# CLIMATE QUICK REFERENCE GUIDE

# **Historic Changes**

#### **Temperature:**

From 1950 to 2020, temperatures (statewide) rose by about 2 °F. On Big Island, the average annual temperature increased by 3 °F from 1990 to 2018.

### **Rainfall:**

Rainfall can vary considerably from year to year, with long-term trends showing a decline in average annual rainfall, with the driest years occurring during a strong El Niño event.



Average Rainfall: Shown in water years from 1950-2020. Rainfall = blue solid line, 30-year average (1951-1980)= black horizontal line, and long-term linear trend= red dot-dash line. Source: www.hawaii.edu/climate-data-portal

# **Drought:**

From 1920 to 2020, drought duration and magnitude trends increased, with drought magnitude reaching its peak in the last decade.



**Drought Magnitude and Drought Duration:** Drought Duration = hatched bars, and Drought Magnitude = unhatched bars. Shown in Standardized Precipitation Index for a 12-month period (SPI-12) per decade from 1920 – 2020.

#### Source: https://doi.org/10.3390/su141912023

# Sea Level Rise:

Long-term observational data (1950-2020) show that sea level is rising by about 1.6 inches per decade.

# Hawaii (Big Island)

# **Projected Changes**

#### **Temperature:**

Future temperature projections suggest an increase of 2.5°F (4% change from present) by mid-century.

#### **Rainfall:**

Future rainfall projections are highly uncertain, with one projection suggesting annual rainfall may decline by 11 inches (-15% change from present) by mid-century.



Temperature and rainfall projections for mid-century (2040-2070), Representative Concentration Pathway 4.5 (RCP 4.5, moderate greenhouse gas emission scenario), statistical downscaling: Temperature (a.; °F change from present) and Rainfall (b.; % change in inches per year from present). Source: http://www.soest.hawaii.edu/pdke/products/climate-portfolios/

# Sea Level Rise:

The intermediate sea level rise scenario suggests that levels will rise by about 1 foot by 2050 (statewide). Within the mid-to-latter half of this century, low-lying coastal areas in Hawaii County may become chronically flooded, with 4,550 acres at risk. Visit the <u>Hawaii Sea</u> <u>Level Rise Viewer</u> to explore the vulnerability of a specific region.

# **Resources:**

**USDA Climate Resources:** 

www.usda.gov/climate-solutions

Pacific Drought Knowledge Exchange:

http://www.soest.hawaii.edu/pdke/

Hawaii Climate Data Portal:

https://www.hawaii.edu/climate-data-portal/

Fifth National Climate Assessment: Hawaii and U.S. Affiliated Pacific Islands

https://nca2023.globalchange.gov/chapter/30/

