

The Use of Digital Elevation Models and Orthoimages for the Determination of Riverbeds of Hydrographic Basins in the Zone of Tixtla, Guerrero

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SUMMARY

The National Institute of Statistics and Geography (INEGI) of Mexico aims to produce data and geospatial information, in order to provide society and the State with quality, pertinent, truthful and timely information, in order to contribute to national development. This derives by law, that the INEGI generates groups of geospatial data, whose use allows to support the decision making of national scope, such as the prevention and attention of disasters, security and civil protection, land use planning, planning and construction of buildings and infrastructure, topography, communications and transportation, and for various projects, objectives and purposes, whose purpose is to be useful for the design, implementation and evaluation of public policies for the advancement and development of the country.

Currently, with the diversity of detection technologies, processing and innovative approaches related to geospatial data, the INEGI has produced digital information of the relief and images of the national territory, these data reach their maximum potential when they are spatially related in Geographical Information Systems (GIS), to offer users and specialists a range of options in the modeling and analysis of the territory with a close approximation to reality and with the variants and advantages offered by computer technology, nowadays applied to digital topography .

Through the presentation of this work, processes with geospatial information from INEGI are disclosed to promote the concurrence and use of this for the determination of river basin channels in the zone of Tixtla, Guerrero, a place where there is a high risk due to floods due to extreme or extraordinary rainfall that occur due to the effects of climate change that we are experiencing and that result in runoff with water flows that cause effects on the population and that, through the use of relief data in Digital Elevation Models (DEM) and its use in GIS, are of great importance, not only in the combination and integration of geospatial data, but also in the ability to extract digital

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information regarding the channels or runoffs necessary to perform hydrographic modeling; This through spatial operations used for this purpose through the use of terrain-type DEMs that allow modeling the interaction between the shape of the terrain and its water and sediment transport processes, and thereby obtain additional geospatial information to analyze the environment of this hydrographic basin in Tixtla.

Therefore, by providing elements to the specialists in charge of and responsible for civil protection and disaster prevention, having complementary information on the prevention of possible risks due to the presence of hydrometeorological phenomena that cause floods, it is possible to promote a culture of safety and self-protection in the citizens themselves, as well as moving towards better living conditions, facilitating the response capacity of the communities themselves in the presence of any disturbing phenomenon or agent that could affect the security of the population of Tixtla, Guerrero.

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