Glossary

Term	Abbreviation	Definition
ambient sound	Ln	Ambient sound refers to sound whose energy is below the energy of the sound(s) of interest. Individual signatures are not identifiable in the ambient sound. The ambient sound is sometimes called background noise or ambient noise as it masks the transmission of the sound(s) of interest.
autonomous recorder unit	ARU	An autonomous recorder unit is an acoustic device that is used to record soundscapes in an unattended way. ARUs are used to perform passive acoustic monitoring.
absorption (acoustics)	-	Acoustics absorption refers to the process by which a fluid (i.e air or water) or a solid (i.e. trunks, leaves) captures energy of a sound. Part of the absorbed energy is transformed into heat that is lost, resulting in acoustic <i>attenuation</i> .
aperiodic lobes	-	Aperiodic lobes are "bumps" and "rays" that can be observed on the <i>frequency spectrum</i> of a transmitted acoustic wave. In the case of outdoor sound propagation, aperiodic lobes are mainly a consequence of <i>constructive and destructive</i> <i>interferences</i> between the sound and the ground during the propagation.
atmospheric attenuation	A _{atm}	Atmospheric attenuation results from the <i>absorption</i> of sound. When sound travels in air, molecules are agitated and capture part of the sound energy. Atmospheric attenuation depends on environmental parameters (i.e. temperature, relative humidity and atmospheric pressure level) and on the <i>frequency</i> of the sound. The higher is the <i>frequency</i> , the higher is the attenuation.
attenuation	-	Attenuation is a measure of the loss of energy of a sound traveling through a medium. Sound attenuation is mostly due to 1) <i>absorption</i> 2) <i>scattering</i> and 3) the <i>spreading loss</i> .
comb filter	-	A comb filter is used in signal processing to add a delayed version of the signal to itself, causing <i>destructive and constructive interferences</i> . This happens when the same sound arrives at the microphone at different times with a very small delay between the signals. The magnitude of the <i>frequency response</i> of the comb filter has a comb-like appearance.
<i>detection distanc</i> e	-	The detection distance of a sound emitted at a given <i>frequency</i> corresponds to the distance at which the <i>sound pressure level</i> becomes equal to a threshold that is just above the average <i>sound pressure level</i> of the <i>ambient sound</i> corresponding to

Table 1. Glossary of technical terms

		that <i>frequency</i> .
distance	<i>r</i> , <i>r</i> ₀	Three different distances can be considered: 1) the propagation distance r between the emitter and the receiver, 2) the reference distance r_{θ} at which the signal is considered to be the initial <i>sound pressure level</i> and 3) the <i>detection distance</i> .
excess attenuation	ΕΑ	The excess attenuation corresponds to the difference between the theoretical <i>attenuation</i> and the measured <i>attenuation</i> . <i>EA</i> at a given <i>distance</i> r relative to a <i>reference distance</i> r_0 corresponds to the difference between the theoretical <i>sound</i> <i>level</i> L and the experimentally measured <i>sound level</i> L_{exp} for each <i>frequency</i> step f and each <i>distance</i> step r , without the contribution of the <i>ambient sound</i> Ln .
frequency	ſ	Frequency is the rate expressed in Hertz (Hz) at which a wave vibrates. A sound can be characterized by a single frequency (i.e. pure tone) or by multiple frequencies (i.e multitone). The <i>power spectrum</i> or the <i>spectrogram</i> of a sound allows the visualization of its frequency content.
frequency response		The frequency response characterizes an audio device in the <i>frequency</i> domain. A high fidelity microphone or loudspeaker is characterized by a flat (uniform) frequency response which ensures a uniform sensitivity to all <i>frequencies</i> . A <i>sound meter level</i> is equipped with a microphone having a flat frequency response to measure reliably the <i>sound pressure level</i> .
geometric attenuation	A_{geo}	Geometric attenuation is the attenuation due to the spreading of the sound in all directions causing a loss of the sound energy that is proportional to the <i>distance</i> . Geometric attenuation is also known as geometric spreading or <i>spreading loss</i> . <i>Spherical</i> <i>attenuation</i> corresponds to the geometric attenuation in the specific case of a point source.
ground effect		Ground effect covers all sound interactions with the ground. It includes constructive and destructive interferences. Ground effect in natural environments mostly affects <i>frequencies</i> below 1 kHz. Ground effect, wave <i>scattering</i> and <i>absorption</i> by vegetation are the main contributors to <i>habitat attenuation</i> A_{hab} .
habitat attenuation	A_{hab}	Attenuation due to the habitat A_{hab} encompasses the attenuation due to the <i>ground effect</i> , wave <i>scattering</i> and <i>absorption</i> by tree trunks, branches and leaves.
habitat attenuation coefficient	a_0	Habitat attenuation A_{hab} can be modelled by an exponential decay law with a linear dependence on <i>frequency</i> and <i>distance</i> driven by a single coefficient of attenuation, a_0 .
interferences (constructive /		The interaction between direct sound waves and delayed sound waves due, for instance, to the <i>ground effect</i> , creates

destructive)		constructive (enhancement of the <i>sound level</i>) and destructive (<i>attenuation</i> of the <i>sound level</i>) interferences depending on the <i>frequency</i> .
scattering		Scattering occurs when a sound is deviated by an object also known as a scatterer. In a forest, scatterers are mostly tree trunks which are reverberant scattering and foliage which are viscous scattering. Scattering by tree trunks and foliage mostly affects <i>frequencies</i> above 1 kHz. <i>Ground effect</i> , wave scattering and <i>absorption</i> by vegetation are the main contributors to the <i>habitat attenuation</i> A_{hab} .
sound pressure level (SPL)	L, L _{0,} L _{exp_corr} , L _{exp}	Sound pressure level (SPL) or sound level <i>L</i> corresponds to the acoustic energy measured over a period of time and over a <i>frequency</i> range relative to a reference value. In case of outdoor sound propagation, the sound level unit is in decibels (dB), with 0 dB SPL equal to the limit of the human ear perception in the air (i.e. $20 \mu Pa$).
sound level meter		A sound level meter is an instrument designed to measure the <i>sound pressure level</i> . It is used in noise pollution and environmental acoustics studies to quantify noise level. It is also used to calibrate and characterize the frequency response of acoustic devices such as microphones and loudspeakers. The sound level meter usually gives a level in decibels (dB <i>SPL</i>)
spectrum (power)		The power spectrum describes the energy distribution of sound as a function of frequency.
spectrogram		A spectrogram is a sound time- <i>frequency</i> representation. Sound energy is plotted as a function of time and <i>frequency</i> . This visual representation is very useful to distinguish acoustic signatures of animal vocalizations. The term sonogram is sometimes used instead of spectrogram.
spherical attenuation		See geometric attenuation.
spreading loss		See <i>geometric attenuation</i> .
white noise		White noise is a random signal with a flat <i>frequency power spectrum</i> .