Key Takeaways from Day 1

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Reflections on the Day?
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 not go away
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
Day 1 Key Takeaways: Downscaling

• Downscaling provides local-scale insight into the range and possibilities projected by GCMs.

• Impacts models need fine-scale and high-temporal resolution climate inputs (e.g., precipitation, temperature, winds, radiation, moisture).

• Often, downscaling provides bias correction of global climate models (though this can lead to misleading outcomes if the GCM is biased in both its mean climate and its anomalies, e.g., jet stream position).
Day 1 Key Takeaways: Downscaling

• In some cases, downscaling may provide precision that can be mistaken for accuracy.
• For the historical period, “truth” is not perfectly known, making it difficult to evaluate the quality of downscaled products.
• For these reasons, downscaling products can rarely be used “off the shelf.” Expertise is required to evaluate them for the application at hand.
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: Climate Information Dos & Don’ts

- It is important to evaluate climate risk.
- Models can be helpful tools, if used appropriately.
- Uncertainty is everyone’s responsibility.
- Tools and guidelines for navigating climate information are available and will continue to evolve.
- Coming soon from NCAR: https://github.com/NCAR/dos_and_donts
Day 1 Key Takeaways: Planning

• The challenge of anticipating climate change is making decisions in light of uncertainty.
  – Note: 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
  – Traditional approaches can still be useful

• Decision support can help in analyzing options.

• Other factors besides climate are also changing and can be relevant.
Day 1 Wrap-Up

• Please complete your Day 1 feedback form
• Coffee available tomorrow starting at 8:00 am
• Please be seated and ready to go by 8:30 am