**Hot desert Environment**



Regions with hot desert climates

Hot desert environment is typically found under the [subtropical ridge](http://en.wikipedia.org/wiki/Subtropical_ridge) where there is largely unbroken sunshine for the whole year due to the stable descending air and high pressure. Such areas include the [Sahara](http://en.wikipedia.org/wiki/Sahara), the [Arabian](http://en.wikipedia.org/wiki/Arabian_Desert), [Syrian](http://en.wikipedia.org/wiki/Syrian_Desert) and [Kalahari Deserts](http://en.wikipedia.org/wiki/Kalahari_Desert), large parts of [Iran](http://en.wikipedia.org/wiki/Iran), southern and central [Pakistan](http://en.wikipedia.org/wiki/Pakistan), northwest [India](http://en.wikipedia.org/wiki/India), the southwestern [United States](http://en.wikipedia.org/wiki/United_States), Northern [Mexico](http://en.wikipedia.org/wiki/Mexico), and much of [Australia](http://en.wikipedia.org/wiki/Australia). These areas are located between 30 degrees south and 30 north latitude.

Hot desert climates feature hot, typically exceptionally hot, periods of the year. In many locations featuring a hot desert climate, maximum temperatures of 40°C to 45°C are not uncommon in summer. During colder periods of the year, night-time temperatures can drop to freezing or below due to the exceptional radiation loss under the clear skies. However, very rarely do temperatures drop far below freezing.

**Location:** The distribution of hot deserts is closely linked with the general atmospheric circulation and the arrangement of land and water bodies. Most of these deserts lie between 15° to 35°N and S. The world's desert regions have their core-areas on the Tropic of Cancer and Capricorn (23Vi N and S latitudes).

The hot desert environment is found in the following regions: the coastal deserts of Peru and Chile, in South America; the Namib and Kalahari deserts of coastal Angola and south-west Africa; interior Bostwana and South Africa; the great Australian desert; the Sahara and the Arabian deserts; the Iranian desert; the Thar desert of Pakistan and India; and the deserts of Northern Mexico.

These deserts occupy the western margins of the continents coinciding with the dry, subsiding air masses of the subtropical anticyclones. In these regions the descending air masses are compressed and heated adiabatically so that their moisture-holding capacity is increased. Thus, there is little chance of rain. Besides, the diverging air masses in a high-pressure system do not allow the formation of fronts; so that there is no frontal precipitation as well. The hot desert climate is not only confined to the land areas, but extends far beyond them over the subtropical oceans towards the west.

**Temperature:** In the hot desert climate the highest insolation and the highest temperatures are recorded. There are two reasons: (1) there are no clouds in the atmosphere to scatter the insolation and no water vapour to absorb it, and (2) there is little moisture on the ground to be evaporated. Thus, maximum energy is available for heating the surface; remember that the same atmospheric conditions are conducive to rapid nocturnal cooling. That is why the hot deserts are characterized by the greatest diurnal ranges of temperature in the world. Commonly the daily ranges of temperature may vary from 22° to 28°C. However, in exceptional cases, the diurnal range may be as high as 41.7°C.It may be interesting to note that because of the extreme aridity of air, there is a large difference between the shade temperature and that taken in direct sunlight. During summer the deserts record higher temperatures than more humid areas located in the same latitude, while temperatures recorded during winter are much lower. Therefore the annual range of temperature in the desert climate is also very high. The annual range may vary from 17° to 22°C.During summer the west-coast tropical deserts record lower temperatures than the inland deserts which are extremely hot. Therefore, the deserts located in the interior record much higher summer maximum temperatures than the coastal deserts.

**Precipitation:** In tropical hot deserts it is true that evaporation exceeds precipitation. Rainfall in the tropical hot deserts is irregular and most unreliable. The annual average precipitation in large part of these deserts is less than 12 cm.

However, towards the humid margins the annual average may vary from 50 to 75 cm. In these deserts, there may not be a drop of rain for several years in succession, but sometimes a single cloudburst may yield so much rain that may be more than the total amount of rain for a number of years. For example, even though the annual average rainfall at Walvis Bay on the coast of the Namib Desert is only 3 cm, it is reported to have received 3.2 cm of rain in one night from a weak atmospheric disturbance. If per chance there is any cloud-burst precipitation, it may cause havoc by causing flash floods. However, much of the precipitation in the form of occasional heavy downpours is lost in runoff. Rainfall is highly variable-more than 40 per cent. Since rainfall is most undependable in these deserts, its variability has no meaning to the desert dwellers. Relative humidity in the deserts is only 10 to 30 percent, but the absolute humidity is relatively higher. That is why because of night time cooling the relative humidity rises during the night. The formation of dew in the morning hours is common at many places in these deserts. Because of intense heating of the land during day time, convectional currents are set up which help to produce strong winds in these deserts. Dust and sand-laden winds lower the visibility and are troublesome for eyes and throats.

**Natural vegetation:** Plants need water for their survival. Since there is scarcity of water in the tropical hot deserts, vegetation is sparse. Over large areas of these deserts there may be little or no plant cover to be seen. Whatever vegetation grows, it is xerophytic which can survive extreme drought. Desert vegetation has its own natural moisture conserving devices. They have thick bark, waxy leaves, thorns, and little vegetative part. Desert plants like cactus adapt themselves to arid conditions by storing moisture in their stem or leaf cells. There are other plants like acacias that have deep root systems so as to reach water. Besides, there are various types of flowering plants. The plant cover in these arid lands undergoes wide variation from season to season and year to year.

**Animal life:** Extreme aridity in these deserts makes animal life very difficult. Like plants, animals living in the deserts have adapted to the arid conditions. Camel is the typical large animal of the desert. It is able to survive for long without water. Reptiles (snakes and lizards) as well as rodents are the common species of animal life that most successfully survive in this climate. Most of the animals live in burrows beneath the surface. During day time they prefer to remain in their holes, but at night they come out in search of food and water. Generally the desert animals are not large in size.