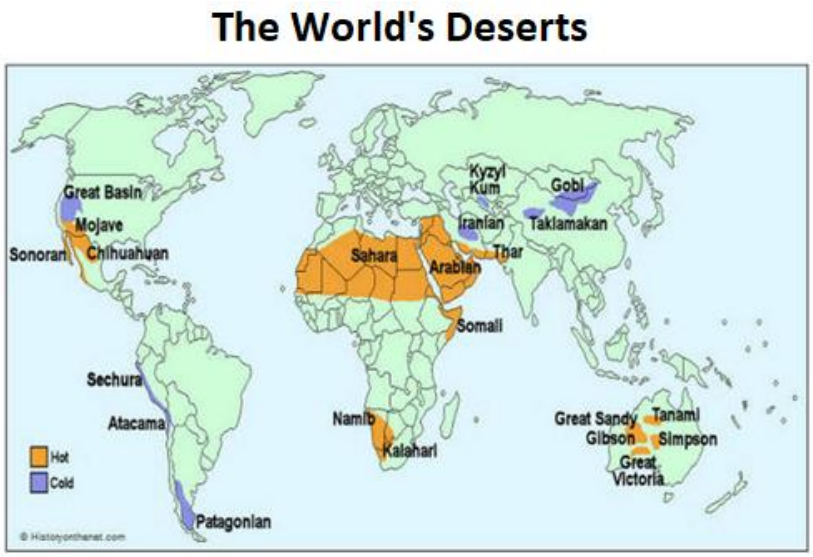
Death Valley – The Highs and Lows

Ok, Death Valley isn't considered to be a "high" desert, in fact it might be the epitome of a low desert, yet there are some commonalities between the two. One is highlighted by the term "desert." Of course this means low rainfall. However, all deserts, high and low, often get a majority of their rainfall in one or two summer thunderstorms.

What is a desert? Most geographers consider it to be a place that receives less than 10 inches of rain. Another practical definition is that there is more evaporation than there is precipitation. What impact does this have on the landscape? One misconception is that a desert is dominated by sand dunes. Most deserts aren't, even though Death Valley has a few impressive sand dune areas. Even the Sahara has many areas that are rocky. In fact only about 20% of deserts are covered by sand dunes.



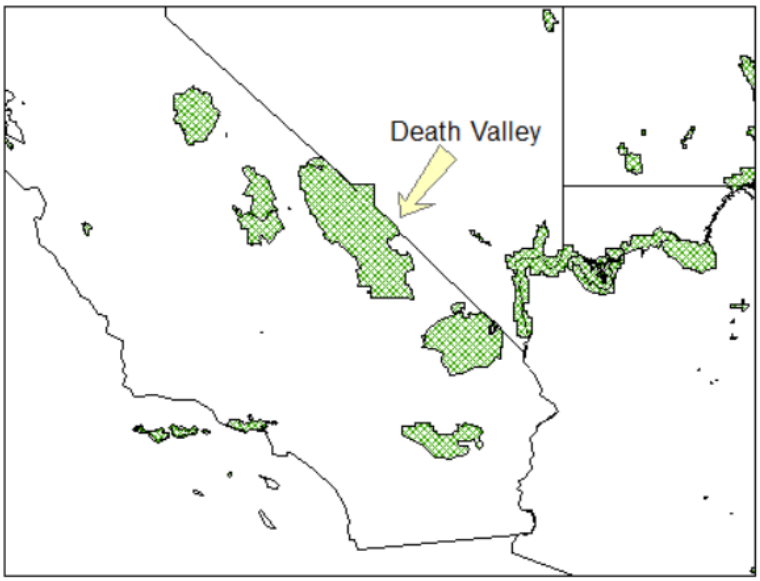
The "Cold" deserts generally correspond to high deserts, and the "Hot" deserts the low.
Source: historyonthenet.com

Many deserts have some kind of plant cover, which include the iconic palm tree, but more often they have a collection of grasses, shrubs, or other xerophytic plants. Xerophytic plants are those that have adapted to the dry environment, which may mean deep tap roots or methods of holding water in situ, such as cacti. These facts apply to high deserts as well as low ones. Our high deserts, such as in eastern Oregon or northern Nevada often have pine or juniper trees sprinkled throughout. This is more evident near the boundaries of the high desert, such as the eastern Cascades or Sierra, or up on desert mountain ridges.

Typical Low Desert Vegetation – Creosote bush and Brittlebush

Typical High Desert Vegetation - Sagebrush and Western Juniper

Other than precipitation, there are some temperature similarities between high and low deserts. Although Death Valley can be much hotter on a summer day, than say Bend, Oregon, they both have wide daily and seasonal variation. They both typically have wider range than most other types of climates. For instance I have experienced in my town of Bend, Oregon a low of 40 degrees and a high of 90 in the same day. And a low of 8^{o} in the winter and a high of 102^{o} in the same year. There is even a place in the Sahara that experienced a daily range of 100 degrees! Wetter areas will usually have a much smaller daily range.



Elevation can have a major impact on both temperature and precipitation in high or low deserts. I have been at the visitor center near sea level in Death Valley where is was near 90 in the spring time, yet there was a lot of snow visible on the nearby peaks:

The highest, verified temperature on earth of 134° was recorded at Death Valley in 1913. There have been several in the high 120s since. Nearby Palm Springs has a tramway going from 2643 to 8516 feet elevation where you go through five live zones (Sonoran Desert to alpine) in a short ride. I once sweated in Palm Spring at 105° in May, and then tromped through snow at the top of the tramway the same day! Elevation has the same impact in the high desert. Typically the temperature would drop three to five degrees as you climb up one of our high desert mountains.

The Palm Spring Tramway
Courtesy Pelican Hill Magazine

Elevation can have an effect on rainfall as well in both types of deserts. Universally, rainfall will increase, at least for the first few hundred feet of elevation gain. Take a look at any precipitation map and you'll see higher values in the mountains. As an example, Elko Nevada's annual rainfall is about 11 inches and nearby Ruby Mountains, at about 5000 feet higher, is estimated to receive about 40 inches a year. The National Park Service reports that 1.9 inches of rain typically falls on the Death Valley floor, while over 15 inches may fall in the higher mountains annually.

The net result of this is that the higher elevations of Death Valley actually are quite similar to much of the high desert much further north. Limber and bristlecone pine and juniper grace both areas, making them biogeographical cousins so to speak.

All photos by Bob Earle unless otherwise stated