

What temperature must be reached on Mars?
written by Jeff Harr on October 09, 2000

One of the major factors in the colonization of Mars is raising the temperature. It is essential to any kind of operation we may decide to undergo. Plant and animal life, atmosphere, and especially human habitation are all dependent on surface temperature. Right now, as I write this, the average Martian temperature is 210 degrees Kelvin. The Martian atmosphere has a small greenhouse effect that raises the temperature by 5 degrees K, much less than we see on Earth or Venus. This is inadequate for colonization purposes, although some bacteria can withstand temperatures to 177 K. The temperature will need to be raised:

- to 220 degrees K to harbor the arctic fox
- to 234 degrees K to grow even the most cold resistant plant, rye
- to 238 degrees K for deer to survive
- to 283 degrees to equal Earth's average

There are many hypothesis to change the temperature, but none have prevailed as of yet. Some insist that pumping CO₂ into the atmosphere will allow for warmer temperatures, speeding up the process of terraforming. But with too much CO₂ in the air, animals and people will not be able to breathe on the surface possibly for centuries. Other options include Kim Stanley Robinson's theory of huge mirrors placed in orbit to direct the rays of the sun. There is no single theory that seems superior to the others, so we may see multiple programs activated to raise the temperature of Mars and introduce animals to the surface.