A possible solution:

Generalized Likelihood Uncertainty Estimation (GLUE)

- assess the likelihood of different models + parameters being good predictors of the system of interest
- reject (give zero likelihood) those models that are clearly not good predictors of calibration data
- Can be done with different model structures as well as different parameter sets

What to do about Equifinality

- Keep all parameter sets that are acceptable
  - –acceptable: above some threshold of performance
  - –always run the model for those parameter sets and use range of model output to define uncertainty bound
- –if you need a single model estimate:
  - combine results from all acceptable parameters
    - » average
    - » weight by performance