

General considerations on the use of information and modeling in planning and decision making

Revised for Napa GSPAC 2021

Robert Twiss, Emeritus Professor of Environmental Planning, UC Berkeley
Member US EPA Chartered Science Advisory Board

Caricatures developed for discussion with EPA Administrator, Mike Leavitt, Salt Lake City, May 27, 2004

How do we develop conclusions and move toward consensus?

More discussion?

More research?

More data?

Better use of existing information?

Reliance on experts; peer review

Reconciliation of dueling interpretations?

Use modeling for assistance

Match the scale of action to the degree of certainty

Every planning effort needs to consider its own strategies.

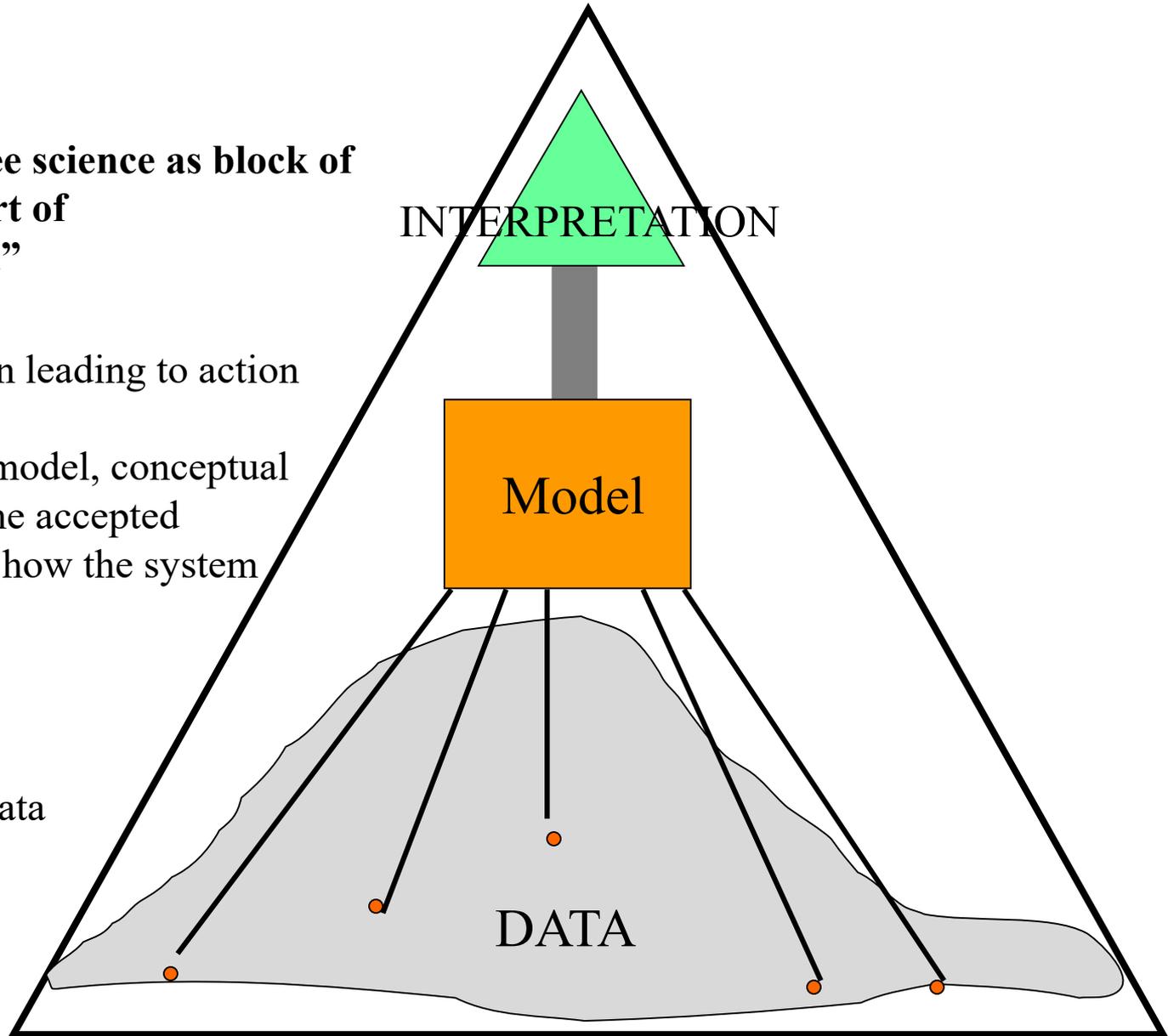
Many seem to see science as block of knowledge, a sort of “Great Pyramid”

One interpretation leading to action

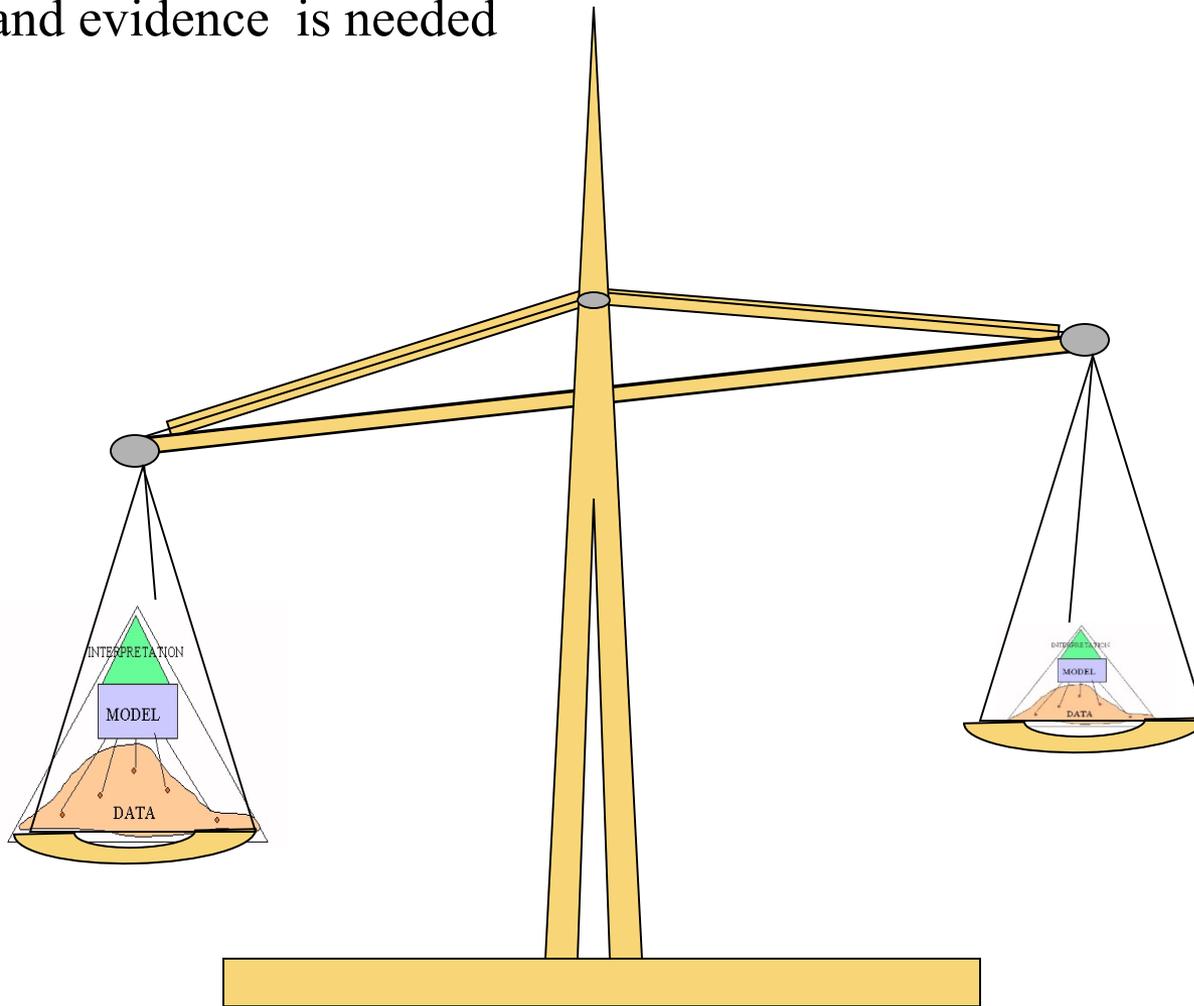
Based upon one model, conceptual or quantitative; the accepted understanding of how the system works.

Good data

Good use of all data



When conclusions differ, more than a simple weighing of the “amount” of science and evidence is needed



Models vary

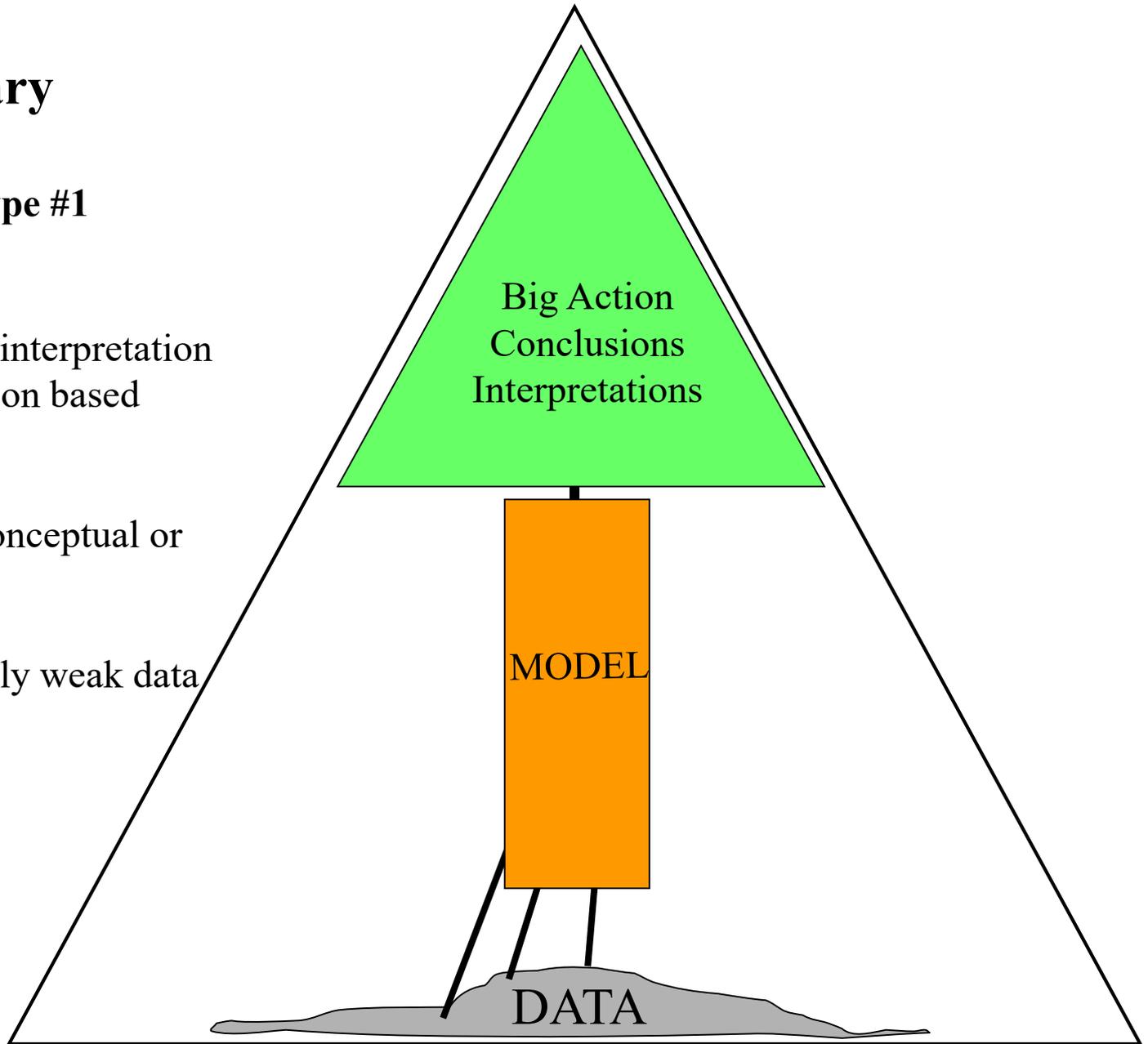
Caricature type #1

Tree house

A very strong interpretation and major action based upon:

One model, conceptual or quantitative

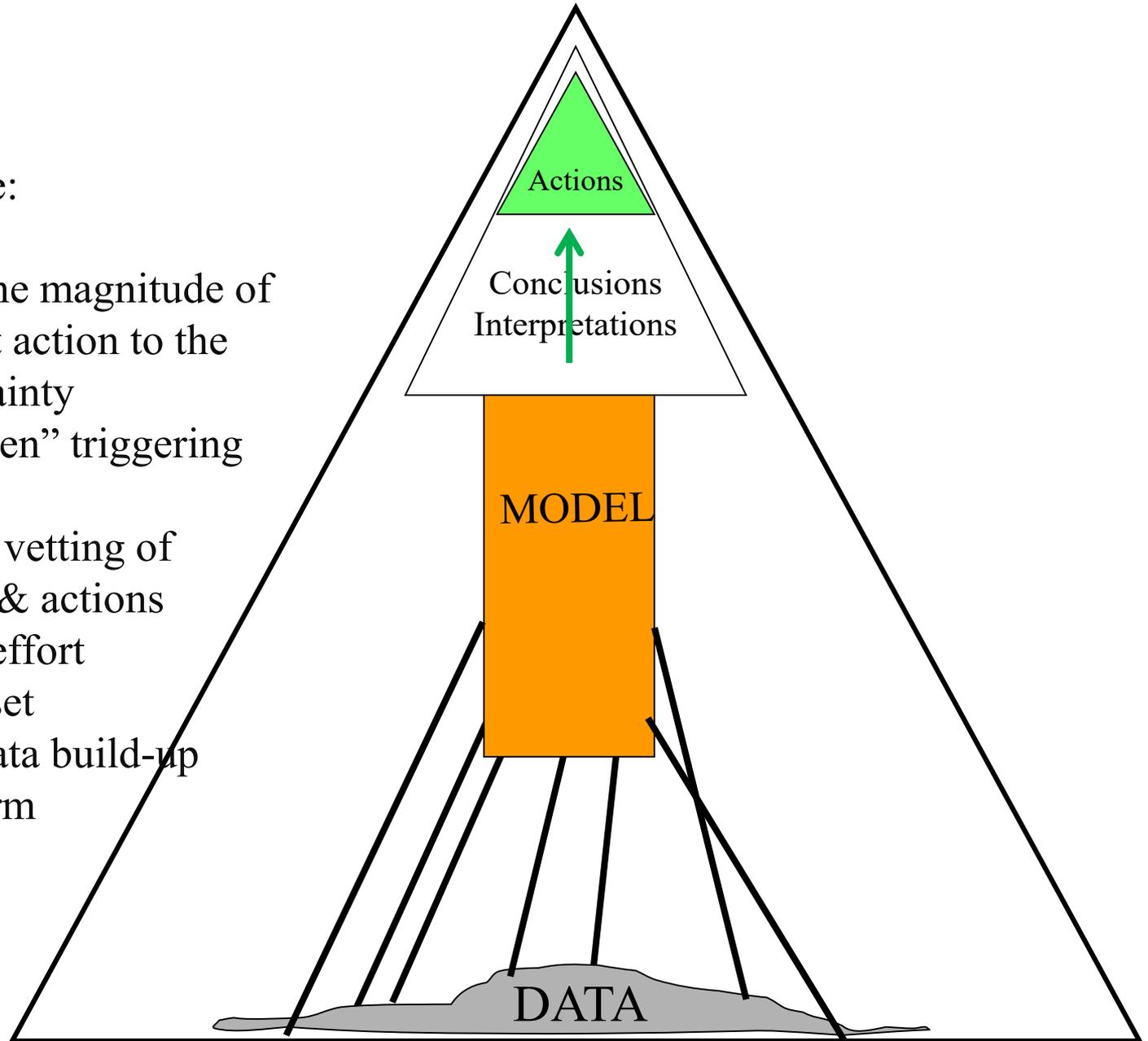
Some, but fairly weak data support



Tree House

Tools for use:

- Calibrate the magnitude of management action to the level of certainty
- Use “If .. then” triggering of actions
- Use expert vetting of conclusions & actions
- Firehouse effort
- Build dataset
- Invest in data build-up over long term



Caricature #2

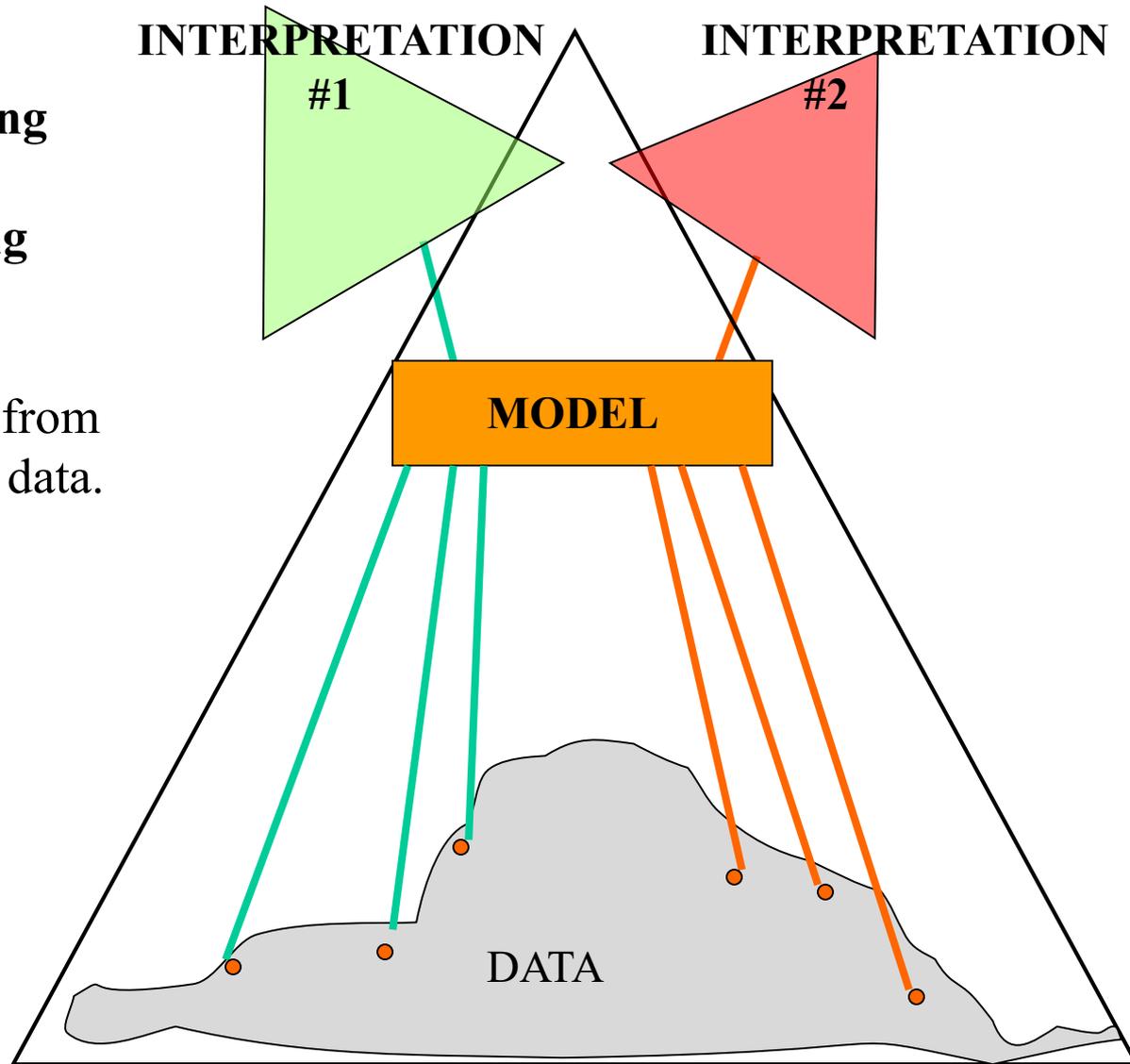
**Adversarial
decision making**

Cherry picking

Two strong
interpretations from
cherry-picking data.

Same model
(conceptual or
quantitative)

Same data set



As we now focus on the formal models supporting our Plan
let's keep in mind some of the steps we can take in their use:

For possible use by GSPAC in Tier 1

- Carefully **evaluate** the strength of our data, model characteristics, and their capacity to support our proposed management actions
- **Develop explicit conceptual models** for all key PMAs
- Continue **transparent discussion** by staff, members, stakeholders and experts
- Consider **more formal use of experts** to confirm and support conclusions (individuals or a small panel)
- Consider a **workshop** (like our Work Group but more structured)
- Consider **Truncated EIS** + & - of proposed actions (partially in use)
- Coordination with, and **borrowing** from other groups (IRWM, DCP

Tier 2

- **Pilot studies** with adaptive management
& monitoring designed explicitly for adaptive management
- Continued monitoring and information acquisition
- **Model refinement**

End

