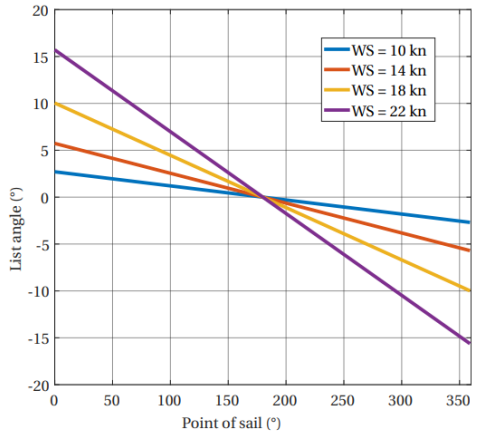

Fig. 10. List angle determined by our model

With the basic model, the boats produce an average of 280 Wh/d versus an average of 210 Wh/d with the model we developed.

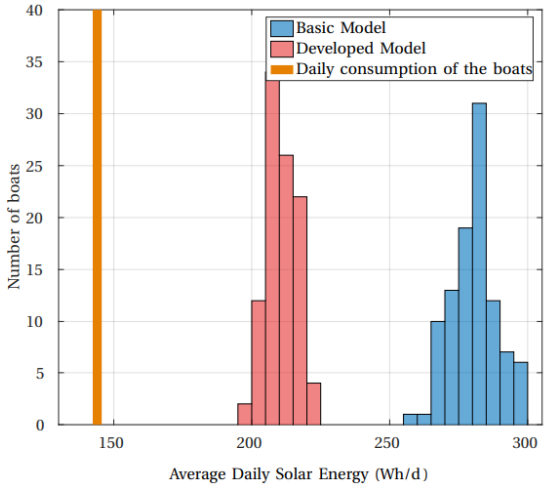

Fig. 11. Average daily solar energy of the boats for the developed model and for a basic model

7. Conclusion

The model developed in this study relies on two main components, the calculation of irradiance and the behavior of the boat. The accuracy of the irradiance model, 10% for a hazy sky, is good enough for the purpose of the study. In addition, the behavior model has been developed using actual data. So that we can suppose the whole model will fit correctly and will able us to determine the solar power available for a known situation (the boats direction and position, the winds speed and direction and the time). Unfortunately, we will not be able to verify it because the measure of power on the solar panel is not available while sailing. However, the model will be used in a decision support tool. It will be included in a simulator to help IBOAT3 developers to choose the path and the batteries size. Furthermore the methodology used in this study could be adapted by one for another project.

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