

This review refers to the paper ref.num. Nhess-2013-411.

Title “ Hydro morphodynamic modelling in Mediterranean storms. Errors and uncertainties under sharp gradients“

by Agustin Sanchez-Arcilla, Vicente Garcia and Manuel Garcia

In this paper the authors consider an intense storm on the Catalan coast, make a simulation with the SWAN model comparing the output with buoy data, run a morphodynamic simulation using as input the SWAN results, and compare the output with LIDAR images. Filtering the verbose text, the results are poor and there is an extensive discussion on the reasons for the poor results ( poor notwithstanding the claims) that leads to the conclusion that better and more complete data are required. This is already a poor start because all the considerations done in the paper are standard stuff and there is nothing new provided with the paper. However, the whole is much worse than this because the fragile background the study starts from was already a sure condition of failure. The methodology and the derived conclusions are far fetched and well beyond what can be concluded from a single one week exercise. A lot more of self criticism would have been useful.

At the end of the day this is a single case study on the Catalan coast. After an accurate reading I reached the conclusion that this does not teach anything to anyone. The results are poor and I see no reason why this paper should be published. A reject is my final opinion and suggestion.

While reading the paper I have taken some notes that at the beginning I thought would have been good suggestions for improvement. The list grew and in the end there is no point in going through it. Here below I list a few examples.

- English is too verbose, cumbersome. There are several errors, there is also a mixture of USA and UK English.
- Talking about depth gradients, 600m depth in 60 Km is a 1% average slope, not so much.
- There are not so many deltas on the Catalan coast.
- Calibrating the results is not a scientific practise.
- Too much emphasis on the Catalan coast. Incidentally, between Pyrenees and Alps there is also the Massif Central.
- I wonder if there is a double peak spectrum, from NW and E, 50% of the time.
- SWAN is not a hydrodynamical model.
- The description of the standard physics of SWAN is not needed.
- The global bathymetries are known for not being correct close to coasts.
- What is meant with “ differences between the input and dissipation terms were relevant”? it seems meaningless to me.
- Such a detailed simulation cannot be done with daily average current input and wind input at 6h interval.
- It is not possible to extract any possible meaningful conclusion from one week simulation. Incidentally two days warming-up is too little for a basin like the whole Mediterranean Sea.
- “The white-capping dissipation coefficient normally used to balance wind input ...”

I find this absolutely meaningless.

- there is a lot of talking about obvious things, as the effect of groins, that waves produce a coastal current, that coastal waves depend on the ones offshore. All this is useless and has to be taken for granted.
- LIDAR images are OK, but if we do not have the bottom profile before and after the storm, there is nothing conclusive we can say about the sediment transport.
- There is no stationary assumption in wave modelling. How was SWAN run?

I have some problems in expressing completely my opinion about the paper but I think I have given enough an idea of the whole presentation. As it is, I cannot see any possibility of a useful modification and improvement. The only conclusion is the rejection.