

Overall Statements

The manuscript "Effects of floating (solar PV) platforms on hydrodynamics and primary production in a coastal sea" by Karpouzoglou et al. describes the effect of photovoltaic platforms (disposed at the sea surface) on physical and ecosystem features in the water column. In times of global warming when mitigating strategies and renewable energy production become important, such basic assessments are necessary and welcome. The overall result is that the shading effect is more important than shielding from wind and friction on currents. To my knowledge the model-system does not include 3-D scattering of light. This effect would increase underwater-light availability and thus might corrupt the central finding of the manuscript. The authors must tackle this challenge seriously, otherwise I cannot recommend the manuscript for publication.

The second major difficulty of the manuscript is the method of individual spin-ups over 26 years using different starting values for nutrients. Does the model system include sink terms, like burial and N_2 release during denitrification? In this case the model will show a drift which should be clearly seen over these years. I understand that the initial conditions must be different for different places, but this very long spin-up must be justified. The initial very high detritus concentrations appear very artificial.

The manuscript is structured and written very well. Thus, I hope the puzzles can be clarified.

Detailed remarks

P1 L4: Define here the "PV" abbreviation.

P1 L27: Also discuss possible conflicts with shipping and offshore windfarms.

P5 L24: Why do you exclude gas exchange?

P5 L30 ff: The air circulating around the platforms will be accelerated and behind the platform I expect a turbulent wind field. Can you estimate these effects?

P6 Table 1: Did you use SPM concentrations? Please give the corresponding values.

P6 L10 ff: It is not the mass of nutrients, which is conserved. It is the amount of nitrogen, phosphorus and silicon, which is conserved, if there is no sink and source within the water column (see overall statements).

P7 Table 2: You mention detritus. Which element describes detritus? Is it pelagic detritus? This are very high values. In this case the shading of detritus would be much larger than the shading of the platform.

P7 L6: Fraction = 1 appears very artificial. Please mention this already here.

P8 Figure 2 abc: The arrangement of x-axis labels does not allow to identify the exact positions.

P12 L7 ff: This sentence is over-complex. Please rephrase.