Comparing shear-wave velocity determined by masw with borehole measurement at merapi sediment in Yogyakarta

Widjojo Prakoso, author

Abstrak

Next generation ground motion prediction models use shear-wave velocity over the top 30 m of subsoil (VS30) as an important assessment parameter of seismic ground surface motion. VS30 can be measured using invasive methods, such as boreholes, or non-invasive methods, such as multichannel analysis of surface waves (MASW). To evaluate this technique in a variety of near-surface conditions, MASW-derived shear-wave velocity profiles (s-wave velocity vs. depth) were statistically compared to direct borehole measurements from three locations of Merapi sediment found on the Universitas Muhammadiyah Yogyakarta (UMY) campus site. A detailed study of the effect from the total number of recording channels of MASW, sampling intervals, source offset, and receiver spacing was conducted near the borehole test site. The soil was classified as a medium soil or SD. The MASW method, which is non-destructive and non-invasive in nature and relatively faster in assessment, provides more reliable shear-wave velocity profiles, i.e. from 0 to 30 meters below the ground surface.