

Interactive comment on “Real-time optimization of wind farms using modifier adaptation and machine learning” by Leif Erik Andersson and Lars Imsland

Anonymous Referee #2

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Thank you for this submission.

My main thought is this a good approach to accomodating model mismatch in application of wind farm control. Critically, learning corrections to a starting model sounds appropriate to the problem, versus a completely black box approach. It seems a very good match between a theoretical approach and an application. I look forward to see this idea advanced and tested in dynamic simulations.

Overall Comments and Questions:

1) Can this approach work in a truly dynamic environment? The current paper compares to a static wake model as the plant, but will the work with varying wind directions and wake propagation delay? I assume this is addressed when compared with LES

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results in the future paper, but some comments in this line welcome.

2) In the last sections, difficulties are discussed in solving large layouts. Could this problem be addressed by decomposing the large farms into manageable subsets according to wake interactions?

3) Could you speculate how this approach would handle a non-input-output dependency. Here i'm thinking of turbulence. If for example it is not measured at a farm, and yet the wake model depends on it, and it varies let's say day/night, is this manageable? Phrased differently, let's say in the extreme there need to be two models, a stable and unstable atmospheric condition, but stability is not an input, can this be captured? Is there the possibility of modeling hidden confounders?

Specific Comments:

1) References to literature is complete and well done 2) If algorithms are explained in literature, explanation of optimization routines can be condensed

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