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Final Report

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Title of Award

Towards a Unified Approach to Evaluating Regional Earthquake Hazard and Risk in the Cordilleran Region – Including Relevant Efforts Along the Wasatch Front

Program Element and Objective Numbers: II.2, II.3
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Disclaimer

NON-TECHNICAL SUMMARY

Towards a Unified Approach to Evaluating Regional Earthquake Hazard and Risk in the Cordilleran Region – Including Relevant Efforts Along the Wasatch Front

Under this research project, the University of Utah has conducted studies on earthquake hazards of the Wasatch fault by examining the time-varying behavior of the fault with precise measurements of ground motion using continuous-recording GPS (Global Positioning Systems). The study is a follow-up project to confirm the observations from a 1992-1995 temporary deployment of GPS receivers along the central and northern Wasatch fault that revealed unexpectedly high deformation rates of ~ 2 times faster loading of the fault than deduced from geologic determinations. We have installed four new continuous GPS (CGPS) stations and incorporate data for co-processing from three additional regional CGPS stations in the surrounding Basin-Range region (operated by the Harvard-Smithsonian Institution) providing seven-station CGPS array coverage across the central part of the Wasatch fault. Data are transmitted continuously to the University of Utah via spread spectrum radio links for recording and processing. GPS data from the University of Utah network are also provided any interested user in near-realtime from the UNAVCO data archive via the Internet. We also investigated the interactions of individual segments of the Wasatch fault to assess its time-dependent loading behavior and began an analysis of the probabilistic fault displacement hazard of the Wasatch fault.