General comments:

From a practical point of view, high resolution WRF simulations (1 km – 3 km) can be enough for a preliminary prospecting phase to identify areas with large wind energy potential. Please indicate at the paper (introduction for example) advantages of using a WRF-CFD coupling against a stand-alone WRF simulation, even in a prospecting phase.
Answer: Good comment. We brushed a little on this subject in the introduction page 2 row 45-50 (about using high resolution WRF and the increase in prediction-error with increasing terrain complexity), but we have now added some more description of the additional value of higher resolution already in the prospecting phase.

"WRF can be used to produce sufficiently accurate local wind speed estimates for early stage wind resource assessments in flat terrain and for offshore applications (Draxl et al. 2015, Hahmann et al. 2015, Mylonas-Dirdiris et al. 2016, Ohsawa et al. 2016, Standen et al. 2017). However, it has also been observed that the prediction error and uncertainty in local wind speed estimates using WRF is correlated with increasing terrain complexity (Flores-Maradiaga et al. 2019, Giannaros et al. 2017, Prósper et al. 2019). To increase the accuracy in moderate and model complex terrain, higher resolution models are desirable to resolve the microscale effects. With respects to conducting wind energy assessments in the early stage of project development, the increased resolution also improves the ability to quantify the spatial extent of the areas with favorable wind conditions, i.e. the size of the potential wind farm, as well as allows the developer to better identify suitable terrain formations and other areas with relatively small characteristic length scales."

Also in the text the numerical modeling is compared with met mast measurements. During micro-siting phase, met mast measurements are always necessary for bankable permissions so numerical modeling (meso micro coupling) can be complementary (never a substitute by itself). This type of comparison should be avoided since they occur in separate phases of the project.
Answer: We agree that this needs to be a bit clarified in the introduction to avoid misunderstandings (see answer to comment for "page 2 - lines 31 and 38").

Regarding the coupling method based on data transfer from particular locations, it should be justified at some point why this data transfer has not been done from the boundary conditions of the CFD domain or from the upper level of the atmosphere (geostrophic level).
Answer: The main motivation of our approach is mentioned on page 3 row 75-80 (i.e. that this is a stable and straightforward method for coupling of the two models, but that a drawback is the sensitivity of the transfer location). Also see answer to comment for "page 7-line 171".

Lastly, It is recommended to add some other literature references related to recent advances in meso micro coupling (i.e. NWEA project)
Answer: Thanks for the suggested papers. The first paper is in the reference list already. I will study the two other suggestions and consider them for the revised version of the paper.

Minor comments

Title: it can be misleading, something more general, such as: "Using multiple transfer locations for WRF-CFD coupling in numerical wind energy assessments"
Answer: Thanks for the suggestion. We will have a think about this one. There is always a balance between specific and general titles of a paper like this. One of the string points in

this paper is the validation to field data, so at least in some way we feel that that should be reflected in the title.

Answer to minor comments below: thanks for taking the time to give detailed suggestions on language. If I did not answer next to the comment this I agree and will implement the suggested changes in the revised paper.

I have provided answers to the large comments below.

Page 1 – abstract
Line 10: the use of NWP can be misleading, using "mesoscale modeling" instead is recommended

Line 11: preferable to avoid this kind of comparison (See comments above)

Line 25: "to the number of sites in complex terrain..."

Page 2 – lines 31 and 38: preferable to avoid this kind of comparison (See comments above)
Answer: We do see your point here. That the current formulation can cause confusion. We have changed the formulation to:
"A remedy to mitigate the risk of advancing an incorrect subset of sites for further analysis is to use high quality numerical methods. As numerical methods are potentially (at least) two orders of magnitude less time consuming and expensive compared to conventional on-site measurements used for early project selection, such as SODAR or LIDAR equipments, it allows developers to evaluate a much larger set of projects. As an example, the numerical method presented in the work can be used to investigate on the order of 100 projects spread out over an area the size of Sweden in a timeframe of 10 weeks for the cost of a single measurement campaign."

Page 3 – line 75: use 'through' instead of 'via'

Page 3 – line 75: better use "which is inserted into the CFD domain"

Page 3 – line 79: "..is sensitive to the location of the data transfer"

Page 5 – line 135: justify why 100m is an appropriate spatial resolution for this analysis; should it be enough for the turbulence characterization in the microscale in complex terrain areas?
Answer: Good comment. We do not expect that this resolution is fine enough to fully capture all fine scale turbulence features in complex terrain (e.g. flow separation in very complex terrain).

For our application, the main focus has been to achieve a stable coupling with the WRF model. For this it is challenging to have too fine resolution in the CFD solver. So instead of striving to archive fully grid invariant solutions in the CFD solver, the objective here is to have the finest CFD resolution we can without causing too much problem in the WRF-CFD coupling.

The size of the location suitable for data transfer decreases as more details are introduced in the CFD solution relative to the WRF resolution. We therefore need some smoothing to make our method stable which is introduced by the relative coarse grid resolution of 100m in the CFD model.

Page 6 – line 144: "Experience", without "d"

Page 6 – line 146: “..based on conducting the data..”

Page 6 – line 146: “..through several different...”, instead of based

Page 6 – line 149: “in the number of large...”

Page 7 – line 171: how does the method deals with this kind of large gradients? This is related with the major comment of coupling mesoscale and CFD from the boundary conditions or at geostrophic level instead.
Answer: The CFD solver will implicitly include all mesoscale effects at the virtual met-mast where forcing based on the WRF time series. From that location the CFD solver will extrapolate results based on neutral conditions according to the CFD solution (i.e. no mesoscale effects).

We would run into the same limitations if we coupled through the boundaries in our case. The added benefit would only occur with a CFD solver that could pick up tendencies at the boundary and accurately model the evolution of the relevant processes in the CFD domain. So, if we coupled WRF to WindSim at the boundaries, we would only move the area with correct forcing (i.e. with the mesoscale effects) away for the area of interest.

We do pick-up on areas of strong mesoscale gradients in our method by considering the overlap in two nearby CFD analyses with different WRF forcing points. If the WRF locations forcing these two CFD analyses lies along the mesoscale gradient, there will be a difference in wind speed between the two met-masts from WRF, but the CFD model will not be able to predict this difference based on the CFD results.

Page 7 – line 198: “..of the collaborating companies..”, instead “by”

Page 8 – figure 5: what does 100m in the legend represent? Apparently it is not described

Page 8 – figure 5 (and subsequent ones figures 6 and 7): specify in the title: With / Without MTLA together with the number of testing points (set of 35, 45 or 80)

Pages 8 to 10: Add a table with the summary of error metrics: mean BIAS + standard deviation for each set of experiments (the value for each binned class and the global value). This helps to follow the results at these chapters and also in the discussion much better than from the text.