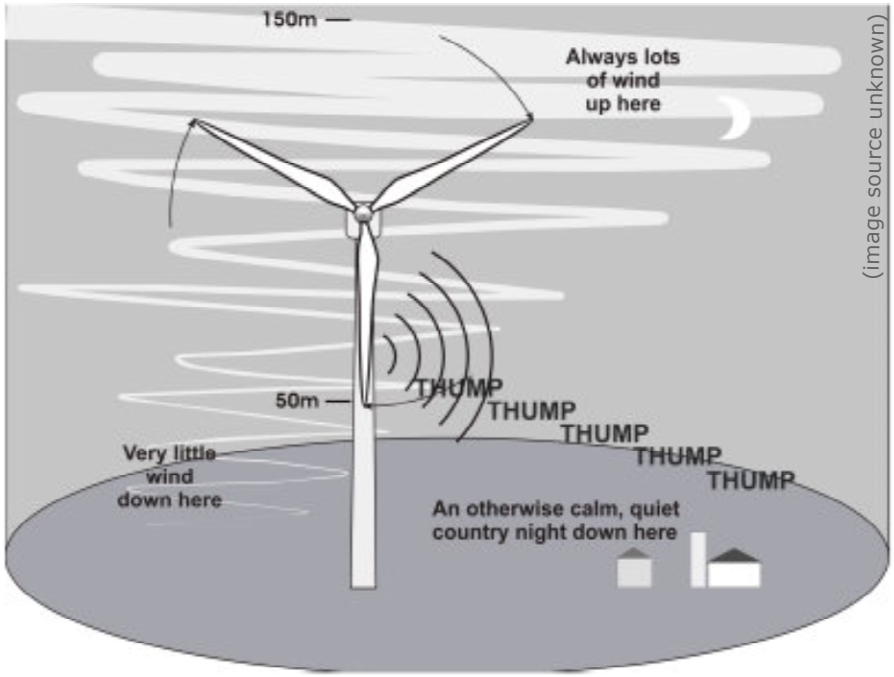

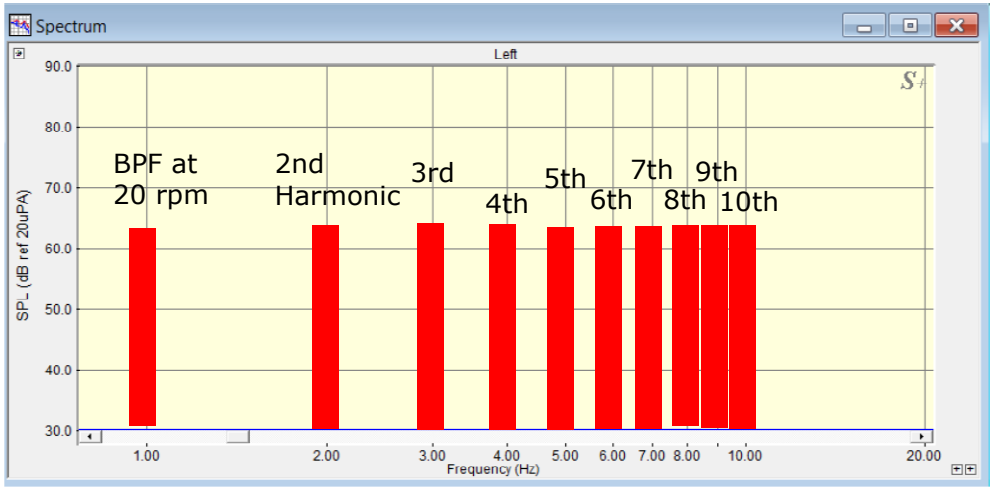

As the blade passes the tower, the low frequency noise and infrasound is generated at a frequency related to the hub's rotation and number of blades. These pressure pulsations appear as tones during analysis but are not heard as tones by most people. Instead they may feel the pressure changes as pulsations, internal organ vibrations, or as a pain (like ear aches or migraines).
This frequency is called the Blade Pass Frequency often abbreviated as BPF.
For modern utility scale wind turbines this frequency is at 1 Hz or lower. A three bladed wind turbine with a hub rotation of 20 revolutions per minute (rpm) has a BPF of 1Hz. This means there is a pressure pulsation emitted into the community once every second. At 15 rpm the BPF is 0.75 Hz and at 10 rpm, 0.5 Hz.

When wind turbine blades rotate past the tower a a short pressure pulse (top graphic) occurs producing a burst of infrasound.
When analyzed the result is a well defined array of tonal harmonics below 10 Hz.
(red bars in figure above)
For impulsive sound of this type the harmonics are all "phase-correlated." This means the peaks of each occur at the same time. Thus, the peaks add together in a linear fashion with their individual maximum sound pressures all coinciding.
Thus, for an impulse having 4 equal amplitude harmonics (BPF, 2nd, 3rd and 4th) each of the same amplitude, the peak level is +12 dB.
10 equal harmonics would produce a peak level of +20 dB.