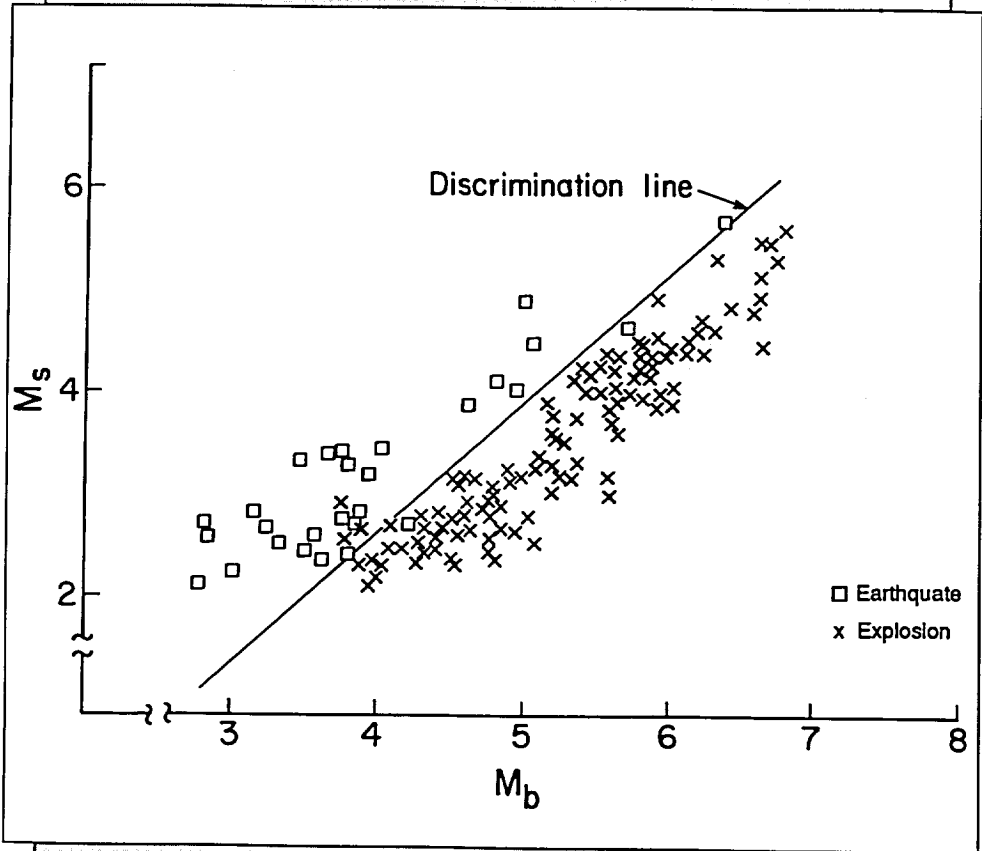


m_b and M_s values for underground explosions at the Nevada Test Site and for Western U.S.A. earthquakes. Note that small explosions with m_b near 4.0 and less tend to cross the "discrimination line" and mix with small earthquakes.

Figure 4: Plot of m_b Versus M_s



Modified from OTA Report, May 1988. Original source: S.R. Taylor, M.D. Denny, and E.S. Vergino, " m_b : M_s Discrimination of NTS and Western United States Earthquakes: A Progress Report", Lawrence Livermore National Laboratory, January 1986.

Annually, there are between 6,000 and 9,000 earthquakes occurring globally with m_b above 4.0, which is approximately the size of a 1 kiloton underground nuclear explosion detonated in hard rock (granite) environment. When earthquakes with m_b between 3.5 and 4.0 are added, the total number nearly triples. An m_b of 3.5 corresponds to what many experts regard as a conservative (too high) source identification threshold in the U.S.S.R. when in-country and external seismic stations are both available⁵.