

## ANTENNA HEIGHT, ANGLE OF RADIATION AND DX PERFORMANCE

The height of an antenna system above ground significantly affects signal propagation. The higher the antenna is above ground, the lower the angle of radiation. A lower angle of radiation, also called take-off angle, will increase the distance of the first reflection off the F2 layer of the ionosphere. This increased distance will enhance long-range signal propagation.

In the diagram below, a signal transmitted from a higher antenna at station A has a lower take-off angle and will travel farther before reflecting off the F2 layer than the signal from a lower antenna at station B. The signal with the lower take-off angle will also travel farther after reflecting off the F2 layer, greatly enhancing long-range performance.

This phenomenon is used with an inverse effect when attempting to decrease the probability of signals skipping over close stations. By deploying an NVIS (Near Vertical Incidence Skywave) antenna low to the ground, the angle of radiation will increase dramatically and the transmitted signal will radiate almost straight up to the F2 layer. The signal will then beam almost straight down, increasing the reliability of close-in communication on the high frequency bands.

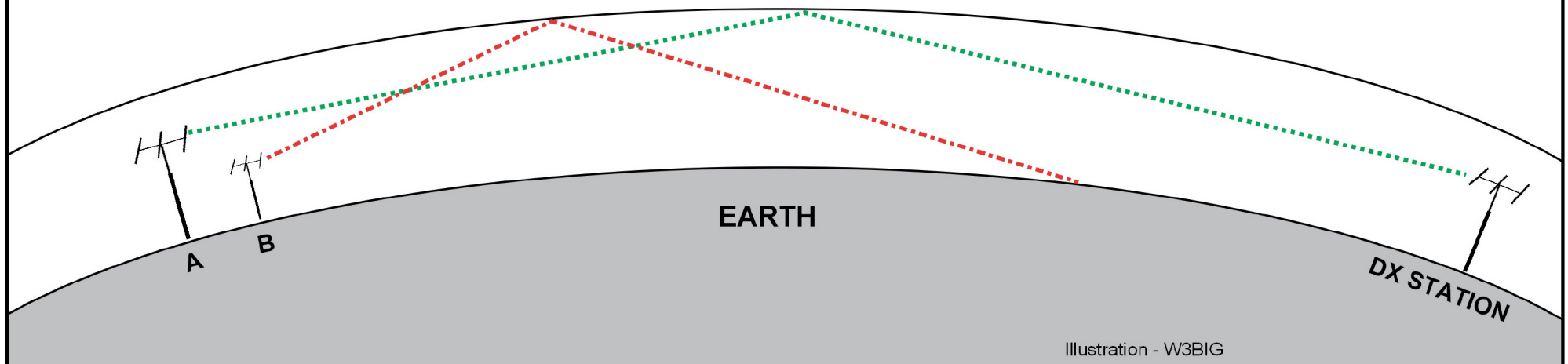


Illustration - W3BIG