

Analysis of Predictive Uncertainty for Model Version 2.0

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Outline

- Introduction
 - Intend to start the conversation
- Only looking at two approaches at this time
 - Multiple model
 - 1 favorite model, others that also calibrate
 - Bend but don't break
 - See how far you can bend a prediction without un-calibrating the model

Introduction

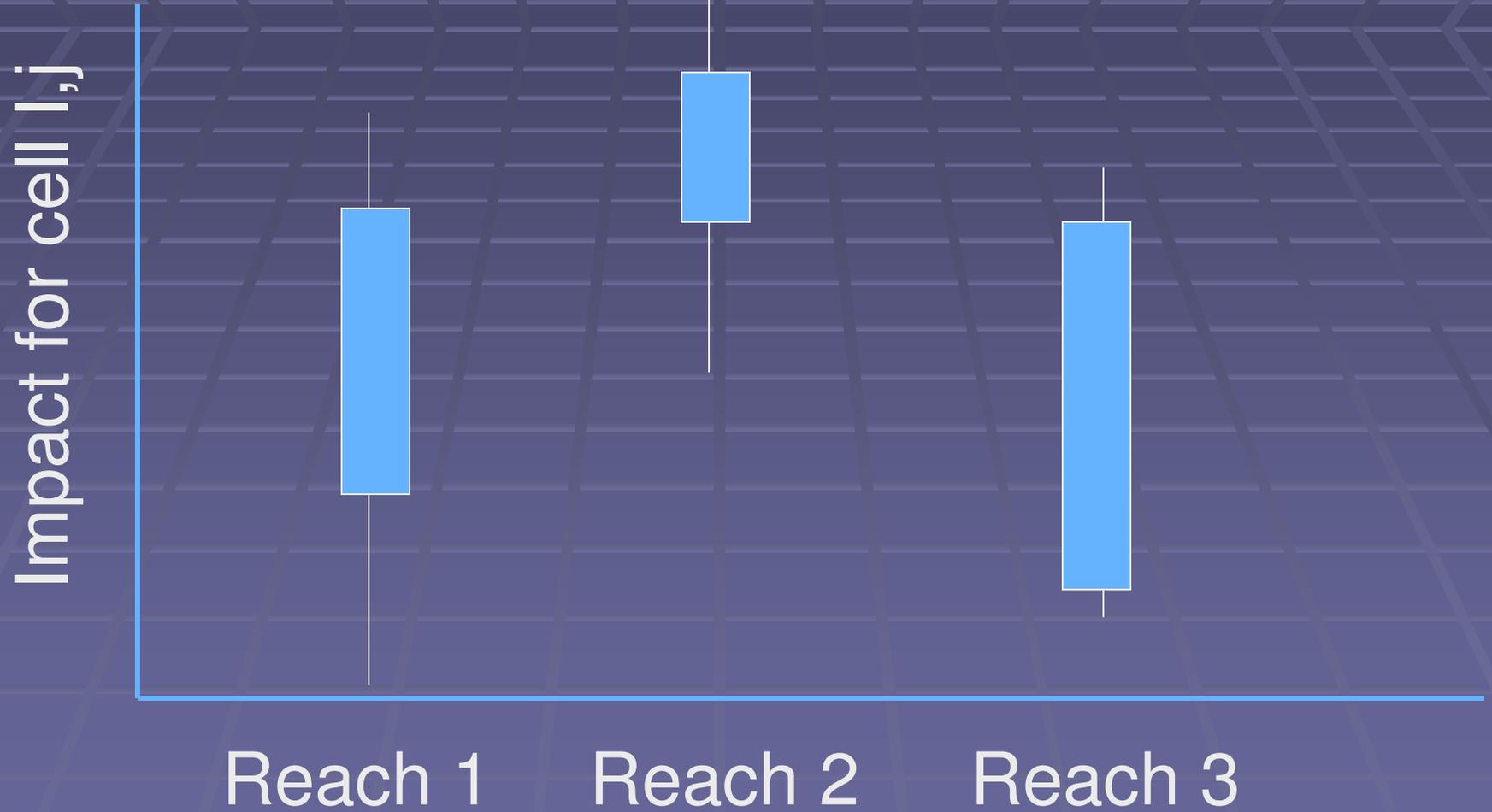
- This presentation is intended to start the discussion, it is not meant to be an exhaustive analysis
- The Department is interested in the uncertainty of the response functions
- Can never know exactly the predictive uncertainty
- Not acknowledging uncertainty is a more serious error than assigning an incorrect value to uncertainty
 - It is better to argue over an unknowable value than be criticized for ignoring a known problem

For V 2.0

Multiple model

- Define 'calibrated'
- Numerous model runs are made during development and calibration process
 - Keep all models that fit 'calibrated' criterion
- Choose one as the favorite
- Others help describe uncertainty

Multiple model



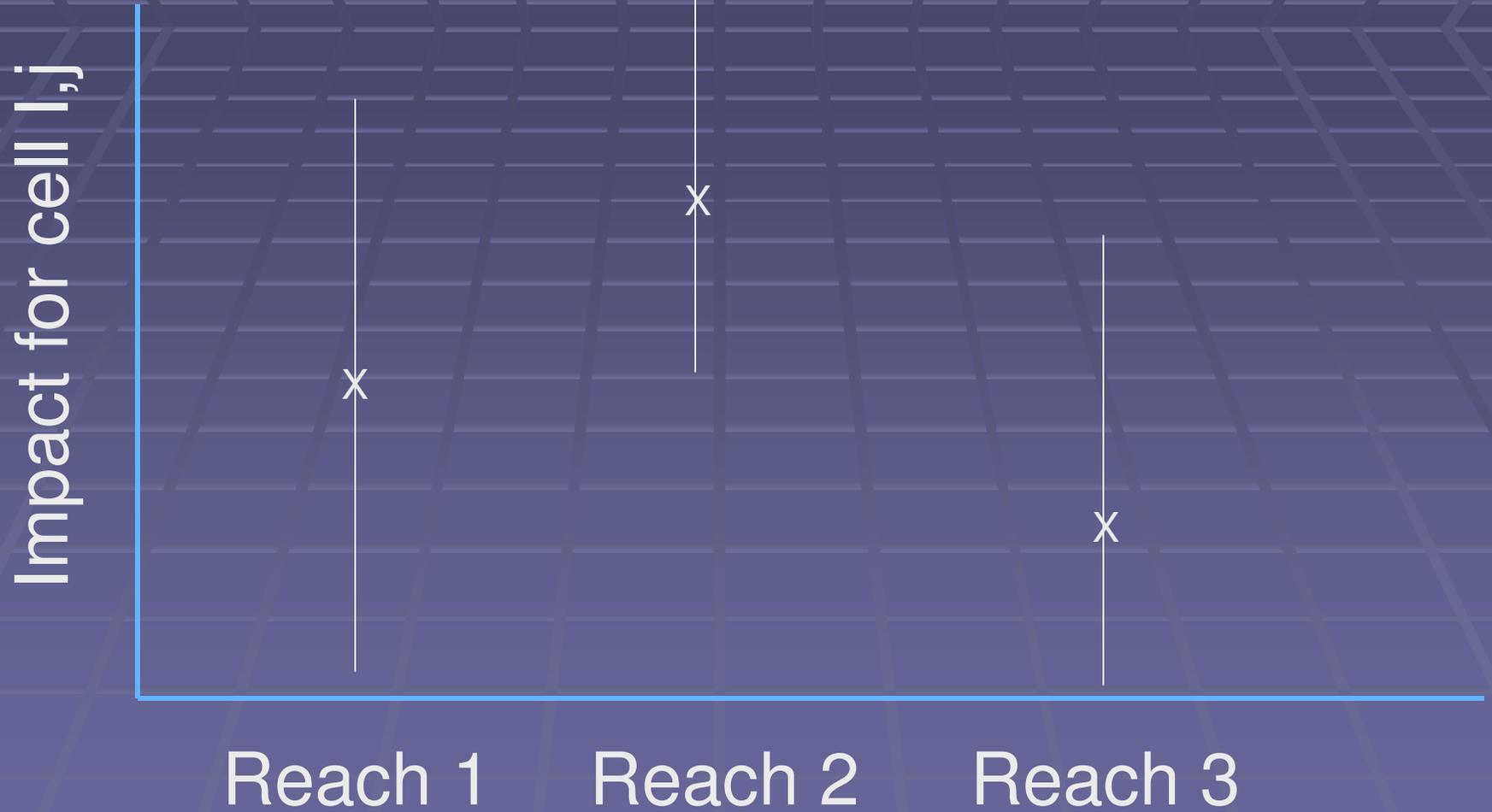
Multiple model

- Advantages
 - Can test impact of different paradigms
 - While we may not find consensus on a favorite model, we all should be able to have a favorite in the mix.
- Disadvantages
 - Probably will not define extremes of distribution
 - File management issues

Bend but don't break

- Define 'calibrated'
- Find favorite model
- Stretch it as far as possible while keeping it calibrated
 - Recalibrate the model while also asking it to change prediction
 - cells in region Y increase impact by 200 cfs on reach X
 - Recalibrate it again
 - Cells in region Y decrease impact by 200 cfs on reach X
- Identifies the extremes the model can achieve while staying calibrated

Bend but don't break



Bend but don't break

- Advantages
 - Better at defining extremes (for a given paradigm)
 - Fewer file management issues
- Disadvantages
 - Does not allow testing of different paradigms
 - Likely not all will agree on favorite model
 - More after calibration work

End