

**Collaborative Research with Central Washington University:  
A Pacific Northwest Geodetic Array (PANGA), Providing  
Constraints on North America – Juan de Fuca – Pacific Plate  
Interaction for Geophysical and Geological Modeling and  
Earthquake Hazards Assessment**

*PANGA*  
USGS No. *1434HQ98GR00039*  
Final Report

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**NEHRP Element(s): II**  
**Key Words:** GPS-Campaign

### **Non-Technical Abstract**

The purpose of the University of Alaska portion of this project was to develop and improve the PANGA data analysis in order to maximize the utility and reliability of the PANGA GPS results. About one year of PANGA data were analyzed both by the University of Alaska and Central Washington University and the results were carefully compared. We found excellent agreement between the PANGA solutions estimated by Alaska and CWU despite a number of differences in the data analysis techniques. This comparative study allowed us to identify a few blunders in each of our analyses, and showed the importance (or lack of importance) of certain models and options within the software. The only important discrepancies between the two sets of solutions were for sites that did not use the standard antenna, and for these sites the difference can be eliminated by using an antenna phase center model to account for the differences in antennas.

### **Project Goals**

The purpose of the University of Alaska portion of this project was to develop and improve the PANGA data analysis in order to maximize the utility and reliability of the PANGA GPS results. About one year of PANGA data were analyzed both by the University of Alaska and Central Washington University and the results were carefully compared. In addition to cross-checking each other's work and driving improvements in our basic analysis techniques, we focused on comparing solutions derived using two different techniques: network solutions and point positions. Point positioning is much more computationally efficient than network solutions, at the cost of some loss of information. Our goal was to use this comparison to determine which approach was the optimum one for PANGA by studying differences between the solutions and evaluating the importance of the covariance information lost in point positioning.