Last year’s Nisqually Quake was a deep earthquake that caused some damage but is the least destructive of the three types of quakes possible in the Northwest. The two other types — shallow and subduction — are potentially much more destructive. The scenarios below illustrate why magnitude estimates alone do not fully represent the threat an earthquake may pose or type of shaking it can generate.

DEEP QUAKES
Fracturing occurs within the Juan de Fuca plate 30 to 40 miles underground. The Juan de Fuca plate dives under, subducts, North America. The intensity of a deep quake often dissipates before hitting the surface.

Largest recorded in Washington: 7.1M in 1949, Olympia
Frequency: Every 30 or 40 years

SHALLOW QUAKES
Crustal stress causes fracturing within the North American plate less than 1.5 miles below the surface.

Largest known in Washington: 7.4M in 1872, North Cascades
Frequency: Unknown

SUBDUCTION QUAKES
Over time, the North American plate builds stress as it locks up against the Juan de Fuca plate. When the subduction boundary slips, releasing the stress, scientists say it will produce one of the world’s largest earthquakes.

Largest known in Washington: 9M in 1700
Frequency: About every 400-600 years

Sources: U.S. Geological Survey, University of Washington, California Institute of Technology

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