Decadal prediction seeks to predict the time-varying trajectory of climate over the next 5-30 years.

Decadal prediction skill arises from: i) initialization, and ii) forcing due to increased greenhouse gases and climate change commitment.

Physical mechanisms connecting local extremes and the larger scale, more slowly varying, and crucially predictable, components of the climate system suggest an untapped source of decadal predictability of local high-impact weather.

Example: Annual average Atlantic Multi-Decadal Oscillation is significant (p = 0.024) as a covariate to predict maximum summer precipitation at Carlsbad, New Mexico.

Advance warning of shifts across thresholds of vulnerable systems could allow for mitigation of future costs and maximize potential benefits.

A major project outcome will be a generalized integrated and interdisciplinary framework that integrates information needs with the provision of skillful predictive information.

This will transform how scientists from multiple disciplines and practitioners conceptualize decadal climate prediction.