Finalized Need Statement Draft for Earthquake Detection & Notification System

There is a need to determine when and where on Earth stress between tectonic plates is building, as it can serve as a potentially good indicator for the possibility of damaging earthquakes in surrounding areas. The system will be able to take into account the various data inputs in order to effectively predict earthquake location and impact such that proper disaster provisions can be put into motion. We expect the system to be able to predict the likelihood of earthquakes (to a certain tolerance level\*) up to 2 weeks in advance, allowing the affected government agencies to notify their populations of the upcoming natural disaster, so that precautions can be made. The intended use of the system is to be used by various government agencies/citizens across North and South America. In 2016, the reported costs of natural disasters in the Americas exceeded $50 billion dollars\* US. The information provided by the seismic prediction prototype system will give the affected areas’ citizens sufficient notice of critical information (location, strength, timeline, and impact to crucial functions) such that the proper actions are taken. The ultimate goal of our system is the protection of assets and preservation of human lives. The estimated costs of the system will be covered by the affected nation’s government organizations, depending on what the country deems necessary. A magnitude 5.5 earthquake or greater had an average cost of $12 million and a median cost of $484 million from 1985-2015 adjusted for inflation, indicating a need for similar magnitude earthquakes to be detected and proper notification information distributed. When given enough time, proper precautions could be taken to protect against structural and property damage thus saving money. The prototype design must be completed for Chuck White, Project Manager for CSEP, by December 6th 2019, with a prototype delivered within 36 months of project initiation.