



**Advanced Model Development and Validation for the
Improved Analysis of Costs and Impacts of Mitigation Policies**

Uncertainty and IAMS

Experience of FEEM

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Brief summary of FEEM research

Multi-disciplinary research, trying to address major topics related to uncertainty

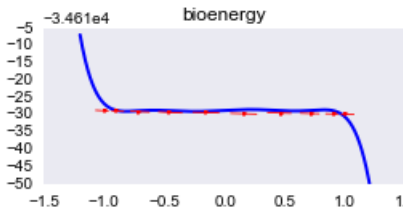
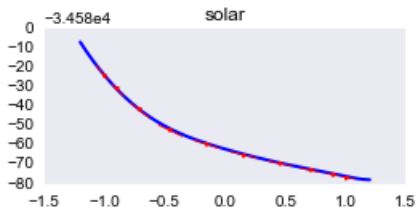
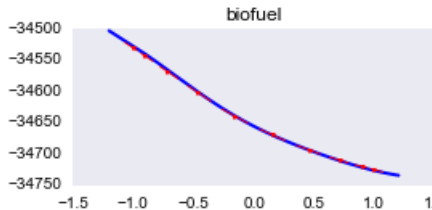
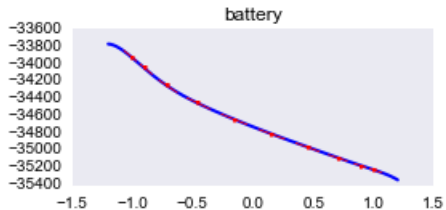
- **Empirical estimation:** econometric studies on effectiveness of RD&D, expert elicitation.
- **Decision making framework:** impact of different welfare framework (risk aversion and ambiguity), lab experiment (public good game)
- **Computational method:** Monte-Carlo, sensitivity analysis, stochastic programming(SP) and approximate dynamic programming (ADP).

We cannot analyze the full set fo uncertainty..

..but thanks to the increase of computational power, we can look at some galaxy.

SP Limited size problem but allow to analyze multistage effects :
option value of carbon-free technologies, uncertainty of innovative/ speculative mitigation option (carbon dioxide removal -geoengeneering)

ADP Capture wider uncertainty (not limited by the size of the decision tree) but the problem needs certain structure:
optimal RD&D portfolio.



There are a lot of synergies between the different subject/methods.

- Sensitivity analysis and scenario settings.
- Sensitivity analysis and expert elicitation