

# GLOSSARY

**Radio Frequency Spectrum**—The portion of the electromagnetic wave spectrum with wavelengths ranging from 30 kilometers to 1 millimeter. The corresponding frequencies are 10,000 cycles/second (10 kHz) to 3000 billion cycles/second (3000 GHz).

**Propagation**—The transfer of energy through a medium, such as the atmosphere, or space.

**Ionosphere**—An upper-atmosphere layer, ranging 75–200 miles above the Earth's surface. So called because molecules at that level are ionized (i.e., they lose electrons) by solar rays passing through them.

**Sky Wave**—A radio wave that travels up to, and is refracted back to Earth by, the ionosphere. A single-skip sky wave—one that is refracted just once by the ionosphere—can travel up to several thousand terrestrial miles. They are mainly responsible for worldwide radio communications.

**Tropospheric Wave**—A wave that travels through the troposphere, the lower part of the atmosphere that extends up six miles from the Earth's surface, by reflection.

**Repeater**—A machine that receives a signal and simultaneously retransmits it on a different frequency. They are normally used to extend the range of line-of-sight signals. They are very popular for mobile-to-mobile VHF-and-above communications.

**DX**—"Long Distance." The distance that qualifies as DX varies from band to band. VHF-and-above DX are distances well beyond the range of line-of-sight.

**Tropospheric bending and ducting**—The condition in which radio waves are refracted when passing through two layers in the troposphere that have sharply contrasting temperatures and moisture content. A duct is formed by a layer of moist cool air over warm dry air, which in turn sits on the Earth. Since the wave is refracted both by the moist, cool air layer, and by the Earth, the warm dry air layer acts as the duct, or waveguide. Waves of up to 10,000 MHz have travelled hundreds of miles by ducting. Ducted VHF waves have been detected from several thousand miles away!

**Sporadic E**—This is propagation whereby sky waves are refracted by dense patches of ions in the E-layer of the ionosphere. Waves up to 430 MHz are known to have been propagated via sporadic E. Since this layer is in the lower ionosphere, wave skip distances are shorter (typically 400–1300 miles). This is also known as "short skip."