



# Weather and Climate



## Death Valley National Park

- ◆ Death Valley is famous as the hottest place on earth, and the driest and lowest place in North America.
- ◆ Higher elevations are cooler than the low valley. Temperatures drop 3° to 5° F with every thousand vertical feet.
- ◆ Sunny skies are the norm in Death Valley, but winter storms and summer monsoons can bring cloud cover and rain.
- ◆ Wind is common in the desert, especially in the spring. Dust storms can suddenly blow up with approaching cold fronts.
- ◆ Weather data was compiled from park and National Weather Service record summaries for the years 1911 through 2011 for Furnace Creek in Death Valley, California.

## Temperatures and Precipitation

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
<b>Daily high</b> (average)	67° F 19° C	73° F 23° C	82° F 27° C	90° F 32° C	100° F 38° C	110° F 43° C	116° F 47° C	115° F 46° C	106° F 41° C	93° F 34° C	77° F 25° C	65° F 18° C	91° F 33° C
<b>daily low</b> (average)	40° F 4° C	46° F 8° C	55° F 13° C	62° F 17° C	73° F 23° C	81° F 27° C	88° F 31° C	86° F 30° C	76° F 24° C	61° F 16° C	48° F 9° C	38° F 3° C	63° F 17° C
<b>record high</b>	87° F 31° C	98° F 37° C	103° F 39° C	113° F 45° C	122° F 50° C	128° F 53° C	134° F 57° C	127° F 53° C	123° F 50° C	113° F 45° C	97° F 36° C	89° F 32° C	134° F 57° C
<b>record low</b>	15° F -9° C	21° F -6° C	26° F -3° C	23° F -5° C	42° F 6° C	49° F 10° C	62° F 17° C	64° F 18° C	41° F 5° C	32° F 0° C	24° F -4° C	19° F -7° C	15° F -9° C
<b>precipitation</b>	0.27 in 0.7 cm	0.37 in 0.9 cm	0.22 in 0.6 cm	0.12 in 0.3 cm	0.07 in 0.2 cm	0.03 in 0.1 cm	0.11 in 0.3 cm	0.11 in 0.3 cm	0.14 in 0.4 cm	0.10 in 0.3 cm	0.17 in 0.5 cm	0.19 in 0.5 cm	1.94 in 4.9 cm

### Changing rainfall patterns

Yearly precipitation consistently averaged about 1.6 inches of rain for the first 50 years of record keeping. The last 50 years has seen an increase, averaging 2.2 inches of rain a year. The 100-year average is now just under two inches a year.

### Longest summers

The greatest number of consecutive days with a maximum temperature of 100° F or above was 160 days in the summer of 2001. The summer of 1996 had 40 days over 120° F, and 105 days over 110° F. The summer of 1917 had 43 consecutive days with a high temperature of 120° F or above.

### Highest ground temperatures

The highest ground temperature recorded was 201° F at Furnace Creek on July 15, 1972. The maximum air temperature for that day was 128° F.

# Why is Death Valley's climate so extreme?

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## Why so Dry?

Winter storms moving inland from the Pacific Ocean must pass over mountain ranges to continue east. As the clouds rise up they cool and the moisture condenses to fall as rain or snow on the western side of the ranges. By the time the clouds reach the mountain's east side they no longer have as much available moisture, creating a dry "rainshadow". Four major mountain ranges lie between Death Valley and the ocean, each one adding to an increasingly drier rainshadow effect.

## Why so hot?

The depth and shape of Death Valley influence its summer temperatures.

The valley is a long, narrow basin 282 feet (86 m) below sea level, yet is walled by high, steep mountain ranges.

The clear, dry air and sparse plant cover allow sunlight to heat the desert surface. Heat radiates back from the rocks and soil, then becomes trapped in the valley's depths. Summer nights provide little relief as overnight lows may only dip into the 85°F to 95°F (30°C to 35°C) range.

Heated air rises, yet is trapped by the high valley walls, is cooled and recycled back down to the valley floor. These pockets of descending air are only slightly cooler than the surrounding hot air. As they descend, they are compressed and heated even more by the low elevation air pressure. These moving masses of super heated air blow through the valley creating extreme high temperatures.

## Weather Landmarks:

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- 1911** Permanent weather station established at Greenland Ranch now known as Furnace Creek Ranch.
- 1913** **World record hottest temperature:** 134° F (57°C) recorded on July 10. Five consecutive days reach 129° F (54°C) or above. Coldest temperature recorded in Death Valley: 15° F (-10°C) recorded on January 8. 4.54 in. (11.5 cm) of rain held calendar year record 92 years.
- 1917** 52 days of 120° F (49°C) or above with 43 of them consecutive.
- 1922** 1/2 inch (1.3 cm) of snow at Furnace Creek on Jan. 29.
- 1929** No rain recorded for year
- 1931-1934** Driest stretch on record with 0.64 inches (1.63cm) of rain over a 40-month period.
- 1933** National Park Service weather station established at Cow Creek, 3 miles north of Furnace Creek.
- 1949** Significant January storm drops 4 inches of snow at Cow Creek. Snow flurries at Furnace Creek.
- 1953** No measurable rain at Furnace Creek for the year.
- 1960** 129° F (54°C) recorded on July 18 at Furnace Creek.
- 1961** Official weather station opens at new Furnace Creek Visitor Center. Cow Creek and Greenland Ranch stations close.
- 1976** Floods wash out Golden Canyon Road. Five day February storm brings 2.37 inches (6.0 cm) of rain.
- 1977-1978** 5.09 inches (12.9 cm) of rain - rainy season record until 1987-88. Spectacular wildflower bloom in spring of 1978.
- 1983** 4.54 inches (11.5 cm) of rain.
- 1984** Summer floods close park roads for weeks. Year rain total 4.04 inches (10.3 cm)
- 1987-1988** July to June rainfall record until a decade later. 5.43 inches (13.8 cm) of rain
- 1995** 2.59 inches (6.6 cm) of rain in January. Wettest month ever recorded in Death Valley.
- 1997-1998** Second wettest July to June on record with 6.09 inches (15.5 cm) of rain. Spectacular wildflower bloom in spring of 1998
- 1998** 129° F (54°C) on July 17.
- 2001** 154 consecutive days at or above 100° F (38°C).
- 2004** Flash flood on Aug. 15 kills two people and closes park for 9 days. Some roads closed for months.
- 2004-2005** Wettest July-June on record with 6.44 inches (16.4 cm) of rain. Spectacular wildflower bloom in spring of 2005
- 2005** 129° F (54°C) on July 19. Wettest calendar year on record with 4.73 inches (12.0 cm) of rain
- 2007** 129° F (54°C) on July 6.