USING QGIS AS A TOOL TO DETERMINE ROUGHNESS

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Nowadays GIS (Geographic Information System) tools have been of great help to support researches and fortunately, some of the spatial information we need can be found today on the cloud or online. Additionally, there are state-of-the-art computer systems and programs to manipulate and analyze that GIS data sets assisting our necessities and investigation objectives. The combination of a free software and cross platform GIS software is the alternative offered by QGIS. This GIS application began development in 2002 and it is maintained by volunteers around the globe, has a broad group of users, and get an excellent support coming from other people using the tool. As user, you have several options to reach assistance through a Q&A site, mailing lists, chat, user groups, website and forums. In our case, as a group of investigators interested in tsunami modeling and evacuation maps, we are exploring the use of QGIS to create a grid that contains roughness and Manning values that correspond to the land cover classification for Puerto Rico. The effect of roughness is a feature that can be evaluated on the tsunami inundation modeling, resulting in changes in the geographical coverage of the inundation area when creating the evacuation maps. It is also stated that larger roughness values (as for vegetation or urban areas) cause a delay in the arrival time of the tsunami front, an important factor to consider for evacuation planning. The approach that will be use in this practice to determine the roughness, follows the method proposed by several authors. It consists in the use of satellite images that already were classified in land use coverage. To produce a roughness map, it will be assigned Manning's values to delimited areas depending on averaged fractions of roughness elements contained by each cover class. These Manning's roughness coefficients are recommendations found on the reviewed literature.