Wind Energ. Sci. Discuss., referee comment RC1
https://doi.org/10.5194/wes-2021-109-RC1, 2021

Comment on wes-2021-109

Anna Maria Sempreviva (Referee)

Referee comment on "Detecting and characterizing simulated sea breezes over the US northeastern coast with implications for offshore wind energy" by Geng Xia et al., Wind Energ. Sci. Discuss., https://doi.org/10.5194/wes-2021-109-RC1, 2021

General Comments

With the progress in the floating turbines technology, an increasing number of offshore projects are going to be implemented in coastal deep waters; offshore areas so far disregarded, are receiving now increasing attention like the US East coast.

In this context, this paper is timely focusing on the major meteorological phenomenon in coastal areas i,e, the breezes. It presents a methodology to detect the three types of sea breezes and their characteristic features, such as the calm zone associated with pure sea breezes and coastal jets associated with corkscrew sea breezes and discuss those feature in a wind energy prospective

Specific Comments

This paper is well structured and written but, in my opinion, the authors, should expand the discussion of the impact of the SB from the wind energy perspective. In fact, the authors show that there are calms and divergence zone that impact on single turbine production in different breeze types (pure and corkscrew and backdoor).

They found that “the power production associated with a 10 megawatts offshore wind turbine would produce approximately 3 to 4 times more electrical power during a corkscrew sea breeze event than the other two types of sea breezes”. But there is more than this. There is the issue of finding the right layout of a wind farm or of wind farms clusters with respect to wakes; a wind farm might be split by a calm zone in at least two areas with different wind directions. In this case, the wake losses of the whole wind farm might be less and the production more.

@pag 10 the authors write " In addition, the location of the calm zone varies by cases, although most calm zones develop relatively close to the coastline " Here, my comment is that an analysis of the variability of the distance from the cost and the amplitude of the calm zone are variables s for sure of interest for projects developers.