



HEAT WAVES: What Are They & Why Are They Changing?

Heat waves in San Diego County are changing! They are becoming more frequent, more intense, longer duration, more humid, and warmer at night. Understanding how and why they are changing is important for understanding how and why to take action to protect your health.

A WARMER EARTH

- **Global warming** is the long-term heating of the Earth’s surface since the pre-industrial period (1850–1900).
- Since then, yearly average temperature has increased by ~0.14°F per decade (or ~2°F in total).
- By the end of this century, yearly average temperature is expected to increase even more, by ~4-6°F (or possibly up to ~7-9°F).
- By comparison, about 20,000 years ago at the peak of the last ice age, global temperatures were ~10°F colder than they are today.

WHY IS THE EARTH WARMING?

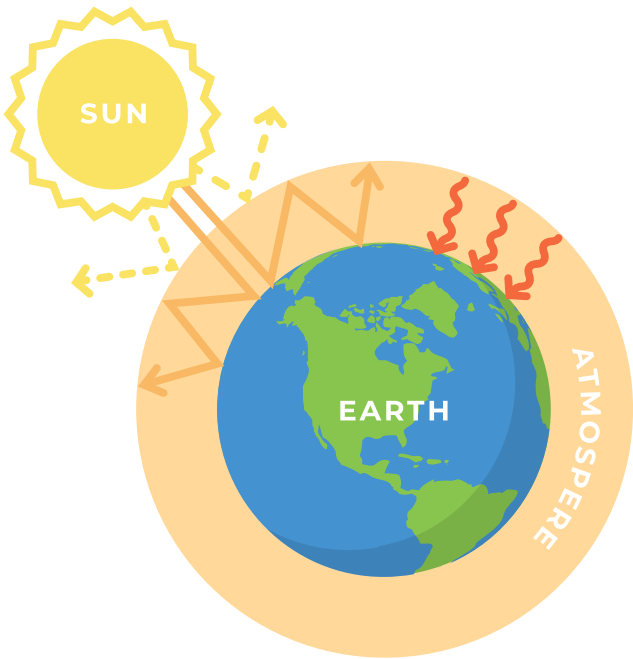
- The **greenhouse effect** is a process that occurs when gases in Earth’s atmosphere trap heat from the sun.
- Examples of “greenhouse gases” include carbon dioxide, methane, nitrous oxide, and fluorinated gases.
- The more greenhouse gases, the more trapped heat, the warmer Earth becomes.

HEAT WAVES

- A **heat wave** is a period of unusually hot weather generally lasting more than two days.
- Global warming increases the frequency, duration, and intensity of heat waves and can also make them more humid and hotter at night.
- Heat waves can have major impacts on human health. In 2006, an unprecedented heat wave in California resulted in:
 - ~5,594 excess emergency department visits along the South Coast (including coastal San Diego County)
 - ~861 excess emergency department visits in the South Desert (including inland San Diego County)

A WARMER SAN DIEGO COUNTY

- Temperatures in San Diego County have been increasing and are expected to continue to increase.
- Historically, the average hottest day per year has been:
 - Coast: 90–100°F
 - Inland: 105–115°F
- At the end of the century, the average hottest day per year could increase to:
 - Coast: 100–110°F
 - Inland: 110–125°F



GREENHOUSE EFFECT

HEAT WAVES IN SAN DIEGO COUNTY

As the climate warms, heat waves in San Diego County *have and will continue* to become:

- More frequent
- More intense
- Longer duration
- More humid
- Warmer at night

INCREASED FREQUENCY & INTENSITY

In an example of increased intensity, a July 2023 heat wave in the Southwest US pushed temperatures in San Diego County to a range of 104–121.

INCREASED HUMIDITY

- Relative humidity (RH) is how much moisture is in the air compared to the maximum amount of moisture that could exist in the air at a given temperature.
- The combination of high temperature and high RH can make the air feel a LOT hotter, for example:
 - On a 100°F day with 40% RH, it can feel like 110°F
 - On a 105 °F day with 40% RH, it can feel like 115°F
- So, it's especially important to be careful when it's both hot and humid.

WARMER NIGHTTIME TEMPERATURES

- The highest daytime temperatures in San Diego County typically occur during:
 - Coast: June–October
 - Inland: May–October
- The highest nighttime temperatures in San Diego County typically occur during:
 - Coast: July–September
 - Inland: July–September
- Reduced cooling at night can make it harder for the body to cool down. It can also also disrupt sleep, which plays a critical role in restoring and maintaining the body.

