# Near-term (annual to decadal) forecasts of water availability

Details of the Working Group proposal

IAHS

# What is near-term (decadal) climate prediction (NTCP)?

- Provide probabilities whether temperature or rainfall are below, on, or above average in the upcoming decade
- Operational NTCP are now produced, bridging the gap between seasonal forecasts and climate projections (O'Kane et al., 2023)
- Decade is a policy-relevant and tangible time-scale in water management

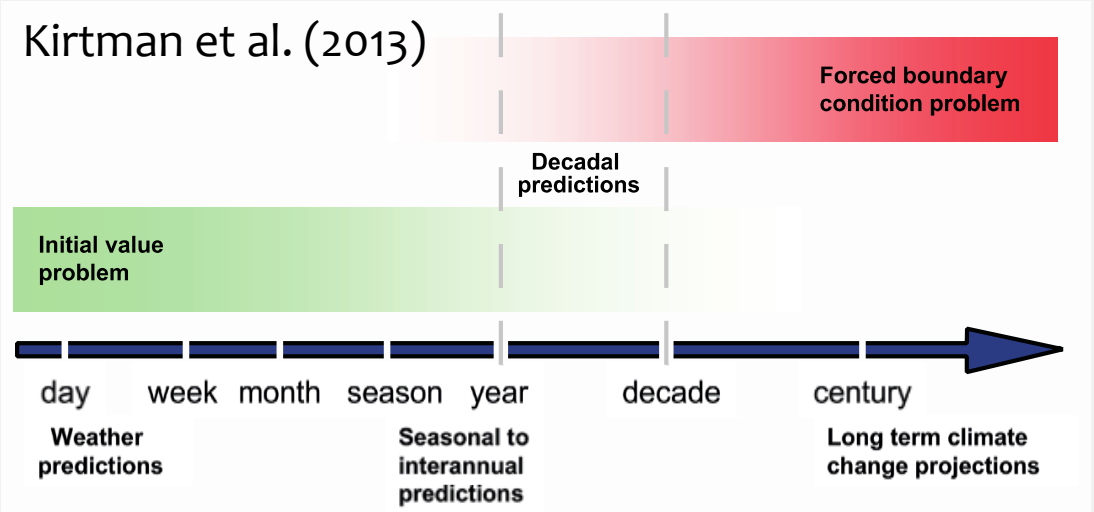


*Figure 1: NTCP and how they relate to initial and boundary condition in climate modelling.*

Germany: Total
Probability of the Categories Dry/Normal/Wet
in Comparison to the Climate Characteristics for 1991-2020

| Time Period | Category Normal | Dry | Normal | Wet |
|---|---|---|---|---|
| 2023 | 729 - 806 l/m² | 73% | 14% | 14% |
| 2023-2027 | 776 - 800 l/m² | 96% | 2% | 2% |

*Figure 2: Example NTCP (source: dwd.de).*


Kirtman, B. et al. (2013). Near-term climate change: projections and predictability. IPCC Climate Change 2013: The Physical Science Basis. Geneva.
O'Kane, T. J. et al. (2023). Recent applications and potential of near-term (interannual to decadal) climate predictions. Front. Clim.

# What type of research is needed to better exploit NTCP for holistic solutions for water security?

- Analyze skill in retrospective forecasts for hydrology (water management)
  - Apply CMIP6 decadal re-forecasts in hydrological modelling
  - Discuss results together with stakeholders to jointly develop operational decadal forecasts of water availability

- Objectives:
  - **Short-term:** make this type of predictions more known
  - **Long-term:** sound knowledge on the utility of this data in the community
  - **Ultimate:** provide scientific basis to guide practitioners


*"Additionally, climate models enable climate predictions on* ***multi-annual to decadal timescales,*** *which* ***improves our knowledge*** *of hazards and how multi-hazard* ***early warning systems may need to evolve in the future.***"

# ThankYou


Kristian Förster

+49 8161 71-6208

kristian.foerster@hswt.de

https://www.hswt.de/


**Possible connections to other proposals:**

- THEME 1: Droughts in Mountain Regions
- THEME 2: Droughts in the Anthropocene, Enhancing the resilience of the Water – Energy – Food Nexus
- THEME 3: Outreach, Communication and Science Interfaces