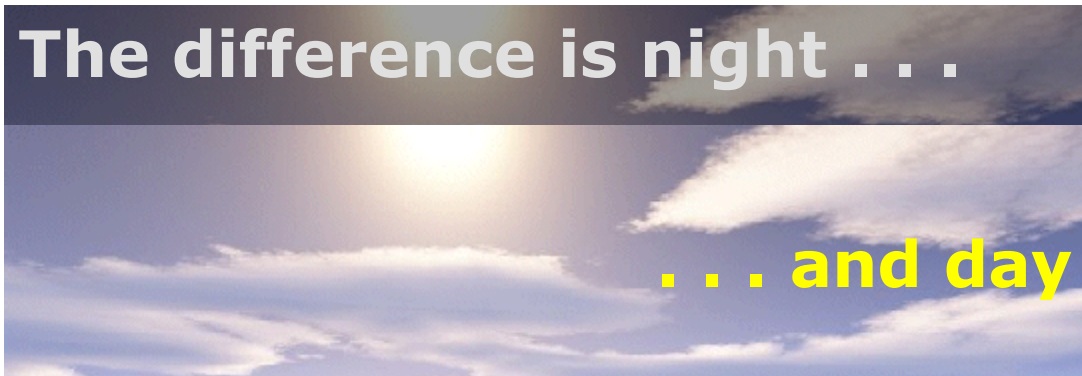


TechTalk



Before selecting a frequency for your AM station, be aware of potential interference at night on certain channels.

Did you ever wonder why some radio stations can be heard for much greater distances at night?

This curious effect, which often manifests as nighttime interference, is caused by a phenomenon known as "skywave." Skywave is essentially radio waves from full power AM stations that travel upward, refracted through the ionosphere (from early evening throughout the night into morning) such that radio signals sometimes return to earth far from where they originate. It's especially prevalent on frequencies* that host 50,000-watt radio stations, which pump up to 200 times the energy skyward, compared with local and regional stations.

Why just at night? During the daytime, the sun's radiation causes atmospheric conditions to change such that the waves pass through the ionosphere and into space. At night when that layer is cool, it reflects them back. With hundreds of radio stations on a given frequency, all bouncing their skywaves simultaneously, what is heard is a garble of background interference.

Some of the dynamics that determine the level of interference are radio signal frequency, ionosphere density and the angle at which the signal enters the ionosphere. Because of the earth's rotation in relation to the sun, its atmosphere constantly changes. Solar storms and sunspots from these changes can also contribute to skywave interference.

How can skywave affect your low-power AM radio transmission?

The major effect is that during the hours from sunset to sunrise, the softer fringe areas of your low-power AM signal can mix with the interference to varying degrees. The effect on the signal can range from complete obliteration to the sense that there is a distracting sound in the background. Closer in, where your signal is stronger, skywave interference has proportionally less effect.

Skywave is heard on the East Coast into the morning daylight hours, because out West, where it is still dark, the bounce continues. Out West, it's the opposite effect, with some skywave taking hold well before sunset, due to eastern stations that are already in the dark.

And skywave is not just produced by commercial radio stations. It is also produced by low-power AM radio stations such as one you may operate. Stories abound of low-power operators who have received monitoring reports in the mail from as far away as Canada, Mexico and (yes) Italy.

*** The best frequencies for low skywave are 1610, 530, 1620, 1630-1700. The worst frequencies for skywave interference are 640-890, 1000-1240, 1340, 1400, 1440, 1450, 1490-1580.**