Building Resilience to a Changing Climate:

A Technical Training in Water Sector Utility Decision Support

WUCA
Water Utility Climate Alliance
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Key Takeaways from Day 1

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Day 1 Key Takeaways: Climate Science

- Temperatures are rising – the climate is changing
- We expect more warming in the future
  - Timing and magnitude are uncertain
- We can **project** potential changes in climate, but can't **predict** them
- There are many sources of uncertainty including uncertainty about future emissions and exactly how the climate will change
- We expect some sources of uncertainty to remain

Day 1 Key Takeaways: Climate Science

- Climate models are the best source of information on future climate
  - They have important limitations
  - Their outputs are projections, not predictions
  - New models aren’t necessarily better and require extensive vetting and assessment before use

Day 1 Key Takeaways: Downscaling and Hydrologic Models

- Downscaling provides **local-scale insight** into the range and possibilities projected by GCMs
- There is a continuum of downscaling approaches that span tradeoffs between computational efficiency and methodological complexity
- Some change signals are more certain than others
- Some uncertainty is unavoidable
  - Representation of uncertainties is hard but necessary
  - Uncertainties have always been there; just understanding them now
  - Previous studies may be over-confident

Day 1 Key Takeaways: Downscaling and Hydrologic Models

- Research underway to develop ways to select representative set of scenarios useful for water resources planning
- It is critical to understand important processes and uncertainties in **your** system
- Models are tools that can be useful, if used appropriately. **Be a savvy consumer**
- Consult local experts and national resources (e.g., OSU, UW, NCAR https://ncar.github.io/dos_and_donts)

Day 1 Key Takeaways: Hydrologic Models

- Hydrologic modeling can help understand local water resources.
- Some change signals are more certain than others.
- Some uncertainty is unavoidable.
  - Representation of uncertainties is hard but necessary.
  - Uncertainties have always been there; just understanding them now.
  - Previous climate impact studies possibly over-confident.
- Approaches being developed to select representative set of scenarios useful for water resources planning.
- It is critical to understand important processes and uncertainties involved in **your** system.

Day 1 Key Takeaways: Planning

- The challenge of anticipating climate change is making decisions in light of uncertainty
  - *That is the challenge of anticipating **any** future change*
- Uncertainty approaches are better suited to identify and assess options for anticipation of climate change
  - Adaptive management, risk management
  - No regrets, low regrets
  - Incremental, modular (scalable), diversification
- Decision support can help in analyzing options
  - Traditional approaches (e.g., BCA) can still be useful
- Other factors besides climate are also changing and can be relevant.

Reflections on the Day?