Second review of "Exploring future production scenarios for the Italian offshore wind power"

1. "Rather than performing the optimization as usual with the AEP as fitness function, we decided to maximize the minimum distance between turbines, i.e. a geometric approach that does not require continuous assessments of wake losses for the various wind directions."

   I am convinced that maximizing the minimum distance and maximizing AEP give optimal layouts that perform similarly. This is good to know. But it was not my issue. My issue was that ignoring the <u>wind rose</u> is unacceptable because it means that you are assuming that all the wind directions are equally likely and all the wind speeds are equally likely, which does not happen anywhere on Earth. Let me say it again: no place on this planet has a wind distribution that is uniform along all directions and all wind speed bins. As such, optimizing any property, whether the AEP or the minimum distance, based on such a wrong wind distribution is fundamentally wrong and will give you a layout that underperforms. In other words, it is scientifically incorrect to optimize for a condition that is absolutely unrealistic, no matter which method or variable you use for such optimization.

   Your results for Lillgrund, actually, confirm my statement because Lillgrund is the worst performing wind farm in the world, with wake losses of the order of 60%, due to the tight spacing (4.3D x 3.2D). Also, Lillgrund was designed originally for much smaller turbines and only at the very last minute they decided to install the Siemens 2.3 MW instead, which had just become available in the market. They were aware that the 2.3 MW turbines would have high wake losses (because of the larger diameter), but they were willing to accept it because the total output was going to be higher than the original anyway. So, the very fact that your algorithm gives you a layout at Lillgrund that performs similarly to the actual layout at Lillgrund means that your algorithm is indeed bad and produces underperforming layouts.

2. "the array efficiency is mostly velocity-dependent rather than direction-dependent"

   Not true. The prevailing wind direction is the most important parameter to build an optimal layout.

3. "the test case run with the WindPro software has not shown significant deviations either."

   This is irrelevant, the tests conducted with WindPro were comparing AEP versus minimum distance optimization for the same uniform wind direction distribution, so these tests cannot be used as an argument in favor of the choice of a uniform distribution.

4. "The centroid was calculated as the arithmetic mean of the latitude and longitudes of the bounding polygon. We do not desire to report this in the main text as we consider this information marginal within the entire project."

   What kind of an answer is this? You do not "desire to report" the equation or at least the definition of centroid? Please do it, because you want to make your paper more understandable and right now it is not.

5. "Given the centroid (latitude-longitude), the velocity time series at the nearest grid points were downloaded from the CERRA database and linearly interpolated to the centroid location."

   Please add this to the text, especially the fact that the interpolation was linear with distance, not inverse square or other way.

6. "The EMD WRF dataset is still not described due to its limited importance in our work."

   I do not find it acceptable that you mention and use a dataset, but you refuse to describe it. Please describe it.

7. "However, having collected 31 years of data, we considered this historical series sufficient to perform the analysis. However, the correlation analysis remains interesting and worth, quantifying how different wind farms could combine or have phase differences in the power production."

   And here you manifest the opposite behavior: when asked to remove something, an analysis that you do not even use, you want to retain it. Please remove it.

8. *The definitions of crossover, mutation, and elitism must be added in the text, not just in the reply to me.*