Geophysical Research Abstracts
Vol. 21, EGU2019-18334, 2019
EGU General Assembly 2019

A GIS model for seismic station sites selection. Case of study Chiapas State, Mexico.

Antonio Noe Aguilar (1), Arturo Montalvo (2), Luis Manuel García (3), and Juan Antonio Vargas (4)

(1) Ígneas Consultoría, Escuela Nacional de Protección Civil Campus Chiapas, Paseo de los Fresnos No. 1685, Col. el Mirador 2 Sección, C.P. 29030, Tuxtla Gutiérrez, Chiapas, Mexico (noe.pea@gmail.com), (2) Centro de Informação e Vigilância Sismovulcânica dos Açores (CIVISA), Rua da Mãe de Deus, Edifício do Complexo Científico, 3º Andar - Ala Sul 9500-321 Ponta Delgada Açores, Portugal, (3) Instituto para la Gestión Integral de Riesgos de Desastres del Estado, Carr. Emiliano Zapata Km. 1.9, Terán C.P. 29050 Tuxtla Gutiérrez, Chiapas, México., (4) Escuela Nacional de Protección Civil, Campus Chiapas. Carretera Ocozocoautla-Tuxtla Gutiérrez km 1.5 Antiguo Aeropuerto Llano San Juan Ocozocoautla de Espinosa, Chiapas, México

ABSTRACT

Setting up of new permanent seismic stations for a local or regional seismic network requires important considerations such as offsite and in situ studies, funding sources and implementation. As described in the New Manual of Seismological Observatory Practice – NMSOP (Borrmann, 2002) and the old one manual (Wilmore, 1979), offsite studies are relatively inexpensive and they should by performed first to minimize future fieldwork and its associated cost. The offsite study includes geographic region of interest, seismo-geological conditions, topography, accessibility, seismic noise sources, data transmissions and power regulations, land ownership, climate.

Most of these parameters are available in GIS format and can be obtain at State Agencies, Universities and Research Centers. In order to use and simplify the offsite studies, at the National Civil Protection School of Mexico in Chiapas State, a GIS model was develop to select sites of interest for new seismic stations that will integrate the Chiapas Regional Seismic Network.

The GIS information collected at the Mexican governmental Agencies provides data about tectonics, rivers, roads, topography, seismic risk and density, telemetry repeaters, geology, vegetation and land use. Each GIS shape where classified in three categories or safety distance or radio coverage depending the shape data type. The model created uses these classifications to create three polygon classes denominated most, less and worst interest.

The model generates 599 “most interest sites” without considering the telemetry repeaters shape and when includes 15 km radio coverage and radio path profile line of sight these sites drops to 42.

Further work will be an in situ noise survey of some of the sites of interest determinate by the model and a digital telemetry test to validate them for future seismic stations. This work will be commence at the summer of 2019 using an accelerometer instrument.