

Climate Change Projections for the SF Bay NWR Complex: Quick Summary

For more detailed information, please see [Climate and Hydrology Projections for the SF Bay NWR Complex](#)

- **Warming** will be accelerating over the coming decades, depending on GHG levels in the atmosphere. Spring and summer temps are expected to increase more rapidly than winter temps.
- **Extreme heat days** (over 92 degrees F) will become more frequent and hotter. By 2030 there are expected to be about twice as many each year (~30) as there are now, and up to 90 by the end of the century.
- **Precipitation** projections vary among models; future long-term trends are uncertain but an increase in variability and extremes is expected.
- There are likely to be more frequent and increasingly severe extremes of **drought** and **flooding** regardless of annual average precipitation.
- Overall **aridity** will increase, regardless of average precipitation trends.
- **Sea level** is rising and will rise more quickly in the coming decades, and there may be more frequent **El Niño** events with associated extreme high sea levels.
- There could be more frequent and stronger **storms**, and the combined effects of these with sea level rise are likely to increase **coastal flooding and damage**.
- **Fog** has been decreasing, and could continue to decrease, although there is low certainty about this projection. Decreases in fog will increase exposure to the warming and drying effects of climate change.
- **Tidal marsh habitat** is undergoing changes as they become inundated more frequently by tides.

- **Salinity** of estuaries, soils, and groundwater is likely to increase with sea level rise.
- There have been changes in **wind, upwelling, and ocean productivity** patterns with resulting effects on bird and marine populations observed in recent years. These relationships are complex and projections of future change are uncertain.
- **Phenology shifts** could cause a decoupling of food source availability and the timing of species life-cycle events that rely on them.
- **Ocean acidification** will affect the ability of many calcifying invertebrates to produce calcium carbonate shells and may affect other physiological processes that are pH-dependent.
- **Synergistic effects of climate change with other stressors**, such as the combination of increased temperatures, and changes in annual weather extremes and ocean chemistry, together with pollutants, invasive species, and other human impacts, are likely to have new types of impacts on ecosystems.