IMPROVED HYPOCENTER DETERMINATIONS USING THE CEPSTRAL STACKING METHOD (CSM) WITH A DENSE REGIONAL NETWORK OF STATIONS

Shelton S. Alexander¹ and Recep Cakir²

¹Department of Geosciences, Pennsylvania State University, University Park, PA 16802, shel@geosc.psu.edu

ABSTRACT

A dense regional network such as Pacific Northwest Seismic Network in Washington State provides accurate epicenter locations, because of full azimuthal coverage of stations recording each event. Relative epicenter locations are still more accurate. By applying the CSM to several of the regional stations an unbiased, accurate focal depth can be determined for each event. If stations at different azimuths are used, both pP-P and sP-P delay times can usually be determined from CSM cepstra so that possible ambiguity in focal depth can be eliminated. Results from applying this approach for hypocenter determinations in Washington are presented for selected earthquakes. They illustrate the improvement in hypocenter accuracy that can be achieved routinely. The potential to define active fault surfaces in three dimensions is significantly improved. Examples illustrating the results of this approach will be presented.



