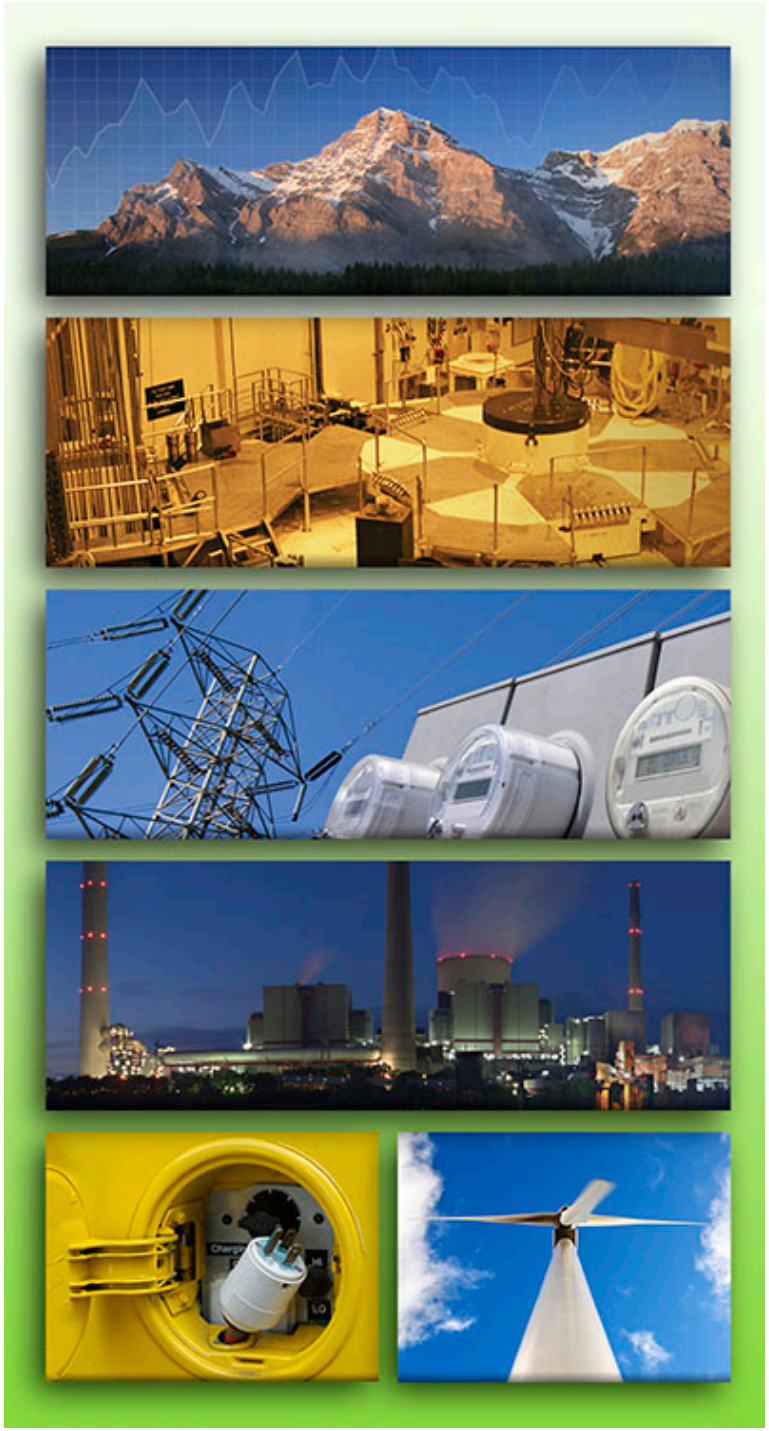

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Exploring consistency with climate outcomes: a simple data mining exercise

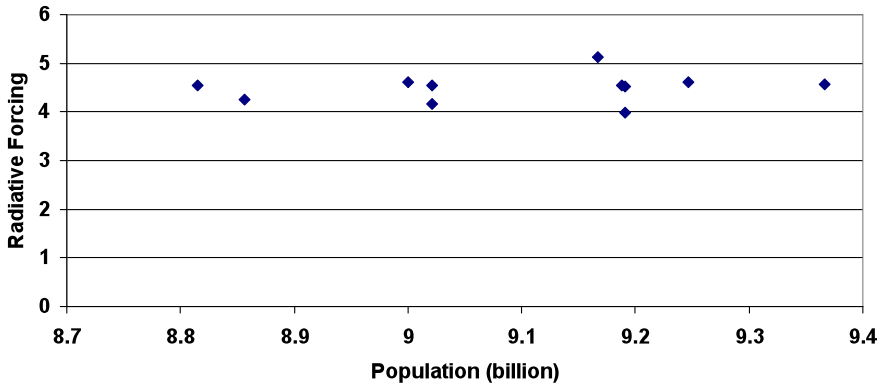
Steven Rose
Global Climate Change Research Group

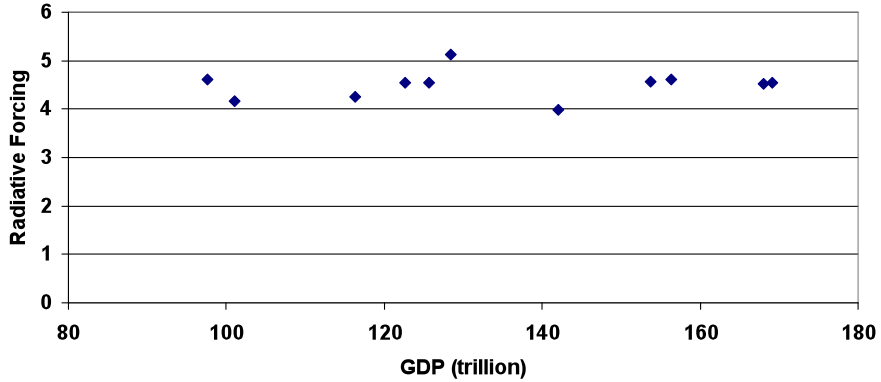
Snowmass, CO
July 27, 2010

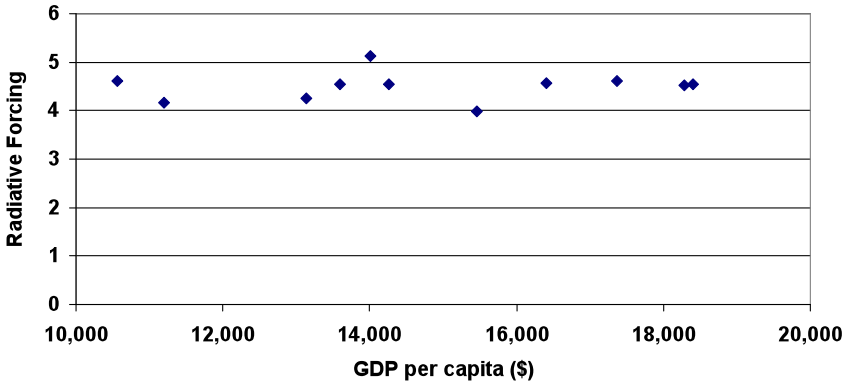
Consistency?

- Socioeconomic consistency?
  - Looking across models
  - Looking within models
- What is consistency with an RCP?
  - Radiative forcing pathway, some RF features, 2100 target, stabilization vs transient RF?
- What's not consistent?

Searching for consistency
e.g., EMF-22 reference scenarios, 2050







Hard to see relationships

Does this imply broad consistency?

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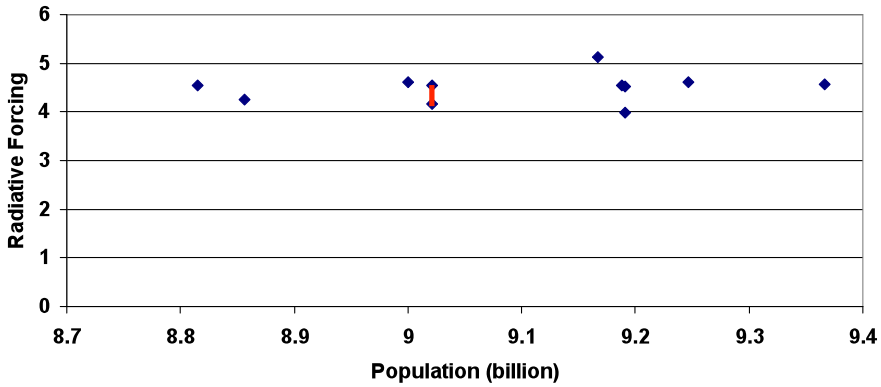
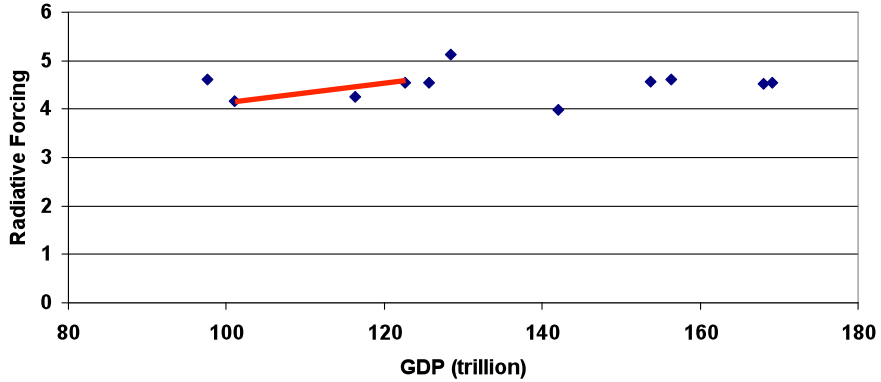
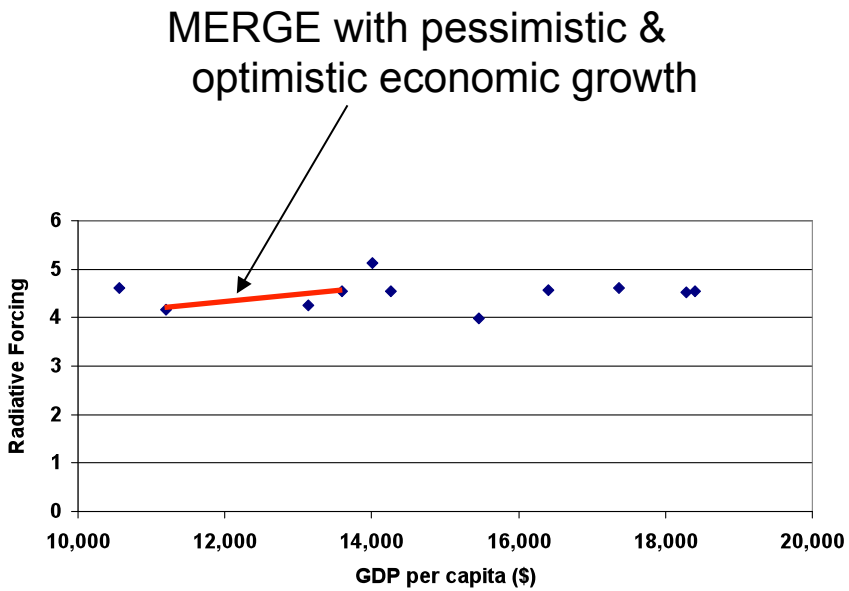
Searching for consistency
e.g., EMF-22 reference scenarios, 2050







Can we ignore internal logic?

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Internal logic – e.g., Kaya identity & energy and industrial CO2 emissions

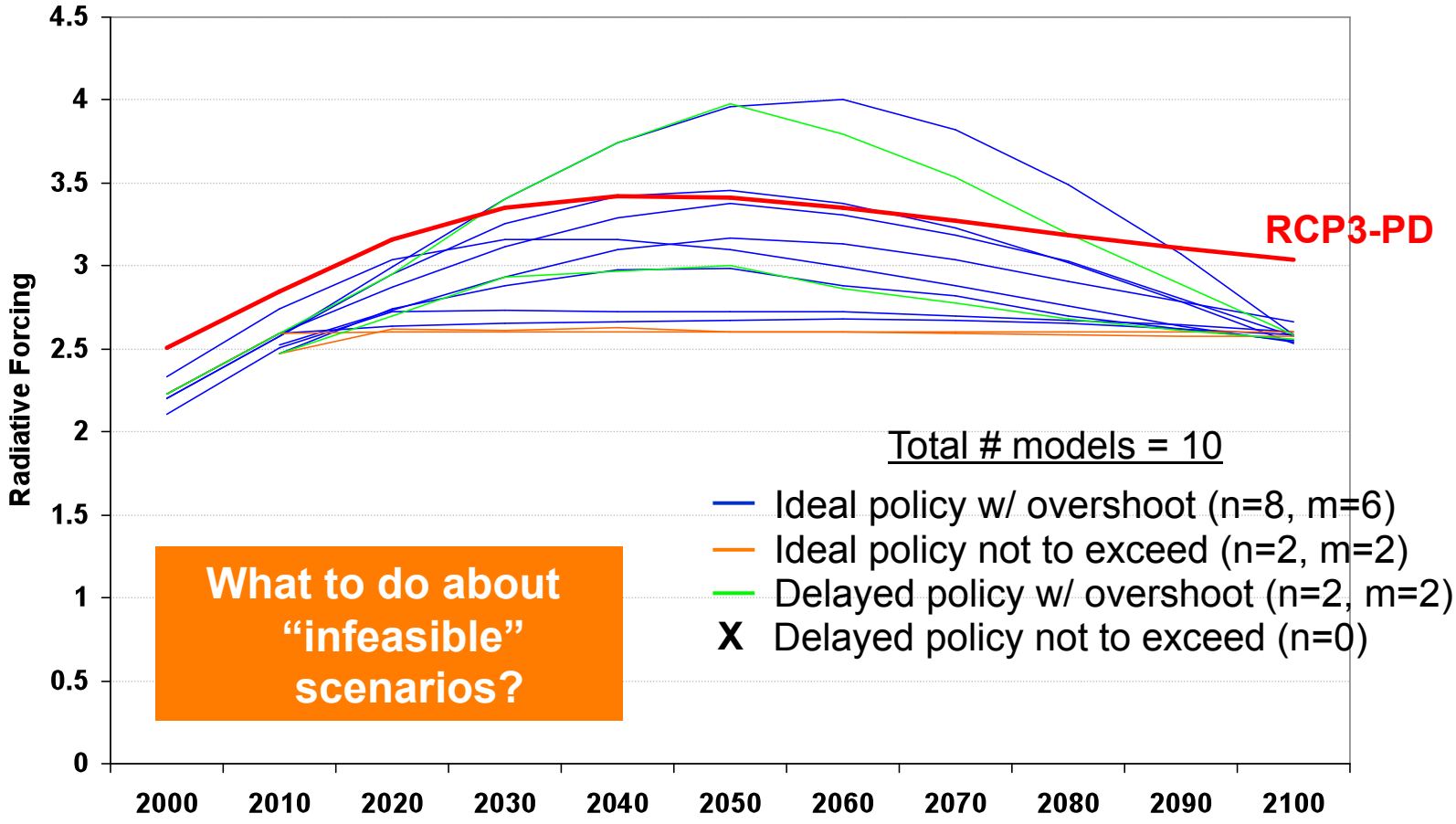
$$M_{t,r} = \frac{M_{t,r}}{E_{t,r}} \frac{E_{t,r}}{Y_{t,r}} \frac{Y_{t,r}}{P_{t,r}} P_{t,r}$$

Combinations of assumptions.

Plausible combinations for a given CO2 level?

RCP 3-PD – RF consistency with the literature?

E.g., EMF-22 2.6 W/m2 scenarios (Kyoto gases)



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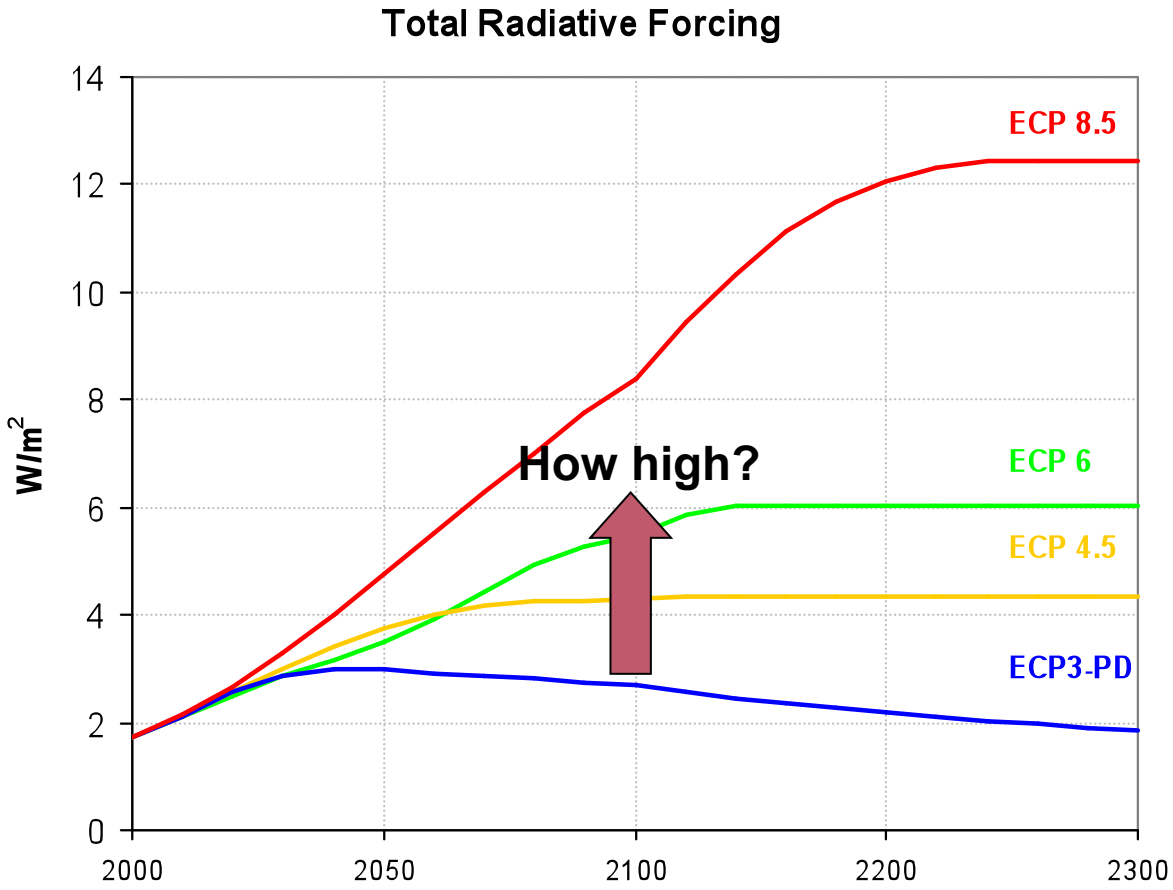
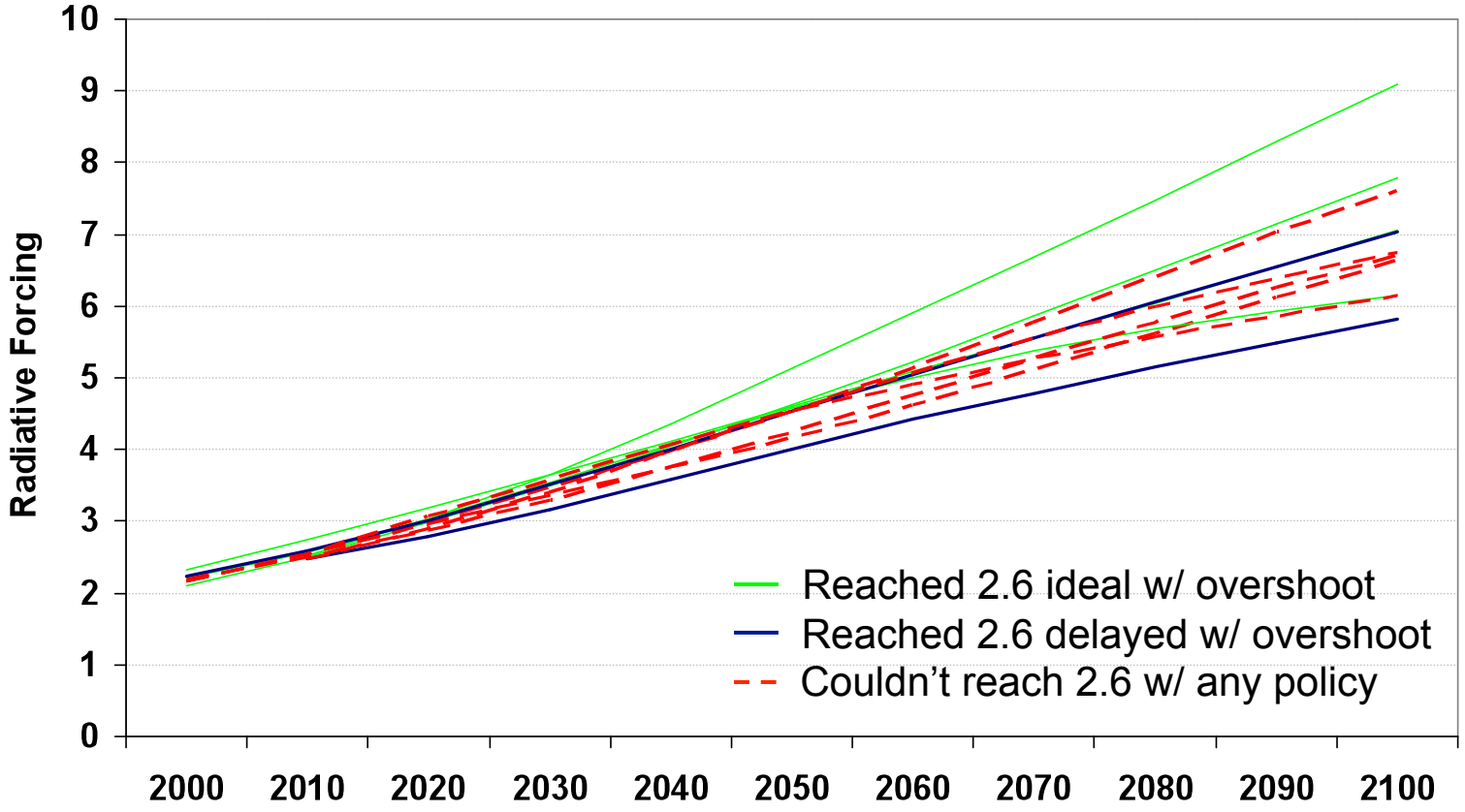
RCP 3-PD – What's the counter factual for avoided damages? We need one!



RCP 3-PD – What's the counter factual?

E.g., EMF-22 reference scenarios (Kyoto gases)



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Summary

- Socioeconomic consistency?
  - Hard to bound looking across models
  - Internal logic is important and could be helpful
- Need to define RF “consistency” with an RCP
- We need counter factual scenario for avoided impacts
  - RCP8.5? Doesn’t appear to be well supported.
  - Need to acknowledge “infeasible” scenarios
- More generally, do we need consistency for socioeconomics across RCPs?