST – atm

- Partly coupled
  - Fixed CO2 for biology; increasing for physics
  - Fixed CO2 for physics; increasing for biology
Functions of current idealized runs

- 1% per year CO2 increase
  - Touchstone type run
  - Produces total response

- Easy to compare current models
- Easy to compare to past models
Idealized 1% CO₂ Increase

- Forcing nearly the same across models
- Easy to compare difference in model response
- Defines TCR
- Many interesting science questions

IPCC WG1 AR4
Functions of current idealized runs

• 4xCO2 switch-on
  – Allows estimate of climate sensitivity
    • However problems as noted by Winton et al. & others
  – Investigates fast responses in climate

• Fixed current and future SST, atm-only
  – Allows high resolution atm models in CMIP
  – Provides more detailed regional information

• Aqua planet – atm-only
  – Allows comparison of atm feedbacks
Functions of current idealized runs

- Patterned and uniform delta SST – atm-only
  - Investigates role of SST forcing on atm response
- Partly coupled
  - Fixed CO2 for biology; increasing for physics &
  - Fixed CO2 for physics; increasing for biology
  - Role of CO2 fertilization on land plants
  - Role of ocean and land feedbacks due to increased CO2
  - Isolate role of climate change
Potential New Core Idealized runs

- ESM emission run at constant rate using idealized emission geographical pattern (same emissions at all land grid boxes); no land use (pot veg), CO2 only
  - Allows all carbon feedbacks to operate (unlike in 1% per year CO2 increase runs)
- Better radiative forcing estimates
  - Need somebody to investigate this and develop method
- Others? – Remember this is “Core”
  - MIPS free to develop other new idealized runs