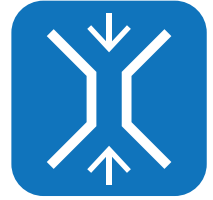




CLIMATE CHANGE: COMBINING FORCES



THE CHALLENGE

While residents, farmers, and business owners may not have observed dramatic increases in flooding events throughout the Skagit Valley in recent years, scientists see a very different picture that includes a “behind the scenes” look at the changes in flood risk. Climate change is expected to increase the size and frequency of floods in the Skagit watershed due to multiple compounding forces such as shrinking glaciers and rising sea levels.

INCREASING FLOOD RISK

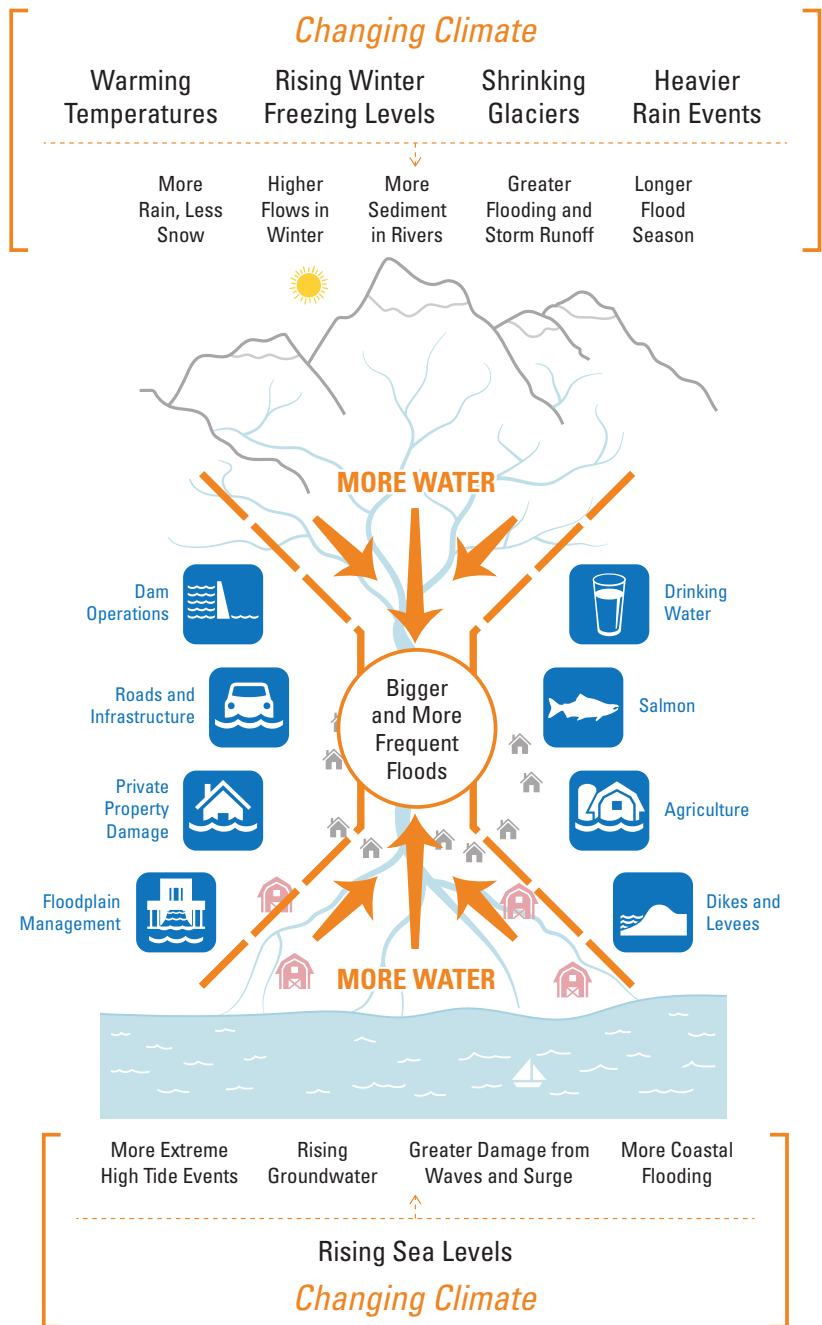
Because of its landscape and geology, the Skagit River is prone to flood even without climate change. The upper watershed covers a huge area of steep slopes and many small streams. Rain and snowmelt flow down the mountains and foothills into three major river branches: the Sauk, Cascade, and Baker Rivers. These branches come together in a narrow and confined valley between Rockport and Concrete, a distance of only eight miles. Much like sand through a two-way hourglass, river flows from the upper watershed and tidal flows coming upstream from the bay meet near Mt. Vernon, resulting in flood events. Despite the dikes and levees on the system, water currently backs up into the broad delta during high tides.

As air temperatures rise, glaciers will continue to melt and shrink and winter freezing levels will rise. As a result of these changes, more precipitation will fall as rain and less as snow, floods will occur throughout the year, and storm events will occur more frequently bringing more rain. All of these forces will loosen more sediment, fill in rivers and tributary streams, and reduce the capacity of the channelized system to carry flood waters.

At the bottom of the hourglass, sea levels will also rise at the same time river flood levels are increasing. Rising sea levels will push groundwater levels closer to the surface, and result in more frequent high tides and greater inland surges of water during severe storms.

The combined forces of more water from the Cascade mountains and the rising Skagit Bay will affect habitat for salmon throughout the watershed. It will also increase risks to dam operations and the pressure on existing levees that currently protect farmland, private property, and roads and other infrastructure.

Why Skagit Flood Risk is Increasing





Town of Hamilton Flood, 2003

SC² AS A PROVEN RESOURCE

SC² conducts research to identify where communities are vulnerable to increased flood risk. We ask questions about local conditions so we can provide relevant information for decision-makers.

SC² has worked with managers who operate the Seattle City Light dams, local drainage district and levee managers, the U.S. Army Corps of Engineers, and local tribes to convey findings and solicit input. We integrate information from others to better understand changes in snow elevation, shifts in glaciers, air temperature data, sediment, sea level rise, and water depths (i.e., bathymetry), all of which contribute to a more rigorous understanding of the risk factors affecting local flooding.

LOOKING FORWARD TO MORE SOLUTIONS, MORE ACTION

SC² works to reach decision-makers and concerned communities with the best available information about current and future flood risks. SC² shares information in a variety of ways, including a video to help people visualize the extent and depth of potential flooding in the basin. We have also produced an interactive map that will allow people to zoom into specific locations and see the extent of historical floods, floods in the year 2040, and floods in the year 2080. This is a tool that local communities can use to stimulate conversation about their own risk tolerance. The information will also alert agricultural and local communities to the increasing flood risks and invite them to consider risk to things they care about and connect with others focused on reducing those risks.

SC² scientists see a high risk of flood damage for the Sauk-Suiattle and Swinomish Tribes and the rural communities of Hamilton, Lyman, Concrete, Burlington, and Mount Vernon. We are working to understand their concerns and provide clearer, more accessible information to support planning for flood mitigation approaches that also help the ecosystem.



The Skagit Climate Science Consortium (SC²)

SC² is a nonprofit 501c(3) organization consisting of scientists working with local people to assess, plan, and adapt to climate related impacts. Composed of research scientists from universities and federal, municipal, and tribal governments and agencies working in the Skagit basin, SC² members seek to understand how the landscape, plants, animals and people may be affected by changes in the patterns of rain, snow, temperature, storms and tides.

www.skagitclimatescience.org

Visit our website to learn more about who we are, what we do, and the various resources we can provide.

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