INTERMEDIATE PERIOD SURFACE WAVES FROM MINING EXPLOSIONS

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Intermediate period surface waves (2-20 s) are generated by long source duration mining explosions. Data from a PASSCAL broadband network in China and a similar deployment in Wyoming are used in a comparative study to understand sources and shallow crustal structure in the two regions.

The velocity models developed from intermediate period surface wave dispersion allow surface wave magnitude estimates to be made from intermediate period surface waves. Such estimates allow the investigation of mb/Ms ratios as an earthquake-explosion discriminate for smaller industrial explosions. mb and Ms values for the US and China large mining explosions (red x-marks) are superimposed on explosion measures published by Stevens and Day (1985, black dots) and Bonner et al. (2003, purple rectangles). This comparison suggests that large, long-delay mining explosions that are normally detonated may fall away from the earthquake populations. One event occurred on Aug. 1, 1996, plots in the explosion population. In-mine observations of this event indicate that it did not detonate as planned. A large portion of the blast accidentally detonated simultaneously.

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