

## Appendix F : Comparison between experimental data and theoretical propagation curves

The theoretical propagation curves in an Alpine coniferous forest (Jura, France) and in a Neotropical rainforest (French guiana) using the full attenuation model (i.e.  $A_{geo}+A_{atm}+A_{hab}$ ) and partial attenuation model (i.e.  $A_{geo}$  only or  $A_{geo}+A_{atm}$ ) are shown in Figs. F-1 and F-2 respectively, when the receiver is an ARU device or in Figs. F-3 and 3 (see the article) respectively, when the receiver is a sound level meter. The trend of the sound level attenuation predicated by the model, including the addition of the ambient sound, was in good agreement with experimental values for all frequencies and distances in case of the sound level meter. One should notice that the experimental sound level corresponds to the sum of the propagated sound (i.e. the white noise) and the ambient sound that arrive simultaneously to the microphone. In the case of the ARU, we observed a good agreement between the experimental and predicted value for frequencies below 10kHz.

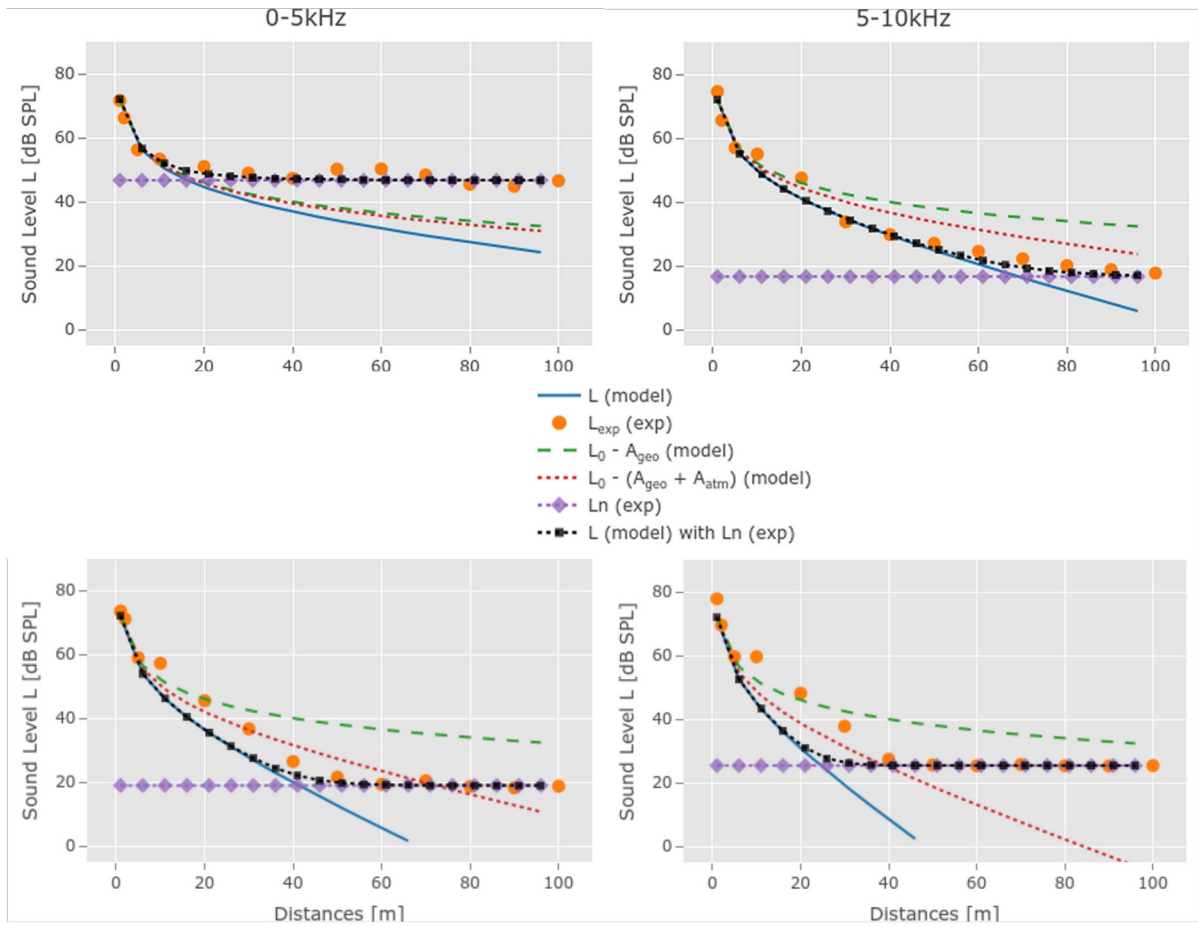


Figure F-1: Comparison between experimental data acquired with the ARU in an Alpine coniferous forest (Jura) and theoretical propagation curves obtained from the full model as described by Eq. 4. The comparison was performed for the following bandwidths: (a) 0–5 kHz; (b) 5–10 kHz; (c) 10–15 kHz; and (d) 15–20 kHz. The habitat coefficient attenuation parameter was  $a_0 = 0.020$  dB/kHz/m.  $L$  (model): predicted sound level according to the full propagation model;  $L_{exp}$  (exp): experimental sound level;  $L_0 - A_{geo}$  (model): predicted sound level according to a partial propagation model taking into account only the geometric attenuation;  $L_0 - (A_{geo} + A_{atm})$  (model): predicted sound level according to a partial propagation model taking into account both, the geometric and atmospheric attenuation;  $L_n$  (exp): experimental ambient sound level;  $L$  (model) +  $L_n$  (exp):  $L$  (model) with  $L_n$  (exp): predicted sound level according to the full propagation model taking into account the contribution of the experimental ambient sound level

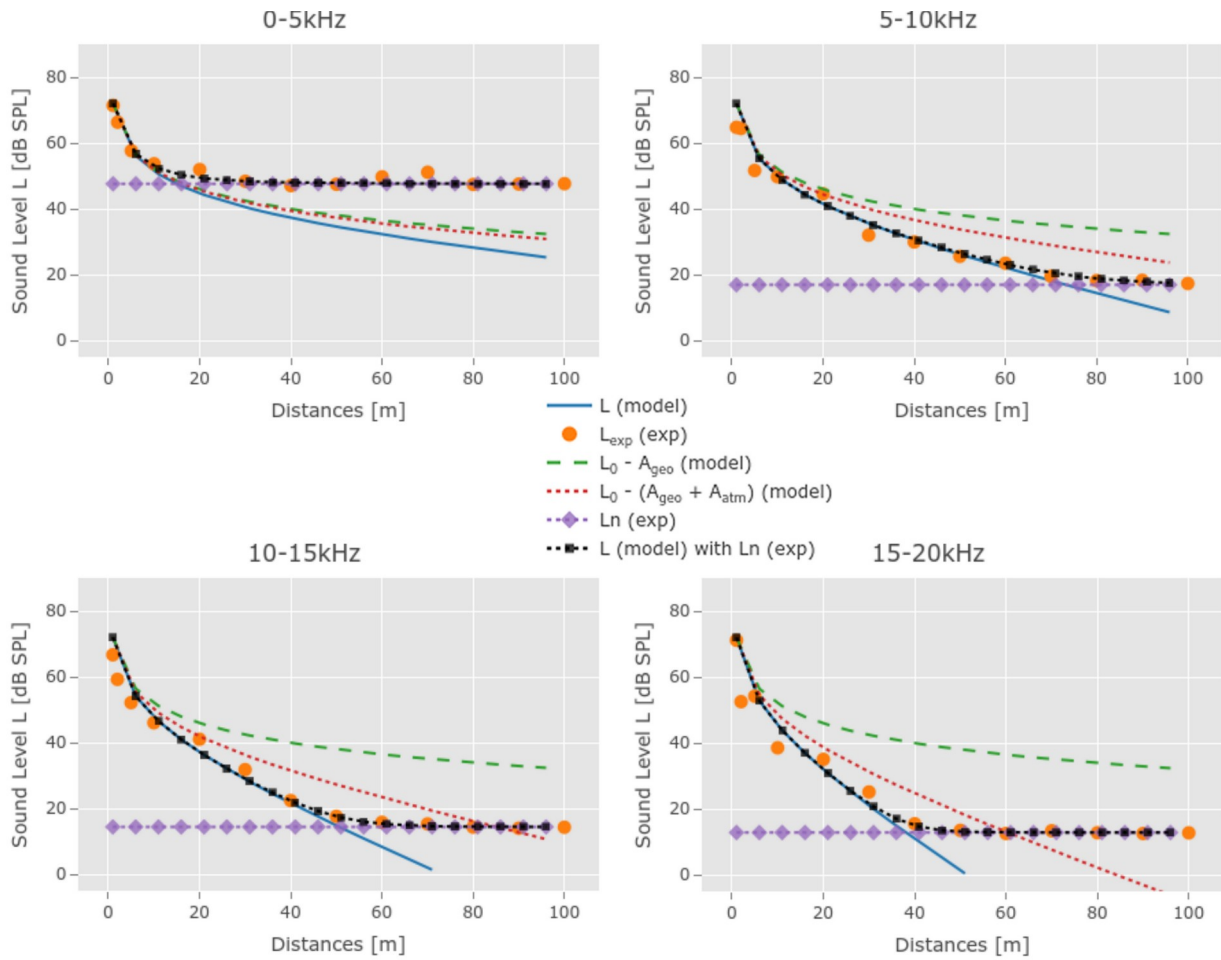


Figure F-2 : Comparison between experimental data acquired with the sound level meter in an Alpine coniferous forest (Jura) and theoretical propagation curves obtained from the full model as described by Eq. 4. The comparison was performed for the following bandwidths: (a) 0–5 kHz; (b) 5–10 kHz; (c) 10–15 kHz; and (d) 15–20 kHz. The habitat coefficient attenuation parameter was  $a_0 = 0.024$  dB/kHz/m.  $L$  (model): predicted sound level according to the full propagation model;  $L_{exp}$  (exp): experimental sound level;  $L_0 - A_{geo}$  (model): predicted sound level according to a partial propagation model taking into account only the geometric attenuation;  $L_0 - (A_{geo} + A_{atm})$  (model): predicted sound level according to a partial propagation model taking into account both, the geometric and atmospheric attenuation;  $L_n$  (exp): experimental ambient sound level;  $L$  (model) +  $L_n$  (exp):  $L$  (model) with  $L_n$  (exp): predicted sound level according to the full propagation model taking into account the contribution of the experimental ambient sound level

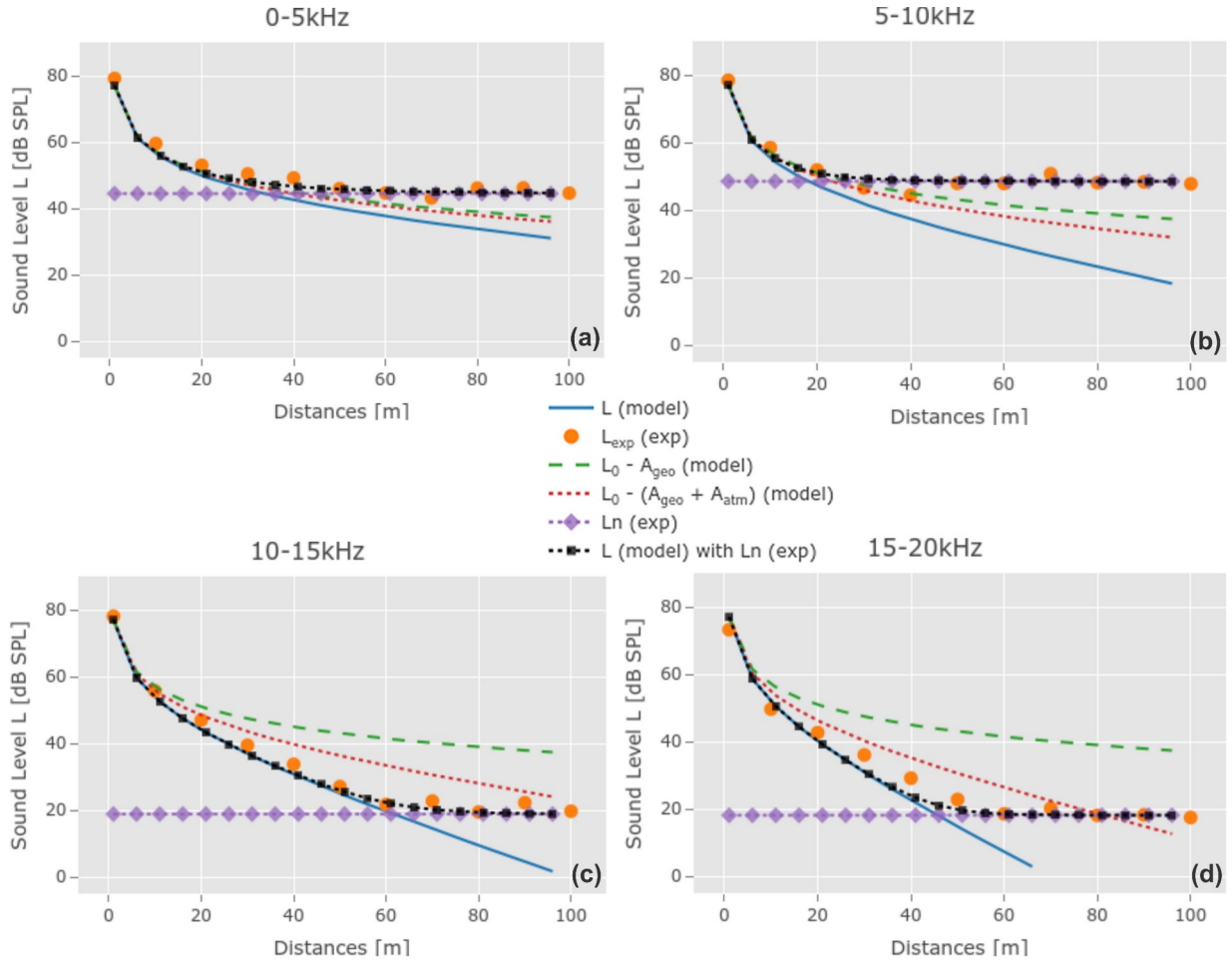


Figure F-3: Comparison between experimental data acquired with the sound level meter in a Neotropical rainforest (French Guiana) and theoretical propagation curves obtained from the full model described by Eq. 4. The comparison was performed for the following bandwidths: (a) 0–5kHz; (b) 5–10kHz; (c) 10–15kHz; and (d) 15–20kHz. The habitat coefficient attenuation parameter was  $a_0 = 0.019$  dB/kHz/m.  $L$  (model): predicted sound level according to the full propagation model;  $L_{exp}$  (exp): experimental sound level;  $L_0 - A_{geo}$  (model): predicted sound level according to a partial propagation model taking into account only the geometric attenuation;  $L_0 - (A_{geo} + A_{atm})$  (model): predicted sound level according to a partial propagation model taking into account both, the geometric and atmospheric attenuation;  $L_n$  (exp): experimental ambient sound level;  $L$  (model) +  $L_n$  (exp):  $L$  (model) with  $L_n$  (exp): predicted sound level according to the full propagation model taking into account the contribution of the experimental ambient sound level