

Dear authors,

Thank you very much for submitting your paper to WES journal. I have read it carefully and would like to comment on it.

I recommend to the editor to ask for mayor changes because of the two aspects: 1) the first part of your work have been published before and 2) I question the scientific approach of fitting data to calculate a correction and not generalising and assessing the topic from a scientific point of view.

I had fun reading the first part of your work describing the methodology of detecting wakes with lidar. This is a strong work and worth of publishing. However I realised that this content has been published before, as you indicated on the webpage. In you paper you did not refer to your previous publication, why?

The weak point of your work is the correction. You claim that you need to correct because your assumptions are not valid anymore or phrasing it differently your estimation model is not valid anymore. You phrase your paper as if this is a general problem, however in my point of view this is very specific to the lidar system you use. Let me make two points: 1) a more scientific approach would be to rethink the assumptions of the estimation and change the estimation model/assumptions whenever a wake is detected. 2) a linear data fitting approach is not very novel. You measure a model mismatch fit a correction and your data look nice. I would put a higher standard on a journal publication. Also your simulation work on page 5 is weak. You could introduce a real simulation environment for measuring in a wake in the paper to encourage others to repeat the work. This would give your detection methodology work much more meaning.

I suggest either: to rework the part where you take the information of a wake detection and try to find a better methodology and/or wind model to estimate well even though there is a wake/partial wake;
Or: to focus more on the data analysis and work with the lidar data. Then I suggest to rephrase the title to put the focus on the data evaluation of the field experiment.

Other points

page	line	Comment
1	4	Sufficient large time - statement without a proof / partly disagree
1	5	You don't tell that you would like to measure with Lidar. What about the anemometer or the vane? Are they disturbed, too?
1	9	"one or more beams can be identified" unclear phrasing
1	12	"and thus, correcting the Lidar derived wind direction" see general comment. In my point of view the approach is wrong to correct a estimation which comes from non valid assumptions?
2	16	"as a consequence" - unclear
		Figure 1 variables are not introduced close to the

3	1-3	Terrain effects are present. With them, the same idea can be followed
3	26	Please also name the multi distances for the Leosphere device
5	U_hat	Please introduce before naming it for the first time
7	-	Chapter 2: What happens to Phi_hat when a wake is detected? How does it effect the algorithm? What happens if a wind direction change and a wake impingement happen simultaneously?
9	Fig 5	Does it always look like that? How sensitive is the method?
12	Fig 9	Nice evaluation, however it uses the sonic. The transition to a general met mast free methodology is missing.
13	1-13	Fitting of the correction. See comments above.
		Conclusions: What are the learning objectives? Which conclusions can we draw and is there a way to make it independent of the met mast. Is is just for the 2 beam single distance an issue, or for every Lidar system?