

Author comments in reply to associate editor

We thank dr. Andrea Hahmann for her useful comments and time invested in reviewing our manuscript. We very much appreciate her support in this review process. We have addressed each of the comments as detailed point by point below, which we believe further improves the quality of our manuscript. We hope our revised manuscript can be accepted for publication.

Adithya Vemuri, on behalf of all co-authors

Editorial comments

Comment 1: *Tables 3,4 and 5. It is not possible to use tables with colored cells. Please see the note from the file validation. You will need to find an alternative approach.*

We have changed the format of all tables to follow WES guidelines. As an example, Table 3 is presented below. The colored cells were aimed at emphasizing the case-to-case variability in skill, however this has since been added to the manuscript at line 363 and 431 as suggested by anonymous reviewer 1's 2nd revision comments.

Simulation run#	ERA LBCs updates	PBL scheme	Cumulus scheme	Microphysics scheme	Wind direction MAE (degrees)	Wind speed MAE (m s ⁻¹)	NED (-)
1	3 h	MYNN	msKF	WSM5	10.46	3.88	2.08
2	3 h	SH	KF	WSM5	8.48	2.57	1.51
3	1 h	MYNN	KF	Thompson	9.26	2.72	1.63
4	1 h	MYNN	msKF	WSM5	8.61	2.54	1.51
5	1 h	SH	KF	WSM5	7.68	2.47	1.41
6	1 h	SH	KF	Thompson	8.37	2.51	1.48
7	1 h	SH	msKF	WSM5	6.59	<u>1.78</u>	<u>1.11</u>
8	1 h	SH	msKF	Thompson	6.69	1.89	1.15
9	1 h	SH	msKF	Morrison	7.17	1.89	1.20
10	1 h	SH	GD-3D	Morrison	<u>5.59</u>	2.25	1.17
11	1 h	SH	GF	Morrison	7.17	2.67	1.43
12	1 h	Zhang	GF	Morrison	8.69	1.84	1.34
13		Ensemble			5.88	2.04	1.12

Comment 2: *I was alarmed to see a time step of 20s in D1. You should have been able to run with a time step of 70-100 s in the 27 km domain. It is a little too late for this manuscript, but using a very small time step causes enhanced diffusion and smooths the model results. This is not adequately described in the WRF documentation, but you should be aware for future simulations.*

Thank you for the note. We wanted to limit the scope of this sensitivity to the variation in physics parameterizations alone.

Minor editorial improvements on technical English

Comment 1: *In my opinion, WRF should not be the subject of a sentence, but "the WRF model" is acceptable. I suggest replacing, e.g., L39 "WRF simulations are found..." with "the WRF model simulations*

are found...". L48: "WRF physics parameterizations..." with "Physics parameterizations in the WRF model..." etc.

We thank the editor for pointing this out. We have corrected the aforementioned statements in the revised manuscript. Not further shown here.

Comment 2: L37: "The microphysical parameterizations...."

We thank the editor for pointing this out. We have corrected the statement in the revised manuscript. Not further shown here.

Comment 3: *When there are multiple citations, they should be ordered by year of publication (unless you have a reason to do it which is obvious):* L103: (Hahmann et al., 2015; Giannakopoulou and Nhili, 2014; Carvalho et al., 2012) and in other places in the manuscript.

The citation order has been changed in the following places:

Line 35: ... National Center for Atmospheric Research (Powers et al., 2017; Skamarock et al., 2019).

Line 102: ... the local weather systems (Carvalho et al., 2012; Giannakopoulou and Nhili, 2014; Hahmann et al., 2015).

Line 114: ... by García-Díez et al. (2013), Mooney et al. (2013), and Stergiou et al. (2017) ...

Line 132: ... fatigue loading of a wind turbine (Laino and Hansen, 1998; Wan et al., 2015; Bakhshi and Sandborn, 2016; Damiani et al., 2018), ...

Comment 4: "In order to" -> To, e.g., L194. There are other "wordy" expressions throughout the manuscript.

The sentence has been rephrased to:

Line 191: To categorize and distinguish the key ...

Comment 5: L196: "The sensitivity to hourly and 3-hourly update intervals of LBCs is assessed". The subject of the sentence is singular.

We thank the editor for pointing this mistake. We have corrected the statement in the revised manuscript. Not further shown here.

Comment 6: L320: "of the timeseries for the low-pressure", BTW, "timeseries" is not an English word.

We thank the editor for pointing this mistake. We have corrected this for all occurrences of "timeseries" in the revised manuscript. Not further shown here.

Comment 7: L322: "Storm Ciara (not shown)."

We thank the editor for pointing this out. We have corrected the statement in the revised manuscript. Not further shown here.