Vortex Particle-Mesh simulations of Vertical Axis Wind Turbine flows: from the blade aerodynamics to the very far wake
Reply to editors

P Chatelain[a], M Duponcheel[a], D-G Caprace[a], Yves Marichal[b], G Winckelmans[a]

[a] *Institute of Mechanics, Materials and Civil Engineering, Université catholique de Louvain, 1348 Louvain-la-Neuve, Belgium*
[b] *Wake Prediction Technologies (WaPT), Rue Louis de Geer 6, 1348 Louvain-la-Neuve, Belgium*

We have addressed all the changes by the editors and reviewers. They are listed below.

Comment 1. I suggest you make the discussion of the definition of S1, and the outflow on the sides of the domain, clearer.

We have expanded the discussion around the definition of S_1: These diagnostics correspond to integrals of flux quantities in cross-stream sections located at a distance x downstream of the turbine axis; their practical implementation approximates these integrals through quadrature over finite square sections $[-3\,D, 3\,D] \times [-3\,D, 3\,D]$. Because our Biot-Savart solver enforces transverse unbounded conditions exactly, it allows a transverse mass flow due to blockage. As a consequence, S_1, shown in Fig. **??**, does not vanish (as it would have for a solver with no-through flow boundaries); it quantifies the blockage effect caused by the wake on the flow."

Comment 2. Already in the abstract, please indicate the nature of the "unexpected topological flow features". It is neither perfectly clear from the conclusion what is "unexpected".

We agree with the editor that this was not clear. We have removed the adjective "unexpected", made the features more explicit, and thus changed the abstract.

Comment 3. Related to the previous point, does Figure 6 show the resolved TKE, or total TKE (resolved+modeled)?

Figure 6 shows resolved TKE only; this is now mentioned in the caption.

Comment 4. In addition to the comment by the associate editor, would it be possible to add to section 6 that if anyone is interested in (parts of) the data then please contact the authors?

Changed accordingly.