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Corrigendum to "Vortex model of the aerodynamic wake of airborne wind energy systems" published in Wind Energ. Sci., 8, 999–1016, 2023

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The article "Vortex model of the aerodynamic wake of airborne wind energy systems" contained an error in the code developed to produce Figs. 10 to 15 and the figures in Appendix B. This error modified the implicit model used to find the normalized torsional parameter of the far wake λ_0 (Sect. 4.4), reducing it to a simpler and correct model reported here.

The new correct figures do not present any appreciable change with respect to the previous ones. For completeness, the updated figures can be found at https://doi.org/10.5281/zenodo.8208313 (Trevisi et al., 2023).

However, this error results in the following modifications to the text.

4.4 Implicit closure model for the normalized torsional parameter

The entire subsection shall be substituted with "The second proposed closure model for the normalized torsional parameter estimates the axial velocity of the vortex filaments by considering only the induction produced by the near wake $a_z^n = \lambda \frac{C_L}{\pi AR}$ such that

$$\lambda_0 = \frac{\lambda}{\left(1 - a_z^n\right)} = \frac{1}{\frac{1}{\lambda} - \frac{C_L}{\pi AR}}.$$

The normalized torsional parameter λ_0 can be found iteratively by considering the definition of the glide ratio (Eq. 43), which is equal to the wing speed ratio $G = \lambda$ when the airborne wind energy system (AWES) is in equilibrium."

5.2 Comparison of the normalized torsional parameter

The sentence "For the high-loading case, the implicit model greatly outperforms the explicit model, showing that the radial induced velocity at the AWES significantly contributes to the velocity of the far vortex filaments." shall be substituted with "For the high-loading case, the implicit model greatly outperforms the explicit model."

6 Conclusions

The two sentences "An implicit model is derived by assuming that the far-wake vortices move downstream with a velocity equal to the velocity, in modulus, at the AWES center. To find the modulus of the velocity at the wing center, the radial velocity induced by the far wake is also derived." shall be substituted with "An implicit model is derived by assuming that the far-wake vortices move downstream with a velocity equal to the wind velocity minus the velocity induced by the near wake."

References

Trevisi, F., Riboldi, C. E. D., and Croce, A.: Figures: Vortex model of the aerodynamic wake of airborne wind energy systems (Version v2), Zenodo [data set], https://doi.org/10.5281/zenodo.8208313, 2023.