The Climate Change Conundrum: A Water Resource Management Perspective

The Big Q…

How much water do we have?
Area of Interest: Main Hawaiian Islands (except Niihau)

Spatial Scale: Hydrologic Units
Determination of Ground Water Availability

\[ R = RF - DRO - ET \]

Simplified recharge calculation where:
- \( R \) = Recharge
- \( RF \) = Rainfall
- \( DRO \) = Direct runoff
- \( ET \) = Evapotranspiration

"Sustainable yield" means the **maximum rate** at which water may be withdrawn from a water source without impairing the utility or quality of the water source as determined by the commission.
Determination of Surface Water Availability

"Instream flow standard" means a quantity or flow of water or depth of water which is required to be present at a specific location in a stream system at certain specified times of the year to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses.
**Time Scale: Long-term**

- Ground Water Management Area designations
- Water allocation duration
- Provisions to deal with short-term fluctuations
The Bigger Q…

How much water do we have?

will

Water Resource Management Issues

Data Needs: Precipitation, air temperature (ET, vegetation cover, demand)

Timescale of the long term average: Present to…?
  20-year planning horizon? infrastructure life cycle? 50 years? 7 generations?

Accuracy: Need a specific rate/number, not identification of trends or a range

Uncertainty: Be conservative & apply adaptive management