Subject: Re: Sound and Elevation
Posted by Cask05 on Fri, 13 Dec 2013 15:28:22 GMT
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Azuri wrote on Thu, 12 December 2013 10:59Do changes in elevation effect sound waves?...Where the air is thinner, do sound waves travel faster for instance?
No, they don't: it's a function of temperature only:

http://en.wikipedia.org/wiki/Speed_of_sound#Practical_formula_for_dry_air

If you've ever wondered about the speed of high performance aircraft/missiles at relatively high altitudes, it's a function of temperature at that altitude, and it's a surprise to most people that as you ascend from the earth's surface, the temperature isn't monotonically decreasing vs. altitude...

http://en.wikipedia.org/wiki/File:Comparison_US_standard_atmosphere_1962.svg

This also affects the performance of horn-loaded speakers that operate outside: at room temperature, speed of sound (celerity) is 1132 ft/s, while at 32 F (zero C) it's 1087 ft/s. In Texas on a hot summer day, the speed at 40 C (104 F) is about 1162 ft/s, which is about 7% faster than at zero C.

It makes a difference in crossover points using horns close to their cutoff points.