Earthquake

Magnitude type:

Magnitude type	Magnitude Range	Distance Range	Comments
MW: Moment W-phase	~5.0 and larger	1 - 90 degrees	The moment magnitude scale is a measure of an earthquake's magnitude ("size" or strength) based on its seismic moment.
Mh	any	any	Non-standard magnitude method. Generally used when standard methods will not work. Sometimes use as a temporary designation until the magnitude is finalized.
Mb short-period body wave	~4.0 to ~6.5	15 - 100 degrees	Mb tends to saturate at about M 6.5 or larger.
Ms 20sec surface wave	~5.0 to ~8.5	20 - 160 degrees	A magnitude based on the amplitude of Rayleigh surface waves measured at a period near 20 sec. Ms is primarily valuable for large (>6), shallow events, providing secondary confirmation on their size.
Mwc (centroid)	~5.5 and larger	20 - 180 degrees	Derived from a centroid moment tensor inversion of the long-period surface waves Computable for all M6.0 worldwide using primarily the Global Seismograph Network.
Mwb (body wave)	~5.5 to ~7.0	30 - 90 degrees	Derived from moment tensor inversion of long-period (~20-200s) body-waves (P- and SH). Computable for all M5.5 or larger events worldwide.
Md or md (duration)	~4 or smaller	0 - 400 km	Based on the duration of shaking as measured by the time decay of the amplitude of the seismogram. Sometimes the only magnitude available for small events, but often used (especially in the past) to compute magnitude from seismograms with "clipped" waveforms due to limited dynamic recording range of analogue instrumentation, which makes it impossible to measure peak amplitudes.
ML Ml, or ml (local)	~2.0 to ~6.5	0 - 600 km	It is based on the maximum amplitude of a seismogram recorded on a Wood-Anderson torsion seismograph. Only authoritative for smaller events, typically M<4.0 for which there is no mb or moment magnitude.

Depth of the earthquake:

Earthquakes can occur anywhere between the Earth's surface and about 700 kilometres below the surface. For scientific purposes, this earthquake depth range of 0 - 700 km is divided into three zones: shallow, intermediate, and deep. Shallow earthquakes are between 0 and 70 km deep; intermediate earthquakes, 70 - 300 km deep; and deep earthquakes, 300 - 700 km deep.

Azimuthal Gap:

The azimuthal gap of an earthquake is the angular range between the two furthest seismic stations from the earthquake's epicentre. It represents the gap in station coverage around the earthquake source. A large azimuthal gap indicates a lack of seismic data from certain directions, which can affect the accuracy of earthquake analysis. Ideally, seismic stations should be evenly distributed to minimize the azimuthal gap and obtain a more complete understanding of the earthquake. By considering the azimuthal gap, seismologists can assess the limitations of the data and estimate uncertainties in determining parameters such as the earthquake's location, depth, and focal mechanism.

Horizontal Distance

The horizontal distance of an earthquake refers to the straight-line measurement between the earthquake's epicenter and a specific location on the Earth's surface. It represents the direct distance from the seismic source to the desired point, typically measured in kilometres (km) or miles (mi). This parameter is important in assessing the impact of an earthquake, as it helps determine how close a particular area is to the source of seismic activity. The horizontal distance is often considered alongside other factors such as magnitude, depth, and local geological conditions to evaluate the potential effects and risks associated with the earthquake at various locations.

RMS value

The RMS (Root Mean Square) value of an earthquake is a measure of the amplitude or strength of the seismic waves generated by the event. It represents the square root of the average of the squared values of the ground motion recorded by seismometers during the earthquake. The RMS value provides an indication of the energy released by the earthquake, and it is commonly used to quantify the earthquake's magnitude. A higher RMS value corresponds to stronger ground shaking and a potentially more significant impact on structures and infrastructure. It is an important parameter in earthquake engineering and seismology for assessing seismic hazard and designing earthquake-resistant structures.