

I set out to determine how the Hot Desert Climate changes compare with the other types of vegetation.

I began by examining a varied mix. Here are 34 stations, using two of each 10 degrees latitude. Of those two, I used one in the Eastern Hemispheres, and the other in the Western hemispheres whenever possible. With data normalized and composites compiled, 29 stations remained. The total composites averaged a temperature increase of 0.19°C per decade.

<http://climatemodels.uchicago.edu/timeseries/#GdKzDkVsDmJoDeCnEjEvGnOJCfEdDrBhaGmCakJnGeLrEcklCqGsBmDrCgJlGhZqFl>

Next, I downloaded all 161 Hot Desert weather stations from the Climate Time Series Browser. Narrowing the time period, the 1950 Hot Desert stations had a global mean of -0.478. This mean rose to 0.596 in 2011, a total increase of 1.074 °C n the 61 year period.

Of the 161 Hot Desert stations, only 28 contained a data set from 1950 to 2011. Upon normalizing the data, the list of stations narrowed to 17 due to spotty reporting in the culled stations. The total data composite temperatures from those remaining, rose by 0.24°C/Decade.

Temperature Trend, °C / Decade

Time Range: - 1950-2011

Fraserburg	0.16
Jiuquan	0.16
Gur'Ev	0.41
Sam	0.27
Turkestan	0.37
Hovd	0.38
Peshawar	0.11
Multan	0.14
Dal Bandin	0.34
Panjgur	0.36
Arica	0.25
Grand Canyon Np 2	0.20
Lees Ferry	0.10
Safford Agricultrl Ctr	0.18
Blythe	0.21
Las Vegas/Mcc	0.10
Ankara/Central	0.11
Data Composite	0.24

Data composites were then obtained for several of the AR5 Models

Data Composite of CCSM4Model	0.23
CCSM4 rcp26 Comp.	0.10

CCSM4 historical Comp.	0.19
CCSM4 historicalNat Comp.	0.03
CCSM4 rcp85 Comp.	0.10

The above shows that the man-made forcings added 0.16 to the natural forcings.
There is no difference between the low emission and the high emission future scenarios.

Data Composite bcc-csm1-1 Model	0.23
bcc-csm1-1 historical Comp.	0.24
bcc-csm1-1 historicalNat Comp.	0.00
bcc-csm1-1 rcp26 Comp.	0.15
bcc-csm1-1 rcp85 Comp.	0.09

Data Composite BNU-ESM Model	0.24
BNU-ESM historicalNat Comp.	-0.04
BNU-ESM historical Comp.	0.26
BNU-ESM rcp26 Comp.	0.06
BNU-ESM rcp85 Comp.	0.15

Data Composite CanESM2 Model	0.24
CanESM2 historicalNat Comp.	0.00
CanESM2 historical Comp.	0.13
CanESM2 rcp26 Comp.	0.09
CanESM2 rcp85 Comp.	0.08

Data Composite CNRM-CM5	0.23
CNRM-CM5 historicalNat Comp.	-0.00
CNRM-CM5 historical Comp.	0.11
CNRM-CM5 rcp26 Comp.	0.04
CNRM-CM5 rcp85 Comp.	0.06

To determine whether the heat island effect could be a factor, I compiled population estimates for most of the areas. Some were heavily populated, while others were parks, without any large areas of man-made structures. Four of the stations had no information readily available.

Averaging the Data Composites from the above 4 Climate models gives us 0.235°C per decade temperature increase.

This proves that the Hot Desert Climate is warming faster than the rest of the global temperature stations sampled.

