

# Uncertainty Analysis in Integrated Assessment Models: Next Steps

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# Recap of our goals

*What we hope to accomplish:*

- A systematic study of uncertainty in integrated assessment models
  - Determine the differences among models in the uncertainties
  - Provide benchmark estimates for major parameters
  - Provide estimates of the areas where reducing uncertainties would have a high payoff

# Both academic and policy questions

- Are there key commonalities across models in the most important uncertainties?
- How does model structure influence uncertainty in model outcomes?
- Where should we be focusing efforts to reduce uncertainty?
- What are the implications of fat-tailed pdfs of uncertain parameters?

# Recap of research agenda

1. Gather several models/modelers who can perform uncertainty experiments (August 2011)
2. Identify key uncertain variables and key output variables (Spring 2012)
3. Run and compare sensitivity experiments (Today!)
4. Prepare pdfs for key uncertain variables (2012-13)
5. Integrate 3. and 4.
6. Collate and compare with earlier results

# What we have been finding

- Fortunately, implementing the protocol is feasible and relatively easy for nearly all of the models
- Not all of the models can complete all of the protocol
- Yet it may be useful to add to the protocol
  - Damages?
  - CO2 intensity?
  - AEEI?
  - Price of oil?

# Proposed next steps

## *Prepare pdfs for key uncertain variables*

- pdfs will be developed based on a consensus using all available evidence
- We propose two “pdf harmonization groups”:
  1. Modelers track – modelers develop pdfs
  2. Modelers + experts track – other experts are included
- Recommendations by winter 2012

# Following steps

Once pdfs have been determined:

- Combine the pdfs with the calibration exercises to develop harmonized pdfs of the selected uncertain outcome variables
- This gets particularly interesting!
  - We definitely want to include relevant off-diagonals
  - Can we look at higher-order uncertainties as well?
- Results available by summer 2013

# What we need to decide on today

- How should we modify the protocol?
- Who is willing to take part in our next steps
  - Pdf harmonization groups
  - Modeling groups