

NATIONAL CLIMATE ASSESSMENT REGIONAL TECHNICAL INPUT REPORT SERIES

ASSESSMENT OF CLIMATE CHANGE IN THE SOUTHWEST UNITED STATES

A Report Prepared for the National Climate Assessment

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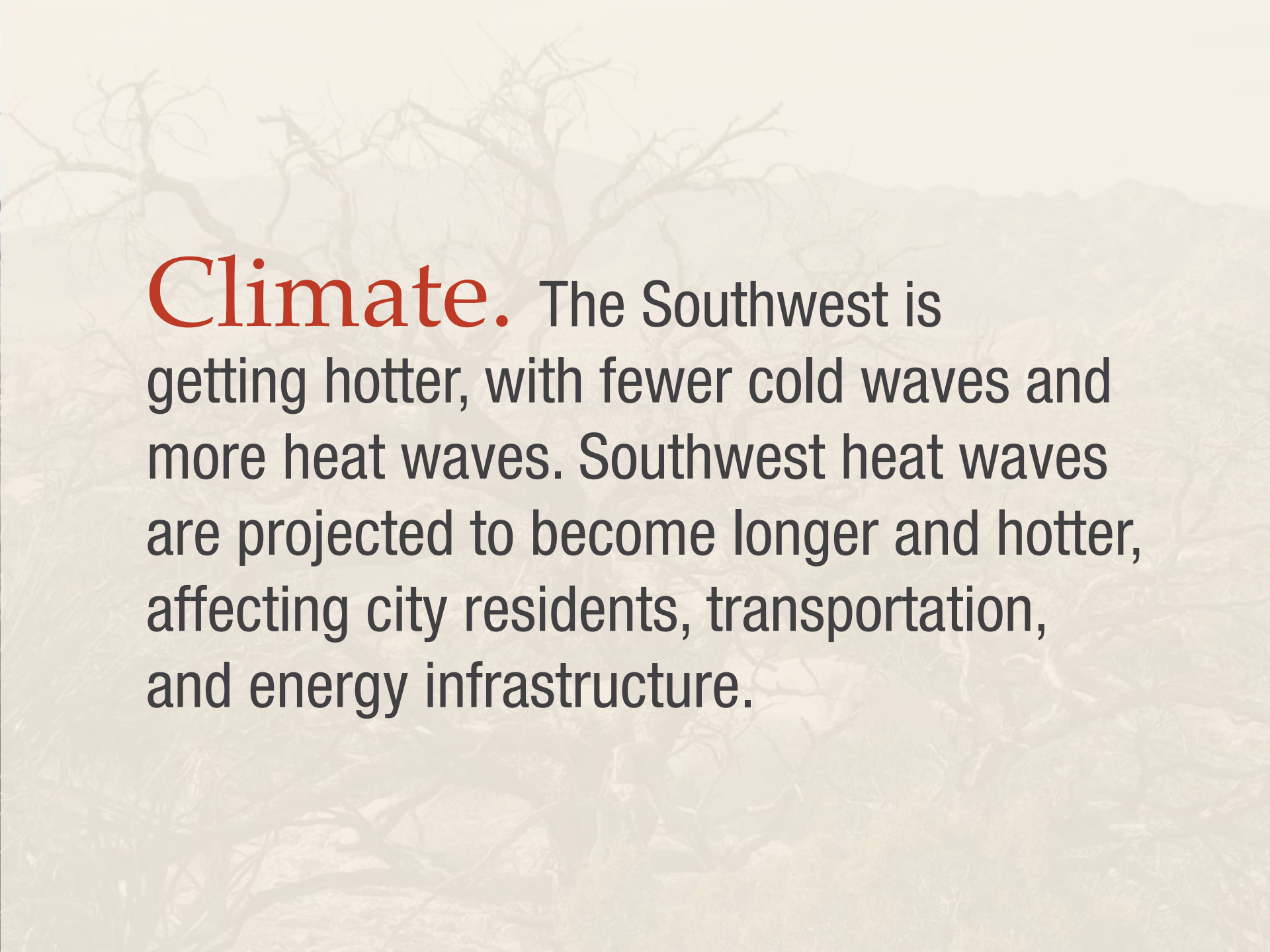
Sarah LeRoy



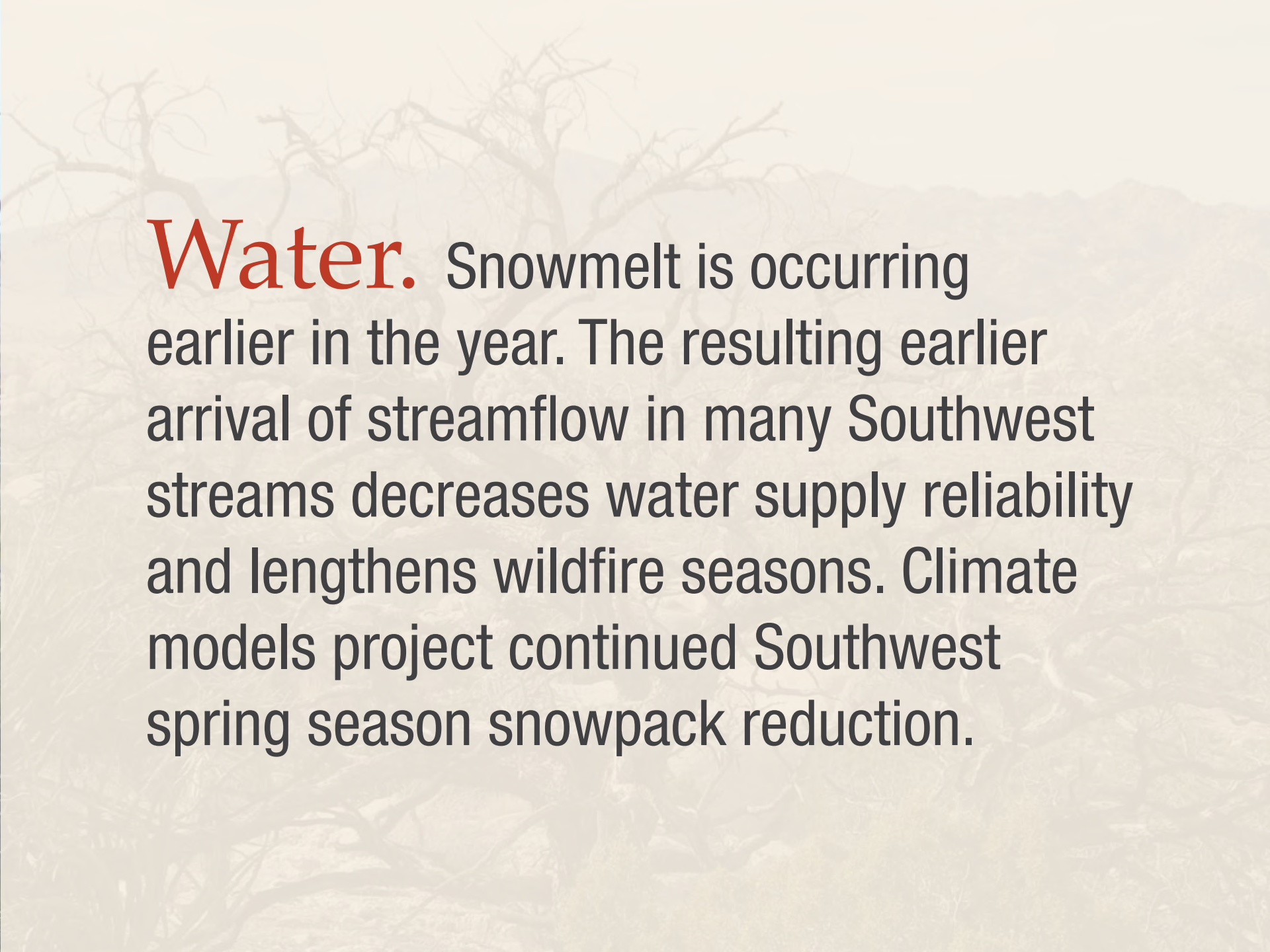
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Key Findings

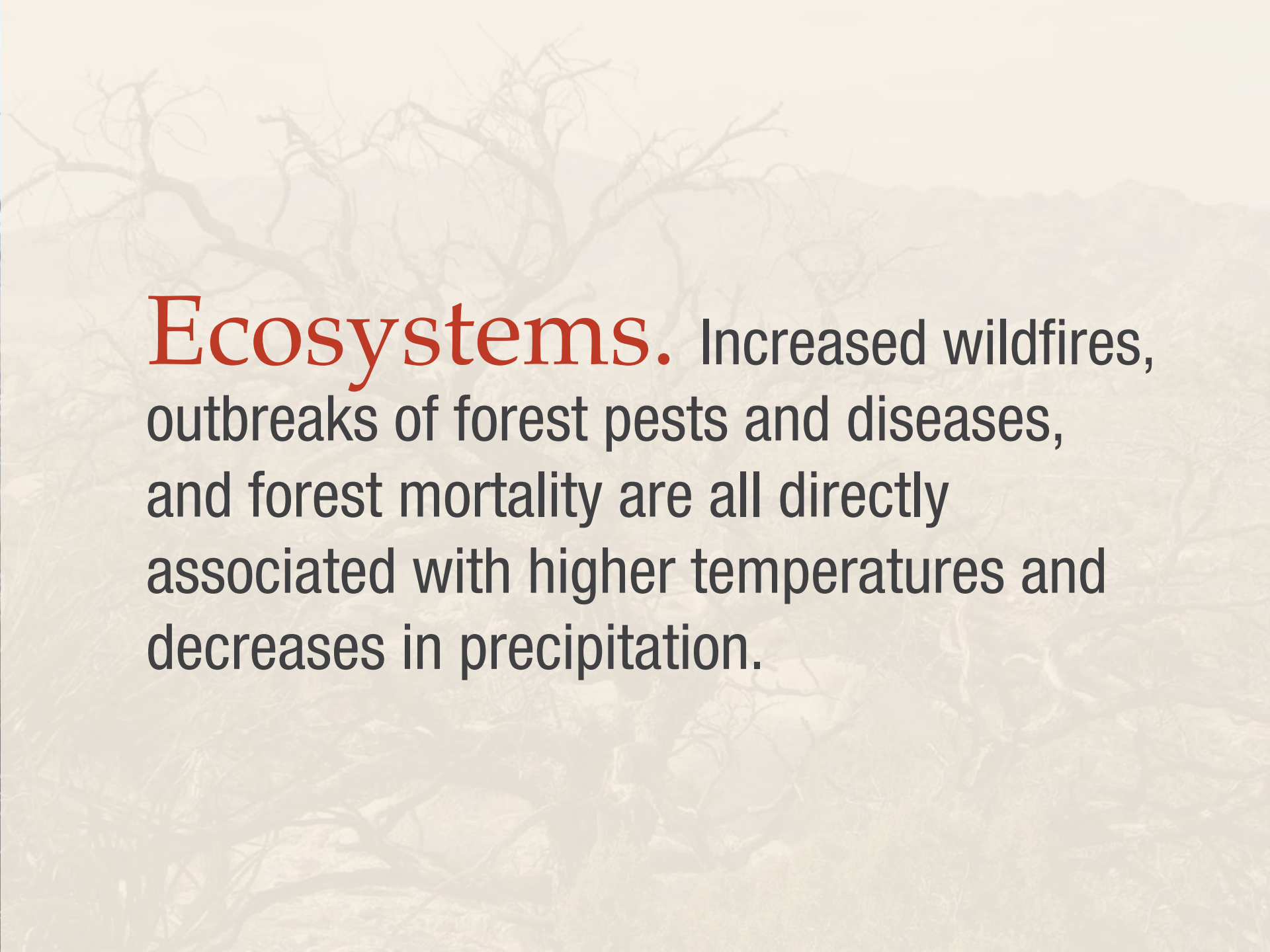
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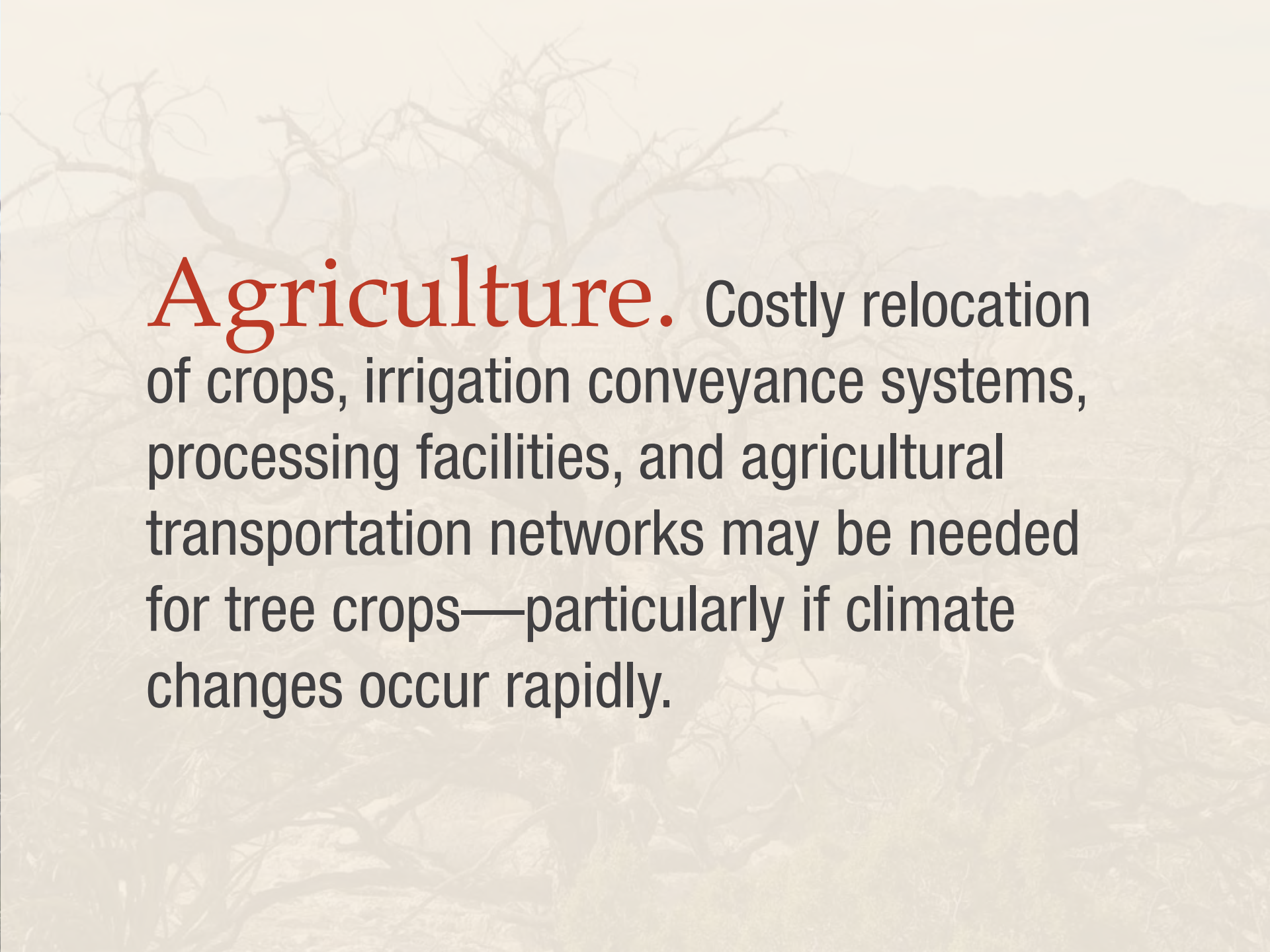
Climate. The Southwest is getting hotter, with fewer cold waves and more heat waves. Southwest heat waves are projected to become longer and hotter, affecting city residents, transportation, and energy infrastructure.



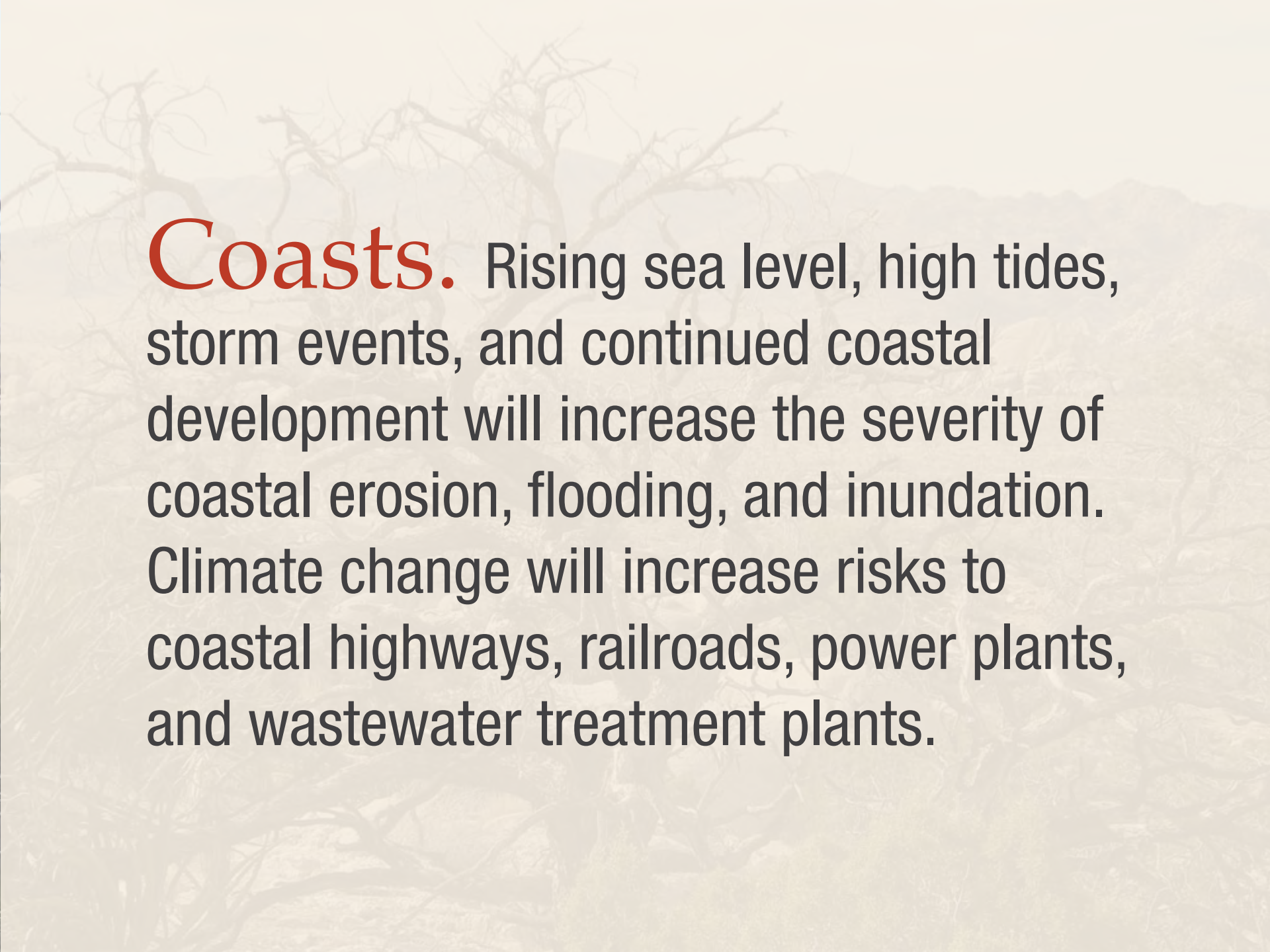
Water. Snowmelt is occurring earlier in the year. The resulting earlier arrival of streamflow in many Southwest streams decreases water supply reliability and lengthens wildfire seasons. Climate models project continued Southwest spring season snowpack reduction.



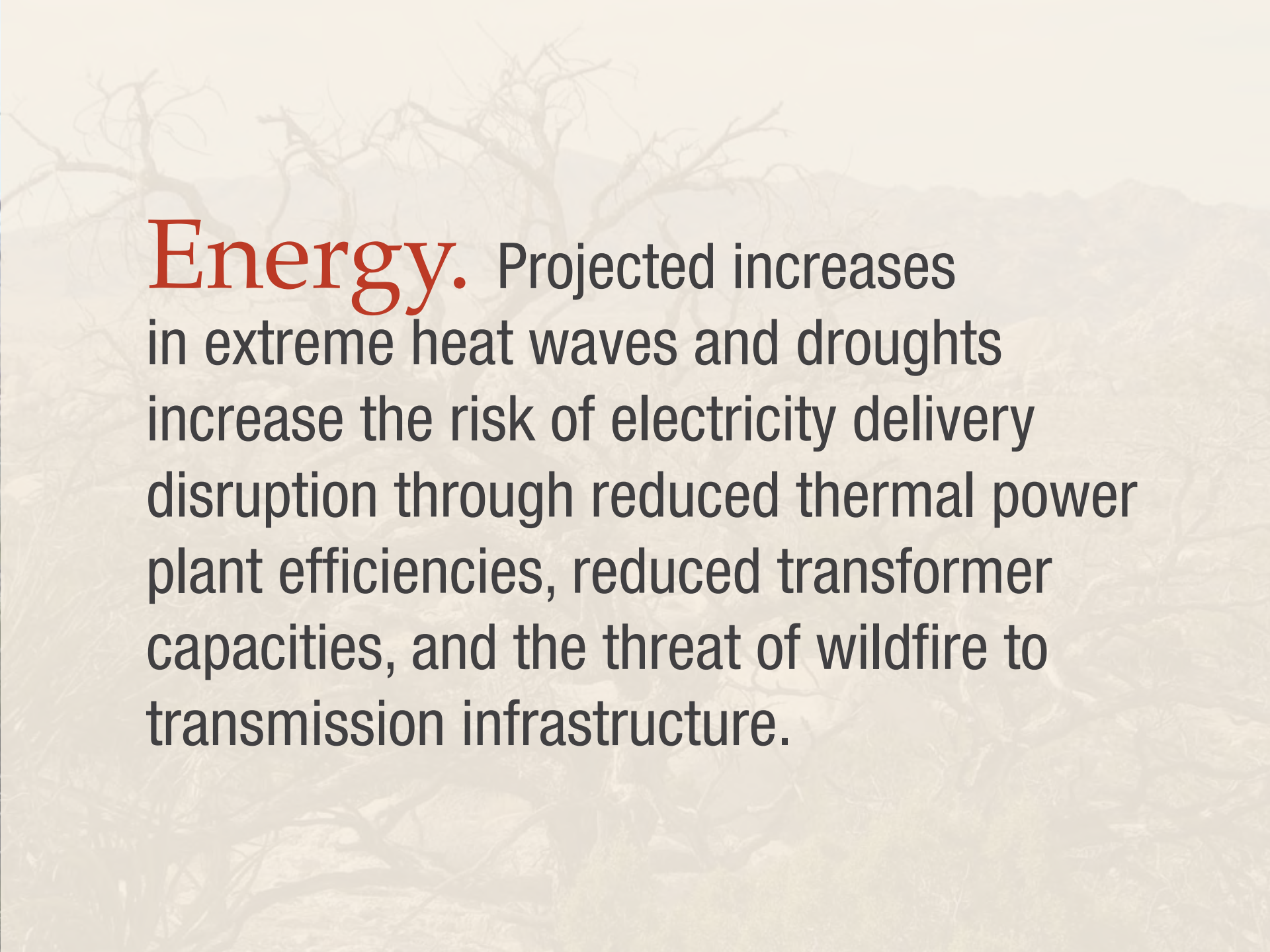
Ecosystems. Increased wildfires, outbreaks of forest pests and diseases, and forest mortality are all directly associated with higher temperatures and decreases in precipitation.



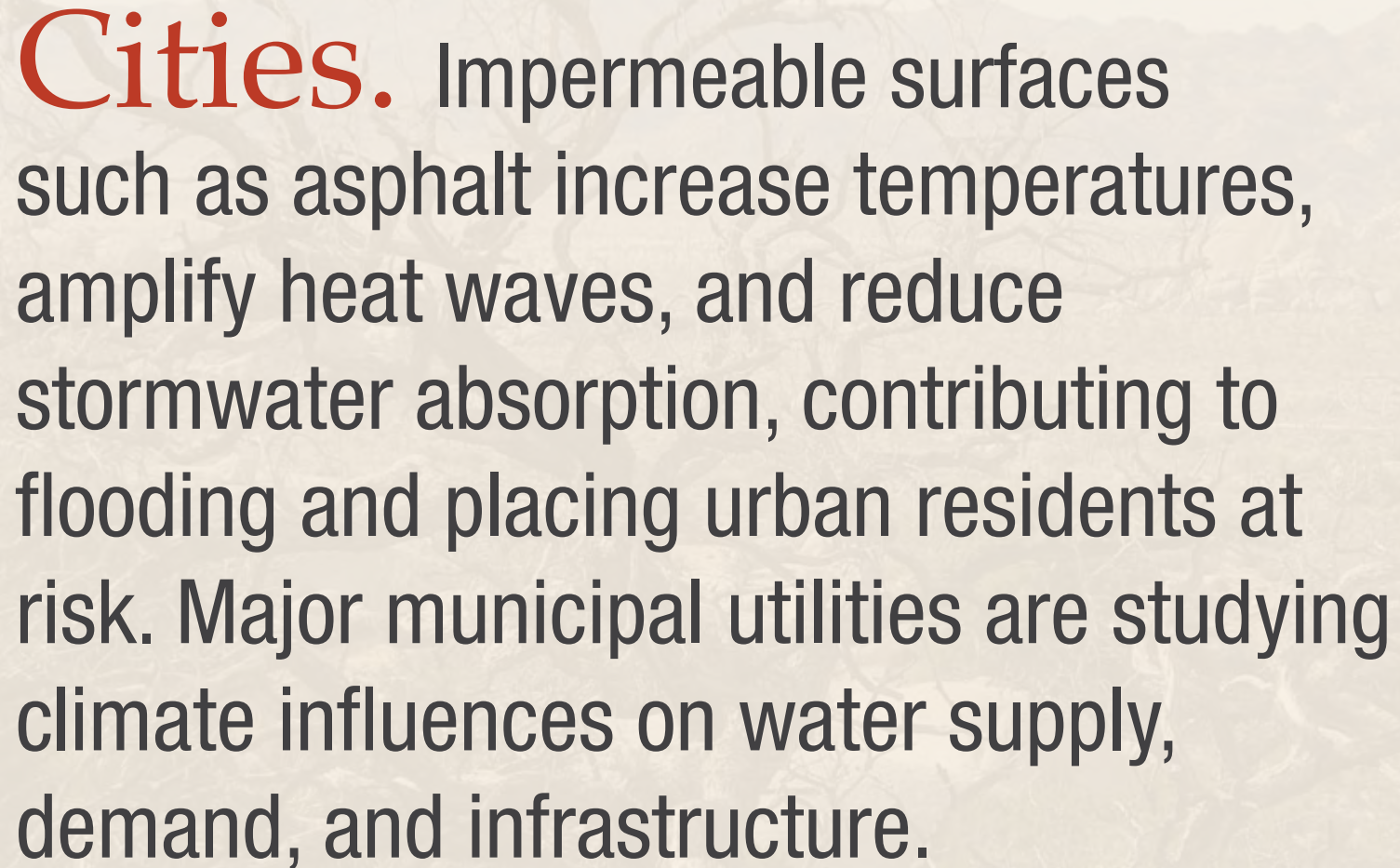
Agriculture. Costly relocation of crops, irrigation conveyance systems, processing facilities, and agricultural transportation networks may be needed for tree crops—particularly if climate changes occur rapidly.



Coasts. Rising sea level, high tides, storm events, and continued coastal development will increase the severity of coastal erosion, flooding, and inundation. Climate change will increase risks to coastal highways, railroads, power plants, and wastewater treatment plants.



Energy. Projected increases in extreme heat waves and droughts increase the risk of electricity delivery disruption through reduced thermal power plant efficiencies, reduced transformer capacities, and the threat of wildfire to transmission infrastructure.



Cities. Impermeable surfaces such as asphalt increase temperatures, amplify heat waves, and reduce stormwater absorption, contributing to flooding and placing urban residents at risk. Major municipal utilities are studying climate influences on water supply, demand, and infrastructure.

Human Health.

Disadvantaged populations, including the elderly, infirm, and others with limited resources or access to medical care, will be more severely impacted by increased heat waves, wildfire smoke, air pollution, and mosquito-borne diseases.

Border and Tribes.

The populations of the U.S.-Mexico border region and many Native Nations are more vulnerable to climate disruptions due to unresolved water rights, a history of socioeconomic and political marginalization, and cultural differences.

Meeting the Challenge.

Historically, the Southwest has shown great capacity to respond to environmental stress and steward its natural resources.

There are many regional revenue-generating opportunities for reducing emissions through energy efficiency and the development of renewable energy.

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The editors extend special acknowledgment to the many experts who presented research, discussed findings, and authored or reviewed sections of the full report.



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