How study of hurricane swell can help to provide a better prediction of the tsunami wave propagation on Caribbean coasts?

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Prediction of tsunami wave propagation on a complex bathymetry can be fatal. Do a mistake on the location of the tsunami wave impact on the coast is highly dangerous. The destruction due to mechanical impact or submersion of the large area of the coast zone can be avoid with a good estimation (*i.e.;* height, location, duration) of the hazard. Features of the propagation are important in term of values but also in term of dynamic, an evacuation plan is directly base on the prediction of the sequence of events.

The frequency of large tsunami is low, but the study of real case may help to have a complete comprehension of the process. We would be better prepare for a tsunami if we had more tsunami.

Caribbean arc was generated by an intense tectonic motion and volcanic activity. The risk of tsunami is high in the area both generated by tectonic motion and volcanic landslide. The quality of a numerical propagation of tsunami is highly dependent of the quality of the DEM Caribbean coast are impact by large Hurricane wave. The study of those can be helpful in the tsunami study, particularly for the bathymetry effect on large wave. The shape of the both types of wave are not the same, we do not try to do a direct comparison, but used the information of the dispersion of large swell wave to applied it to the tsunami dispersion and fill the lack of information of the bathymetry.

We focus on the comparative study of the propagation of tsunami wave generated by submarine volcano land slide and hurricane wave on a small scale bathymetry (10 m, **Lito 3d**). The case of Guadeloupe and Martinique island are detailed in this study, due to the available dataset. We used those two territories as reference area.

The numerical propagation of the waves is done with **FUNWAVE** on two different bathymetry (10 m & 50 m). The tsunami wave was generated by **VolcFlow** in case of submarine volcano collapse and the swell determine by coupling of **WaveWatchIII** and **SWAN** in case of past Hurricane. The information gathered by the propagation of a past study will help to correct the bathymetry and have a best prediction of the propagation of a tsunami wave. The result is applied on other Caribbean islands to improve the prediction method of tsunami wave propagation.