

from Gøran Brostrøm <goranb@met.no>
to Ron Huber <coastwatch@gmail.com>
date Thu, Aug 19, 2010 at 8:38 AM
subject Re: Ocean windfarm - hydrology and climate question.
hide details 8:38 AM (3 hours ago)

Hi Ron

Thanks for your letter. I am not sure I have a clear answer to you. I think that further studies are needed for more realistic situations. However, I have not been able to work any more on this subject although I am still interested in what a large wind farm may impact the ocean currents.

I do think large wind farms can potentially have a relatively large impact on the local oceanographic conditions. I say potentially because it has not yet been proven yet. Thing that should be investigated may be:

1. Will the wind farms increase the upwelling in the area? If so, how will the nutrient levels and primary production be affected by the increased nutrient levels? Will the risks for toxic algae blooms increase?
2. Will the induced changes in wind stresses (or more specifically, the large increase in wind stress curl) give rise to a changing current system in the area? Will this affect local transport mechanism for e.g., plankton, larvae and sediment. Will the new current pattern influence wave climate in nearby areas and the nearby coast. What is the extent of the induced current system (if barotropic motions are excited there is a possible remote affect from the wind farms).
3. It should be noted that different wind farms may act in concert such that you cannot investigate the impact of each wind farm separately, it could be that the most important aspect is the total area covered by wind farms.

For our question concerning Lobster larvae I think that the transport of these may change. However, without really knowing I would say that the wind farms will not affect Lobster production in a negative way. The possibility of increased primary production will probably take out any negative impacts on larvae transport but I really do not know.

My phone number to my office is (+47) 22963348. I work late Monday to Wednesday so call me if you have any questions. Unfortunately, I am not aware of any other similar studies.

Sincerely
Göran

Ocean Wind Energy Extraction and Climate

Following is an email from Ron Huber to Norwegian meteorologist Goran Brostrom inquiring about the impact of ocean wind energy extraction and ocean climate, and Dr Brostrom's emailed response.

from Ron Huber <coastwatch@gmail.com>
to Göran Broström <goran.brostrom@met.no>
date Tue, Jul 20, 2010 at 11:34 AM
subject Ocean windfarm - hydrology and climate question.

Göran Broström,
Norwegian Meteorological Institute,
Postboks 43 Blindern, N-0313 Oslo, Norway.

Dear Dr Broström,

My organization, Penobscot Bay Watch, is trying to understand the possible effect of ocean windfarms on local and regional climate. The Gulf of Maine may soon join other coastal oceans in hosting large scale ocean windfarms. We have read with great interest your 2008 paper: "On the influence of large wind farms on the upper ocean circulation", and an English translation of your commentary "Windmills at sea will affect the climate" of 2008.

Now we are seeking additional research examining the actual or potential effects ocean windfarms can have on coastal currents.

As you may know the United States' Gulf of Maine region has committed to large scale ocean wind farming. There are plans for deepwater floating wind turbines to be anchored 30 to 80 kilometers offshore of Maine, and shallow water farms set into the seafloor in shallower regions. No ocean windmills of either kind have been built yet in the Gulf of Maine

Doctor Brostrom, what are the questions that we need to ask and seek answers for, when considering what possible impacts should be examined during the review process for these offshore windfarms?

For example, Penobscot Bay's lobster fishery is very productive, but it is very dependent on the Eastern Maine Coastal Current transporting

lobster larvae to this bay at a precise season. Is it possible that the very large arrays of ocean windmills proposed for the Gulf of Maine by both the United States and Canada could have any accelerating or delaying effect, or thermal diverting effect upon such local ocean currents?

It is difficult to predict precise number of windturbines proposed, as the development is still in planning. Because ocean windfarming is still in a planning stage for the Gulf of Maine region, we would like to ensure that those windfarms that are emplaced here have as little impact on the Gulf of Maine's hydrology and meteorology as possible. Any information you can share that we can bring to the considerations would be most gratefully appreciated. If there are other researchers studying the effect of ocean windfarming on the regional environment that you can recommend, that too would be welcomes..

Sincerely

Ron Huber
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web: www.penbay.org

2. Gøran Brostrøm replies to Ron Huber

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