

Discrimination Using Seismoacoustic Catalog Probabilities

Presented here are three seismoacoustic catalogs from various years and locations throughout Utah and New Mexico. To create these catalogs, we combine seismic and acoustic events detected and located using different algorithms. Seismoacoustic events are formed based on similarity of origin time and location. Following seismoacoustic fusion, the data is compared against ground truth events. Each catalog contains events originating from both natural and anthropogenic sources. By creating these seismoacoustic catalogs, we show that the fusion of seismic and acoustic data leads to a better understanding of the nature of individual events. The probability of an event being a surface blast given its presence in each seismoacoustic catalog is quantified. We use these probabilities to discriminate between events from natural and anthropogenic sources. Sandia National Laboratories is a multimission laboratory managed and operated by National Technology and Engineering Solutions of Sandia, LLC., a wholly owned subsidiary of Honeywell International, Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA-0003525.

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