

# Unit6: considering the albedo of various surfaces, how might temperatures differ ...

[Science](#), [Physics](#)



High Temperatures in Urban Areas Higher Temperatures in Urban areas.

Albedo also known as the reflection coefficient is the reflecting power of a surface and it depends on radiation frequency. Surfaces with higher values of Albedo on the scale of 0 – 1 tend to absorb less incident variations.

At any given time temperatures at the urban areas are higher than in the rural areas and this is attributed to the urban heat islands. The difference can also be as a result of the difference in weather conditions, urban thermo-physical and geometrical characteristic. Two surfaces with similar Albedo may result in different temperatures due to the difference in the thermal capacity of the surfaces (Peterson, T. C.; Gallo, K. P.; Lawrimore, J.; Owen, T. W.; Huang, A.; McKittrick, D. A. 1999). Many constructions around the world use concrete which has an Albedo value ranging from 0. 1 to 0. 35 and is also lighter in colour. These Albedo values are higher than those of other materials. The tall buildings in the urban areas provide surfaces for sunlight reflection and absorption leading to an increased heating rate of the urban areas. This is called the canyon effect that is the reverberation that multiple reflection produce in tall building framed streets.

These higher temperatures in urban areas are caused by different factors including: more buildings with running furnaces and air conditioners that produce and emit heat; many dark coloured asphalt paved areas; flat dark – coloured roofs; heavy traffic operated by internal combustion engines; and less reflective covers of snow during the winters (Yaghoobian, N.; Kleissl, J. 2012).

Generally, warmer urban areas in comparison to rural areas are as a result of

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land surface modifications by urban developments that use materials that effectively retain heat (Li, Y.; Zhao, X. 2012).

References:

Yaghoobian, N.; Kleissl, J. (2012). " Effect of reflective pavements on building energy use". Urban Climate