We acknowledge the comments of the reviewers, which will contribute to significantly improve the paper. Please find enclosed below our response (indented in blue) to the reviewer comments, clarifying some issues.

The paper studies Port agitation in 13 Catalan Harbors using a combination of different projected global and regional circulation models. Waves are obtained with SWAN modeling and selected waves propagated to the Harbor entrance using linear theory and within the Harbor using a Boussinesq-type of model (BTM). The paper is quite well-written except at very specific confusing places. The paper is descriptive without many thoughts given to physical meaning and interpretations of the results. I suppose the information might eventually be practically useful but the authors should provide error estimates of the model results.

The wok uses a BTM for wave propagation inside the ports. However the model is not presented and thus the characteristics (i.e. the performance) of the model (i.e., fully or weakly non-linear?, fully dispersive?, etc) cannot be evaluated. No information is given about the different ranges (for each harbor) for mu= kÂ ̊uh and epsilon=a/h (also for the intermediate waters when the linear theory is used).

We did not include the equations since we made reference to previous works. It is true that there are a number of Boussinesq-type (BT) equations with different performances. The one employed here is based on the equations of Abbott et al. (1978), which is weakly-nonlinear. The processes activated include shoaling, refraction, diffraction, reflection (which is essential when dealing with propagation within harbours), bottom friction and non-linear interactions. In a recent study, Filippini et al. (2015) ("On the linear behavior of Boussinesq-type models: amplitude-velocity vs amplitude-flux forms", Coastal Engineering, http://dx.doi.org/10.1016/j.coastaleng.2015.02.003) make an analysis of nonlinear wave transformation using different types of BT models. Models based on Abbott equations perform well for *kd* up to 1 and for greater values they start to slightly underpredict the phase velocity and also underpredict the shoaling coefficient (i.e. the wave height).

In our study almost all the ports are located at limited depths (between 6 and 12 m in the outer limit), so most of the times the model performs the simulation within the best range of applicability (*kd* = 1). In the case of three ports (Barcelona, Tarragona and Port de la Selva) the range of water depths is greater (up to 20 to 25 m), so for short periods the model is applied out of is best range of applicability and, as a consequence, the results are less reliable. However, the aim of the paper is focused in analyzing the difference between future and present conditions rather than in the obtaining of very accurate values of significant wave heights. In addition the simulations with the BT model are performed in similar conditions for present and future conditions, so even though the model is applied outside of its range of applicability, this does not introduce any bias in the results. Therefore, for comparative purposes as carried out in the paper, we consider that the obtained results are acceptable.

Since the reviewer considers it important, we will include all the information described in the previous paragraphs in the revised version of the paper.

The main drawbacks of the paper are: i) From DW to SW the propagation is made using linear theory. This is a critical aspect, specially 1) for large epsilon and 2) for those areas where refraction/diffraction are important).

This is true, but we had no other chance due to the lack of detailed bathymetries as indicated in the paper. A higher resolution application of another numerical model (e.g. SWAN) would of course provide more precise results. In fact, we tried to follow this approach obtaining bathymetries from digitalized nautical charts. The available charts for the Catalan Coast from the Spanish Hydrographic Institute (*Instituto Hidrográfico de la Marina*) have scales that range between 1:5,000 and 1:95,600. This means that in some points of the coast there are nautical charts with scales between 1.5,000 and 1:20,000 which can be used for this purpose. However, large areas of this coast are covered by charts with scales lower than 1:90,000 which have low resolution and where many details are missing or poorly described (e.g. small ports like some of the studied here). Therefore we concluded that the approach applying SWAN to propagate waves towards the ports could be applied only for some ports. For this reason and considering that in all the studied cases when propagating waves towards the port, the diffraction effects (due to the presence of geographical accidents) are negligible, for the sake of using a homogeneous approach for all the ports we decided to use linear theory.

Moreover, the scope of the paper (the analysis of several ports within a regional scope) is focused in analyzing the difference between future and present conditions based on the changes in the distribution of wave directional frequency, so the use of linear theory does not introduce any bias in the results for comparative purposes.

ii) The incoming direction is avoided in the analysis. A slight change in the wave vector angle will largely modify the results.

We guess that the reviewer refers to the reduced numbers of directions considered. We use sectors of 45º in order to limit the number of simulations to be carried out. As indicated in the paper, the number of simulations is 50*n* (5 wave heights x n directions x 2 time spans –present and future- x 5 models) for each port. In most of the ports this means 200 simulations. In the case of Barcelona, each simulation with the BT model took about 2 hours of computer. So, in order to limit the number of simulations, we had to choose these wide sectors. We agree with the referee that the results could be different using a different number of sectors, but once again we think that the selected approach is suitable for comparative purposes like in this paper.

i) Page 5 line 209. How Hs is computed from the model results? BTM solve the phase and therefore Hs will depend on the length of the simulation. This is a critical issue especially for resonant cases.

At each point of the simulation domain, Hs is stored at each time step, so we obtain a time series. The variance (m_0) of this time series is computed and Hs is obtained as $4m_0^{1/2}$. Obviously, as indicated by the reviewer, this depends on the length of the simulation, which is selected long enough to obtain a time series representative of a sea state. Since the present and future conditions are simulated using the same length of simulation, for comparative purposes we think that results are not affected by the length of the simulation, because all the simulations are carried out for wave periods relatively low (<15 s), and as a consequence resonant effects are not expected.

ii) Page 5. I am confused about the methodology presented. Why the authors did not use directly the DW characterization instead of grouping the waves?

For the aforementioned reason: to limit the number of simulations. For this reason we grouped them by directions and bins of Hs. The fact of having 5 models and two time spans (present and future conditions) means that every wave condition has to be simulated 10 times and this greatly increases the number of simulations.

iii) The graphics show in general a banded behavior for Hs inside the harbors. My guess is that this a consequence of the methodological process (average (Hs) of averages (cases)).

This is probably true. On the other hand, wave patterns within ports are very complex due to the effects of diffraction and, in particular, reflection. This makes very difficult to analyze the behavior mentioned by the reviewer.