Southwest

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Key Message 28.1

Drought and Increasing Aridity Threaten Water Resources

Climate change has reduced surface water and groundwater availability for people and nature in the Southwest (*very high confidence*), and there are inequities in how these impacts are experienced (*high confidence*). Higher temperatures have intensified drought and will lead to a more arid future (*very likely, high confidence*); without adaptation, these changes will exacerbate existing water supply–demand imbalances (*likely, high confidence*). At the same time, the region is experiencing more intense precipitation events, including atmospheric rivers, which contribute to increased flooding (*high confidence*). Flexible and adaptive approaches to water management have the potential to mitigate the impacts of these changes on people, the environment, and the economy (*medium confidence*).

Key Message 28.2

Adaptation Efforts Increase to Address Accelerating Impacts to the Region's Coast and Ocean

Large-scale marine heatwaves and harmful algal blooms have caused profound and cascading impacts on marine coastal ecosystems and economies (*high confidence*). Without implementation of adaptation or emissions-reductions measures, human-caused warming will drive more frequent and longer marine heatwaves (*very likely, very high confidence*), amplifying negative coastal effects (*medium confidence*). Sea level rise, along with associated impacts such as flooding and saltwater intrusion, will have severe and disproportionate effects on infrastructure, communities, and natural resources (*likely, very high confidence*). The California State Government has applied climate science to planning and decision-making for sea level rise, and multiple regions are moving toward climate-informed and adaptive strategies for fisheries (*high confidence*). However, climate planning and adaptation solutions for aquaculture are less clear (*high confidence*).

Key Message 28.3

Increasing Challenges Confront Food and Fiber Production in the Southwest

Continuing drought and water scarcity will make it more difficult to raise food and fiber in the Southwest without major shifts to new strategies and technologies (*high confidence*). Extreme heat events will increase animal stress and reduce crop quality and yield, thereby resulting in widespread economic impacts (*likely, high confidence*). Because people in the Southwest have adapted to drought impacts for millennia, incorporating Indigenous Knowledge with technological innovation can offer solutions to protect food security and sovereignty (*medium confidence*).

Key Message 28.4

Climate Change Compromises Human Health and Reshapes Demographics

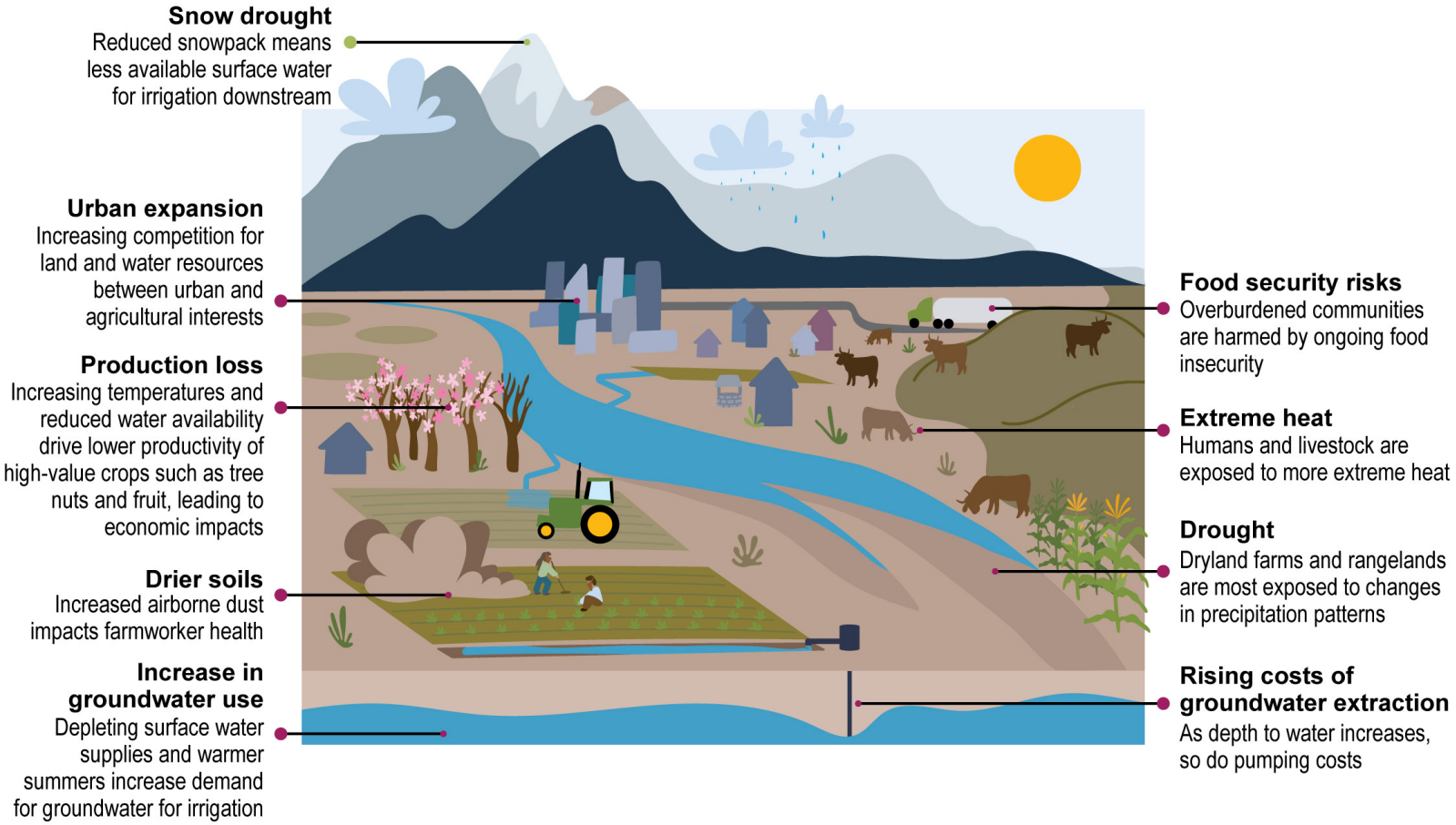
Increases in extreme heat, drought, flooding, and wildfire activity are negatively impacting the physical health of Southwest residents (*high confidence*). Climate change is also shaping the demographics of the region by spurring the migration of people from Central America to the Southwest (*medium confidence*). Individuals particularly vulnerable to increasing climate change impacts include older adults, outdoor workers, and people with low income (*high confidence*). Local, state, and federal adaptation initiatives are working to respond to these impacts (*high confidence*).

Key Message 28.5

Changes in Wildfire Patterns Pose Challenges for Southwest Residents and Ecosystems

In recent years, the Southwest has experienced unprecedented wildfire events, driven in part by climate change (*high confidence*). Fires in the region have become larger and more severe (*high confidence*). High-severity wildfires are expected to continue in coming years, placing the people, economies, ecosystems, and water resources of the region at considerable risk (*very likely, high confidence*). Opportunities for adaptation include pre- and postfire actions that reduce wildfire risk and facilitate ecosystem restoration and include traditional land stewardship practices (*high confidence*) and the application of Indigenous cultural fire (*medium confidence*).

Agriculture and Climate Change in the Southwest US



Monitoring indicators of climate impacts on agriculture can improve understanding and help with adaptation efforts.

Figure 28.6. Climate change impacts to the Southwest's agriculture include longer growing seasons, a northward shift in plant hardiness zones, expanded areas of heat stress, and higher rates of evapotranspiration, increasing demand for fresh water for irrigation. Monitoring the indicators helps us understand how impacts are experienced and how to adapt to risks. Figure credit: New Mexico State University and Utah State University. See figure metadata for additional contributors.

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