

Climate scenarios for Sectorial Research – SETUKLIM

2011-12

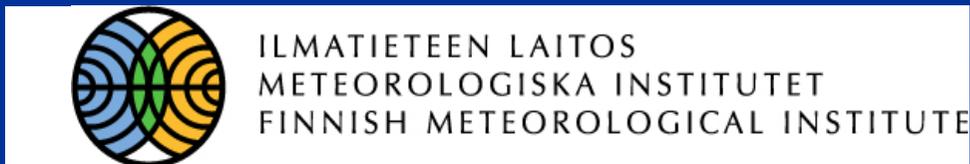
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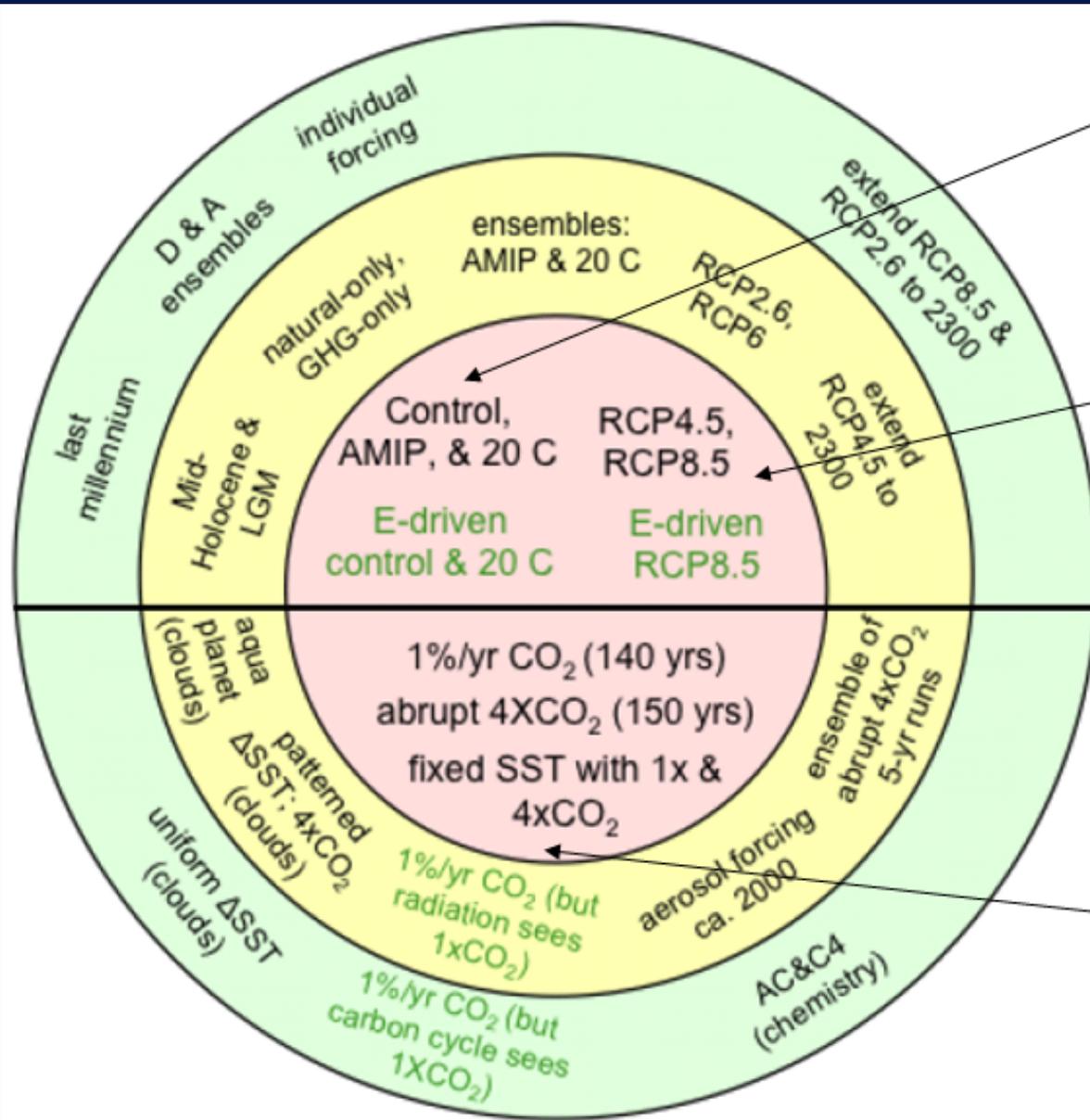
Goals

- **To produce climate scenarios to be used in the redesign of the national adaptation strategy**
- **Scenarios will be based on the CMIP5 simulations**
- **Provide scientific basis fo climateguide.fi web portal**

CMIP5 simulations – IPCC AR5

- evaluate how realistic the models are in simulating the recent past,
- provide projections of future climate change on two time scales, near term (out to about 2035) and long term (out to 2100 and beyond), and
- understand some of the factors responsible for differences in model projections, including quantifying some key feedbacks such as those involving clouds and the carbon cycle

CMIP5 simulations +100yr

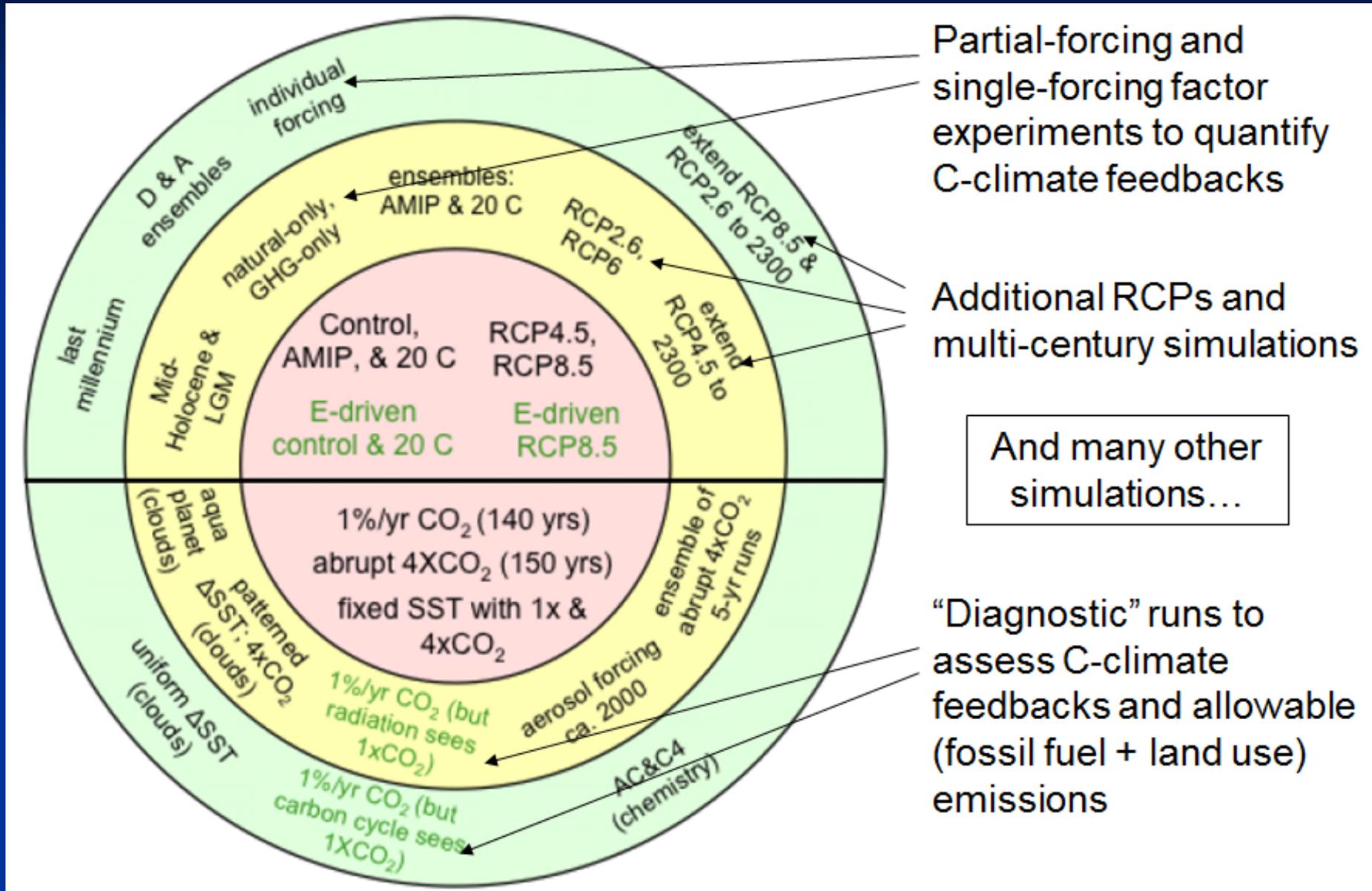


Pre-industrial control (ca. 1850) and 20th century, forced by concentrations and by **emissions**

Future scenarios (RCPs) forced by concentrations and by **emissions**

“Diagnostic” runs to assess transient climate response, equilibrium climate sensitivity

CMIP5 simulations



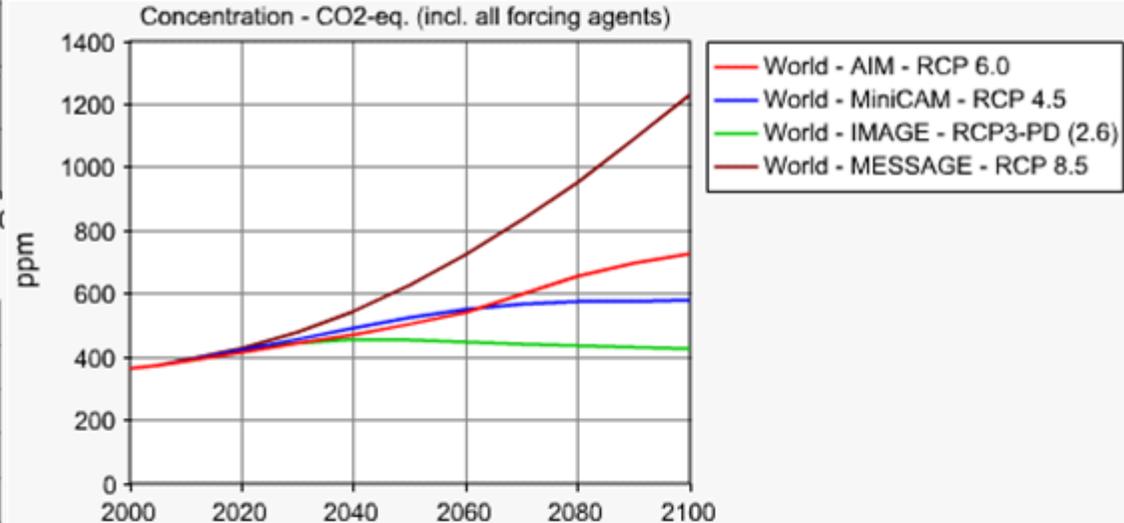
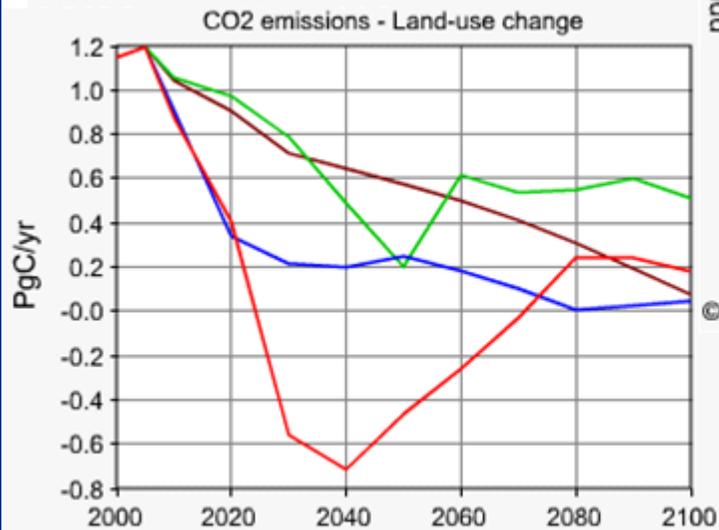
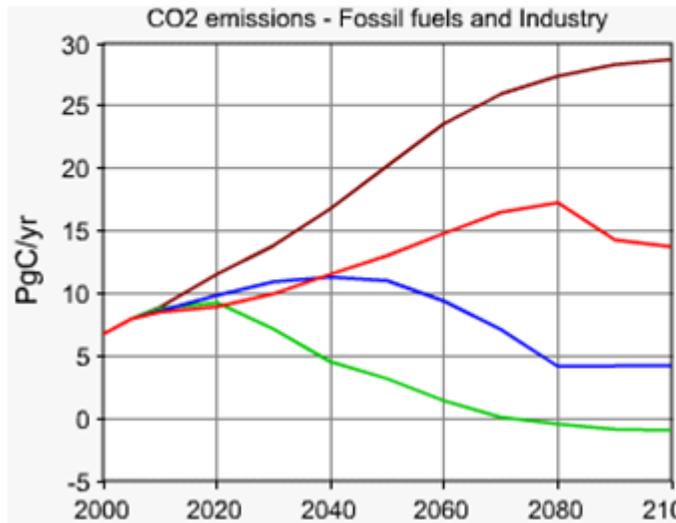
Partial-forcing and single-forcing factor experiments to quantify C-climate feedbacks

Additional RCPs and multi-century simulations

And many other simulations...

“Diagnostic” runs to assess C-climate feedbacks and allowable (fossil fuel + land use) emissions

RCPs (from Integrated Assessment Models)



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CMIP5 mallikokeet

Simulations:

- ~90,000 years
- ~60 experiments
- ~20 modelling centres using
- ~30 major(*) model configurations
- ~2 million output datasets
- ~10's of petabytes of output
- ~2 petabytes of CMIP5 requested output
- ~1 petabyte of CMIP5 “replicated” output (at least three replicants)
 - One at BADC, to arrive in 2010!
- ~10 TB of land-biochemistry (from the long term experiments alone).

Of the replicants:

- ~ 220 TB decadal
- ~ 540 TB long term
- ~ 220 TB atmos-only

- ~100 TB of 3hourly atmos data!
- ~215 TB of ocean 3d monthly data!
- ~250 TB for the cloud feedbacks!

Expected Usage (@ BADC):

- ~ hundreds of users downloading at a sustained daily average rate of between 1 and 3 Gbit/s (or up to 35 TB/day from BADC ...)