The North Coast region is notable for its extensive natural ecosystems, abundance of water, and rural character. In some ways, these characteristics make the region less vulnerable to climate change impacts than other parts of California. Higher annual precipitation and lower human water demands mean less social disruption during drought. Cooler overall temperatures limit public health risks associated with heat waves. The rugged and largely undeveloped coast line offers greater opportunity to accommodate sea-level rise than coastal regions to the south. In other ways, however, climate change represents a significant threat. Many of region’s native plants and animals, including endangered plant, wildlife, and fish species, are dependent on the cool, wet conditions that characterize coastal forests and river corridors. As the climate warms and precipitation patterns change, these important habitats may shift or disappear from the landscape. The distributed, rural population faces growing threats from natural disasters – including wildfire, flooding, and landslides – that put property, critical infrastructure, and life at risk. The region’s low population and limited economic base make it difficult to secure funding for needed disaster preparedness and response systems and for infrastructure investments needed to reduce climate change vulnerabilities. Nevertheless, novel community-based efforts, involving partnerships between state and federal agencies, local and regional governments, tribes, and NGOs, are implementing a variety of adaptive measures to improve the resilience of the region’s ecosystems and communities to climate change.

This report summarizes major climate change risks for communities and natural resources in the North Coast region of California, encompassing Mendocino, Humboldt, Del Norte, Lake, Trinity and Siskiyou Counties. The synthesis report identifies several key climate change effects for the region, including:

- Average annual maximum temperatures are likely to increase by 5-9 °F throughout the region through the end of the 21st century. Interior regions will experience the greatest degree of warming.

- Annual precipitation is not expected to change significantly, but will likely be delivered in more intense storms and within a shorter wet season. As a result, the region is expected to experience prolonged dry seasons and reduced soil moisture conditions, even if annual precipitation stays the same or moderately
increases. Less precipitation will fall as snow and total snowpack will be a small fraction of its historical average.

- There is a higher likelihood of extreme wet years and extreme dry years (drought). An “average” rainfall year will become less common.

- A rise in extreme precipitation events will increase the frequency and extent of flooding in low-lying areas, particularly along the coast where flood risk will be enhanced with rising sea levels.

- Streamflows in the dry season are expected to decline and peak flows in the winter are likely to increase.

- Sea-level rise projections differ along the coast, but are greatest for the Humboldt Bay region and Eel River delta, threatening communities, prime agricultural land, critical infrastructure, and wildlife habitat. Wildfires will continue to be a major disturbance in the region. Future wildfire projections suggest a longer fire season, an increase in wildfire frequency, and an expansion of the area susceptible to fire.

These changes will have significant consequences for natural ecosystems, working landscapes, and the built environment. These include:

- Habitat loss for sensitive plant and wildlife species, including cold-water fish species such as salmon.

- Change in vegetation types, including forests.

- Reduced productivity of rangeland and pastureland.

- Increased flood and landslide risks to critical infrastructure, including major transportation corridors, water supply systems, wastewater treatment plants, and energy and communication networks.

- Increased public health risks from wildfire, floods, heat waves, and disease vectors. These risks are greatest for vulnerable populations along the coast and in remote inland communities.

A few of the recommended climate adaptation options include:

- Protection of climate refugia and migration corridors for wildlife and freshwater species.

- Habitat preservation and restoration, particularly in river, riparian and wetland systems that support high species diversity and cold-water species.

- Fire management, including fuel load reduction by harvest in forests and prescribed fire in forest, woodland, and rangeland systems.
• Short- and long-term planning and investment in transportation, water, and energy infrastructure system resilience, particularly in coastal zone.

• Investment in emergency planning and response systems.

Expanding opportunities for stakeholder participation in planning processes and development decisions is critical for raising awareness of climate risks, building a common understanding of vulnerabilities, and allowing local perceptions and preferences to guide adaptation strategies. Overall, strengthening of community-based research and partnerships will help to advance understanding and to limit the impacts of climate change on North Coast communities, ecosystems, and livelihoods.

ACCESS

For access to the full report, please email Research@sgc.ca.gov

DISCLAIMER

This report summarizes recent climate research, including work sponsored by the California Natural Resources Agency and California Energy Commission. The information presented here does not necessarily represent the views of the coordinating agencies of the State of California.