RECLAMATION

Managing Water in the West

Reclamation Workshop to Review Current Operations Practices

Focus on Communicating Risk, Uncertainty and Incorporating Climate Information

Denver Federal Center

Lakewood, CO

June 16-17, 2009

U.S. Department of the Interior
Bureau of Reclamation

Day 2

- Defining, Expressing, Evaluating risk and uncertainty
- Communicating risk and uncertainty
- Identifying Gaps

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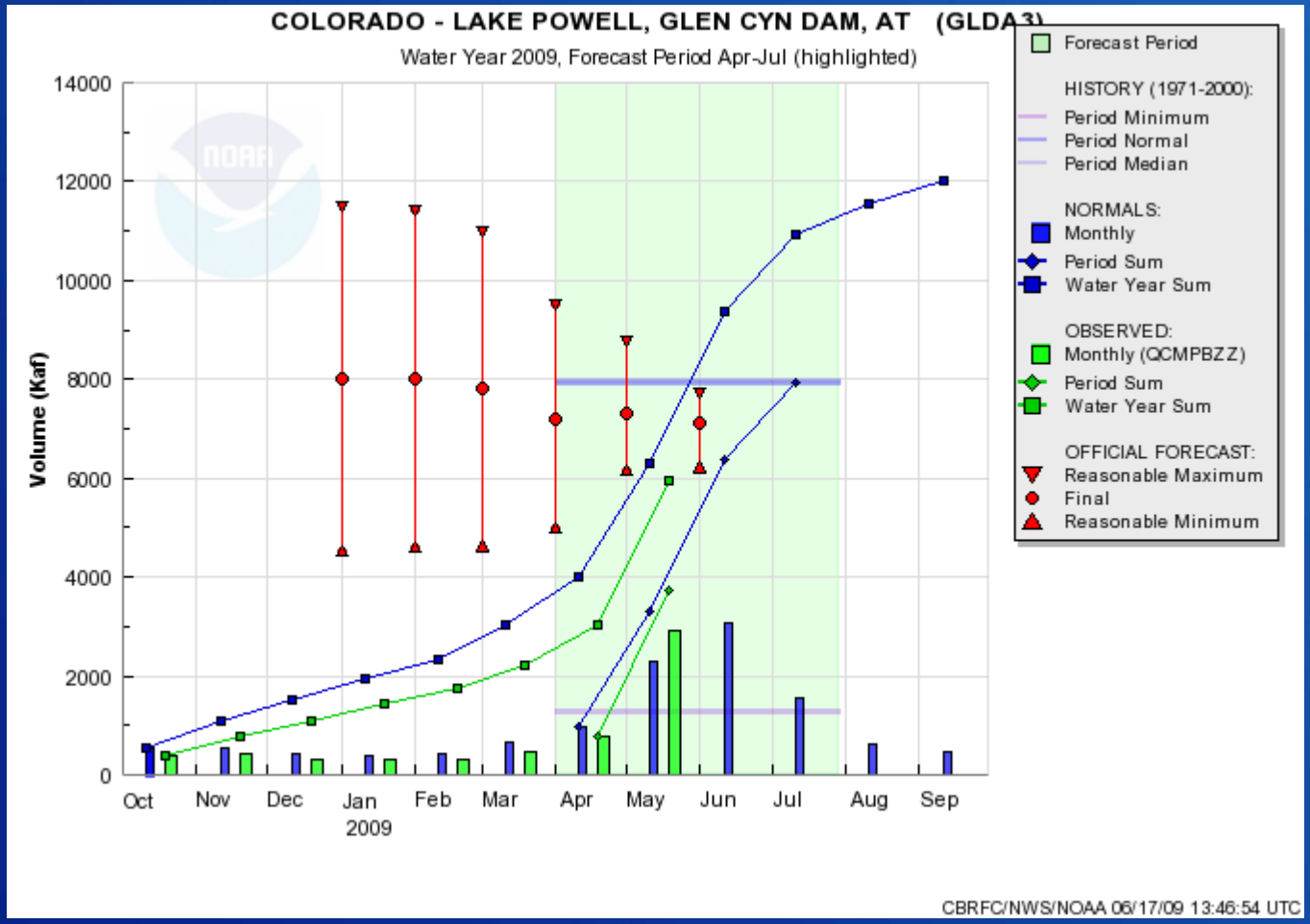
Defining, Expressing, Evaluating

- Define types of Uncertainty
  - Common types
- Which types can we best quantify and evaluate?
- Regret function and “bet hedging”

Communicating Uncertainty

- Within Reclamation / COE
- With managers and stakeholders
- Best practices for communicating R & U?
- Ways to communicate
  - Visual figures (boxplots)
  - “Backpocket” handout that describes R & U (simply)
  - Continual disucssion with stakeholders

Forecast Plot



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SAP 5.2

- Best Practice Approaches for Characterizing, Communicating and Incorporating Scientific Uncertainty in Climate Decision Making
  - U.S. Climate Change Science Program
    - Does what we are doing make sense?
    - Are there other important factors that are equally or more important than the factors we are considering?
    - Are there key correlation structures in the problems that are being ignored?
    - Are there normative assumptions and judgements about which we are not being explicit?
    - Is information about the uncertainties related to research results and potential policies being communicated clearly and consistently?

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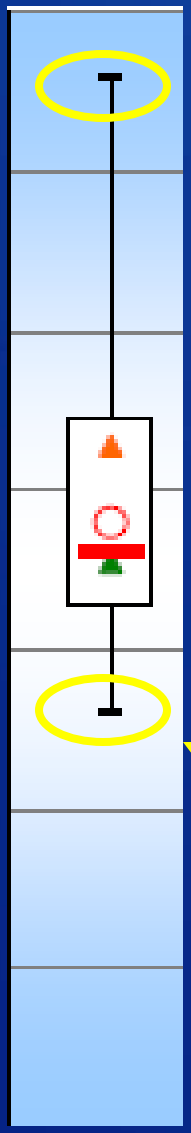
Box Plots



Indicates the maximum value over the observed record

Indicates the minimum value over the observed record

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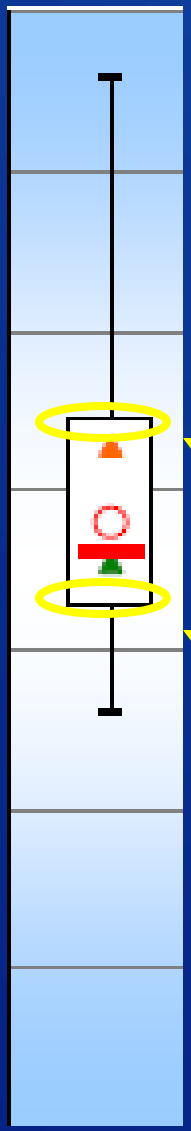
Box Plots



Indicates the 75th percentile

Indicates the 25th percentile

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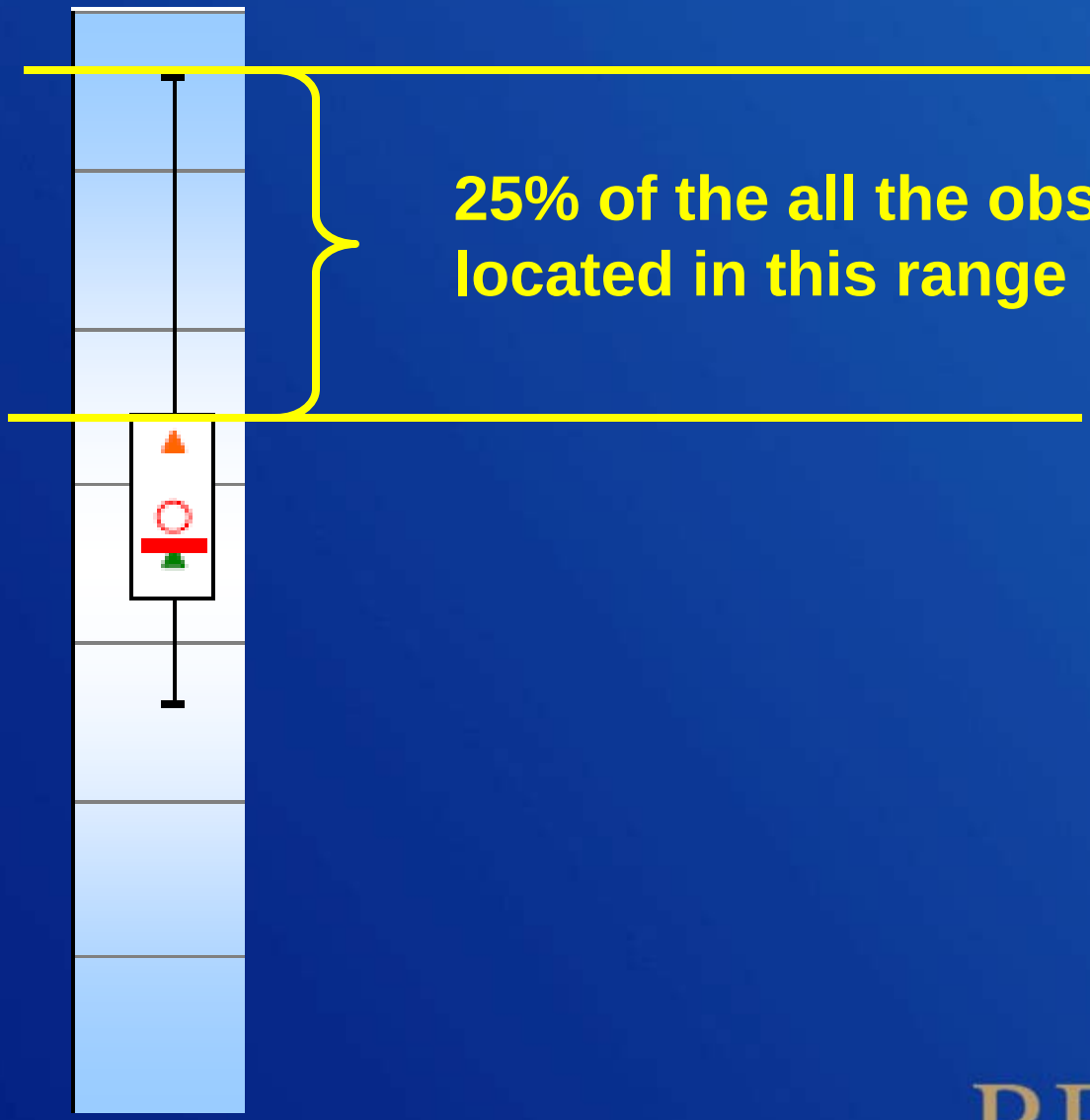
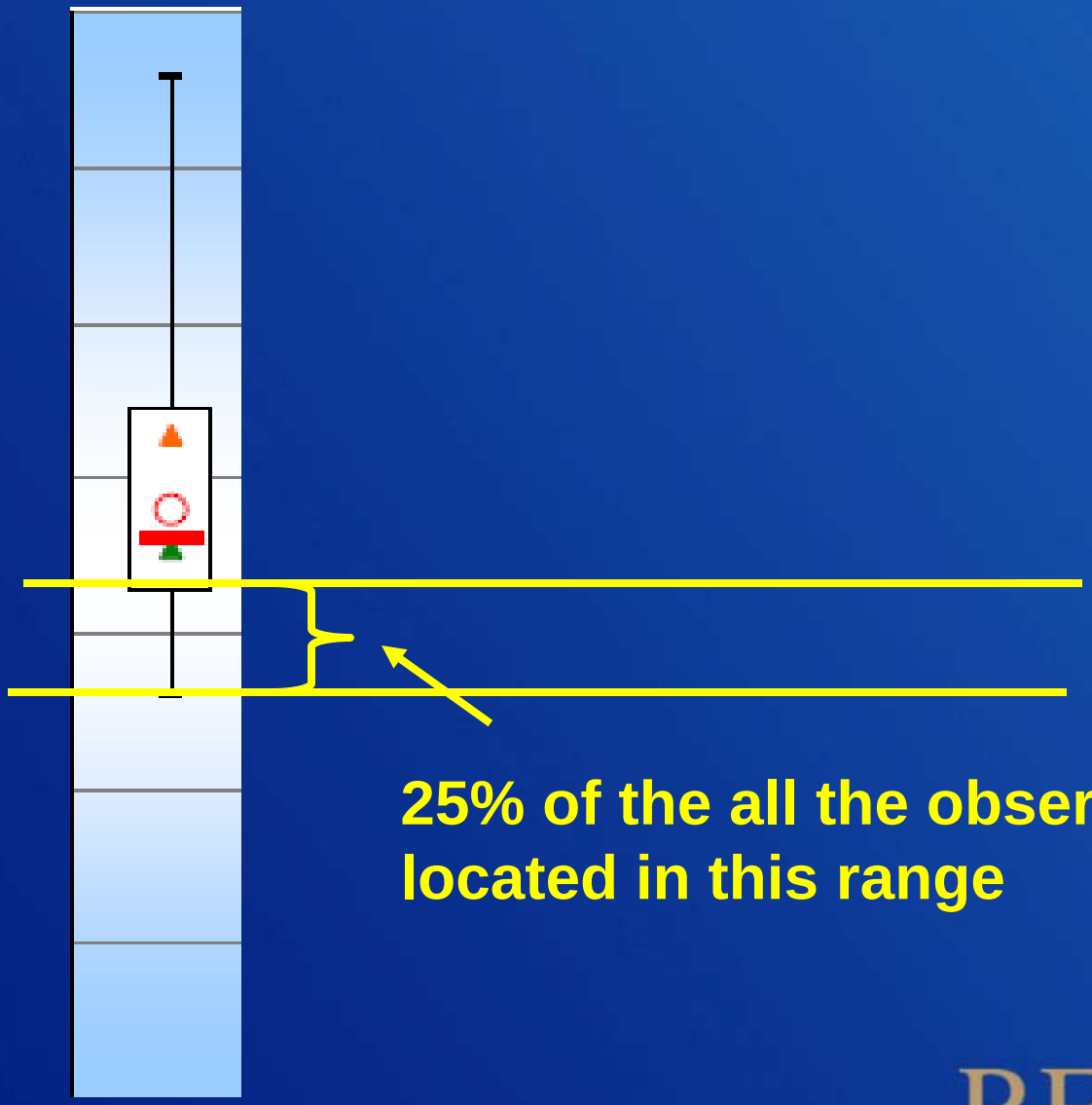
Box Plots



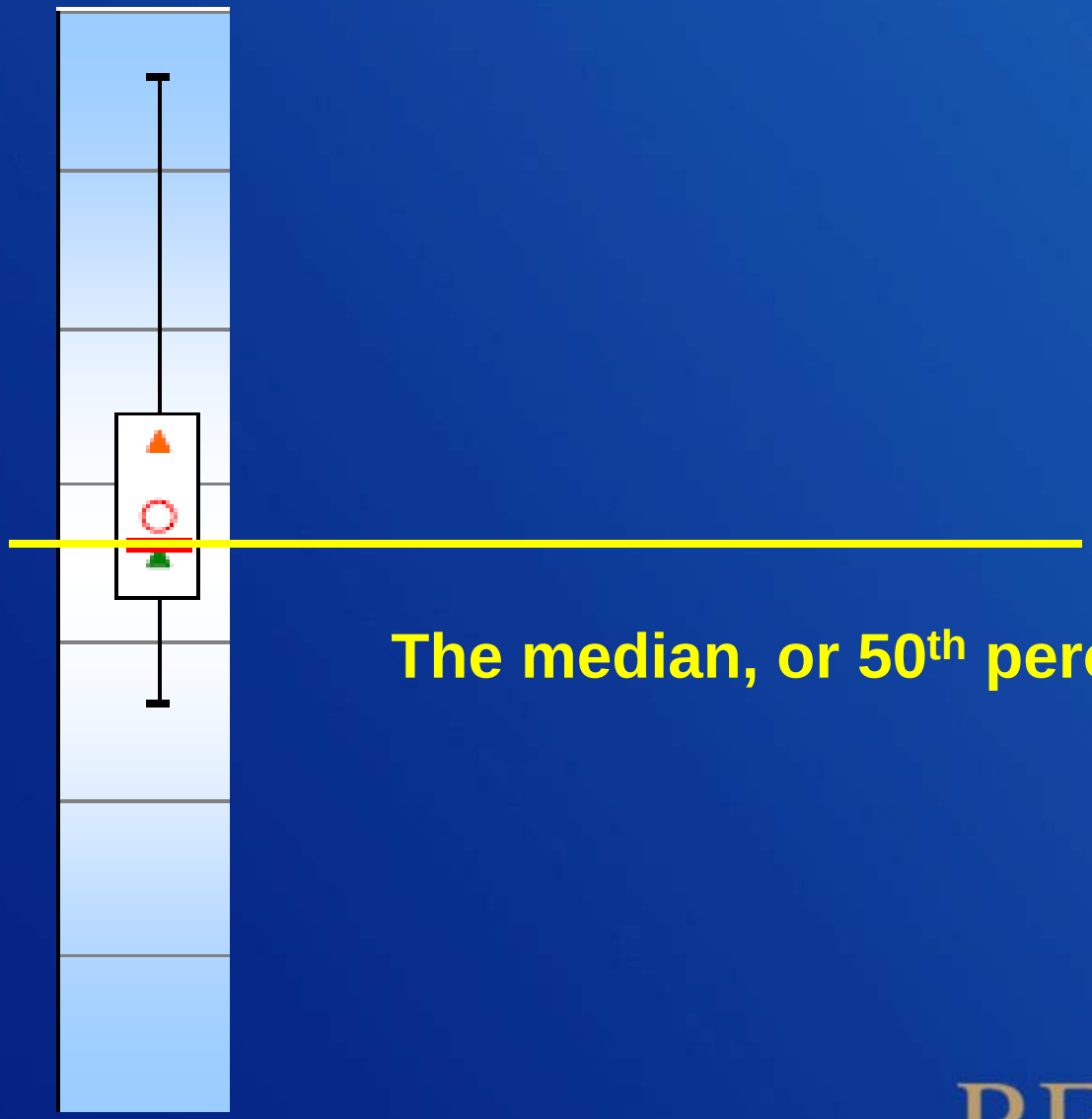
25% of the all the observed values are located in this range

Box Plots



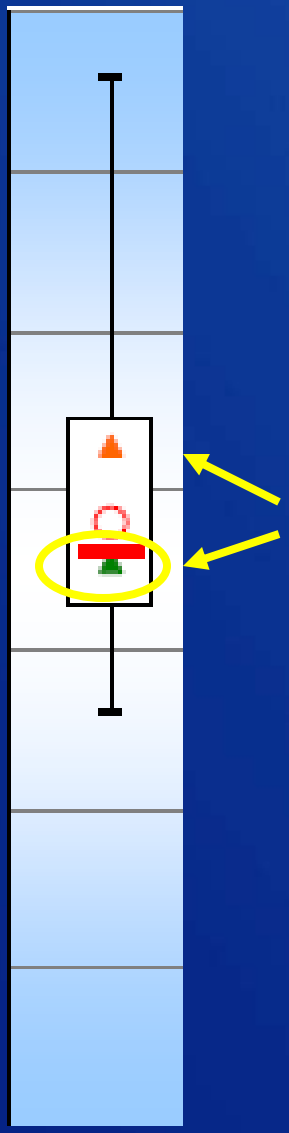
25% of the all the observed values are located in this range

Box Plots



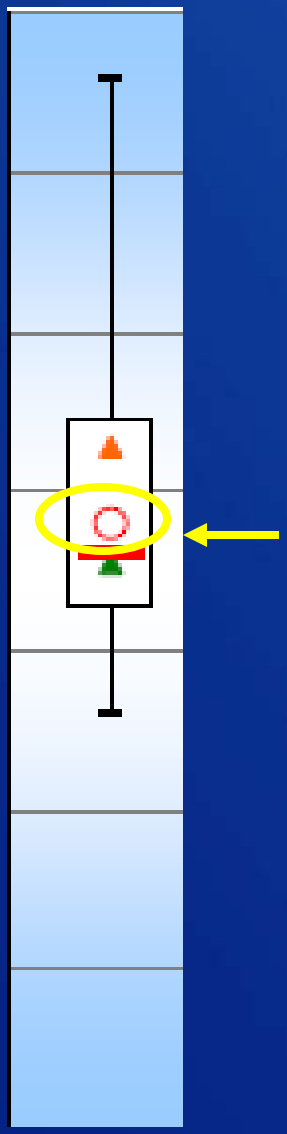
The median, or 50th percentile value

Box Plots



Triangles are particular observations within the dataset we would like to draw attention to

Box Plots



The red circle is a target value that we would like to draw your attention to and is not necessarily part of the observed record

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Identify Gaps

- Common gaps
  - E.g., which forecast should we use?
- Existing efforts we should explore
  - E.g., utilization of ESP
- What would help you evaluate risk and uncertainty and convey that to decision makers and stakeholders?