

### Full Caption, Explanatory Notes and References

**Figure 1, full caption.** Global distribution of earthquakes with magnitude >5.0 (1973-2013) compiled from the USGS NEIC (National Earthquake Information Center) and human population density for the Year 2000 from SEDAC (Socioeconomic Data and Applications Center) using GeoMapApp. These data highlight the critical need to better understand the paleoearthquake record, given high population density along plate boundaries. Red star = location of IODP Japan Trench 866-Pre. Blue stars = areas identified for development of future proposals. Numbers indicate areas where paleoseismic studies have recovered arguably complete and fragmentary archives of earthquakes.

#### Explanatory note earthquake data:

The compilation only considers regions with major off- or near shore fault systems and regions with prominent historic earthquakes and tsunamis. Each given region is numbered from 1-27, see list below).

- 1) Cascadia Subduction Zone: e.g. 1700 Cascadia earthquake
- 2) Northern San Andreas Fault System: e.g. 1908 San Francisco Earthquake
- 3) Mexico and Central America Subduction System: e.g. 1902/1976 Quatema, 1931 Managua, Nicaragua, 1985 Mexico City,
- 4) Ecuador Subduction System: e.g. 1906 Esmeraldas, Ecuador
- 5) Peru / northern Chile subduction system: e.g. 1868 Arica, 1970 Ancash earthquake, Peru
- 6) Central Chile subduction system: e.g. 1906 Valparaiso 1928 Talca 2010 Maule earthquakes
- 7) South-central Chile subduction system: e.g. 1837 and 1960 Valdivia earthquakes
- 8) Caribbean: e.g. 1787 Puerto Rico, 1812 Caracas, Venezuela, 2010 Haiti earthquakes
- 9) Newfoundland: 1929 Grand Banks
- 10) Iberian margin: e.g. 1755 Great Lisbon earthquake
- 11) Calabria Subduction System: e.g. 1693 Sicily, 1783 Calabria, 1908 Messina earthquakes
- 12) Hellenic subduction zone: e.g. 365AD Crete earthquake
- 13) Northern Anatolian Fault / Marmara Sea: e.g. 1509 Constantinopel, 1894 Istanbul, and 1999 Izmit earthquakes
- 14) Makran. Subduction system: 1945 Balochistan earthquake
- 15) Arakan subduction zone: e.g. 1762 Arakan earthquake
- 16) Sumatra-Andaman subduction system: e.g. 2004 Great Sumatra-Andaman earthquakes
- 17) Sunda Trench / Sumatra Subduction System: 1833, 1861 and 2005 earthquakes
- 18) Sumba /Timor New Guinea area: e.g. 1977 Sumba earthquake
- 19) Philippines, 1976 Mindanao earthquake
- 20) Nankai Trough, 1944/1946 Nankai/Tonankai,
- 21) Japan Trench: e.g. Jogan, 1896 Sanriku, 2011 Tohoku
- 22) Kamchatka/Kuril Trench: 1952 Kamchatka earthquake
- 23) Aleutian Subduction Zone: 1946 E.Aleutian earthquake
- 24) Alaska Subduction Zone: 1964 Great Alaskan earthquake
- 25) Solomon/Vanuatu: 1977 Tonga,
- 26) Samoa: e.g. 2009 Samoa earthquake
- 27) New Zealand, Hikurange Subduction Zone and Alpine Fault Plate boundary System

#### Explanatory note and reference list for submarine paleoseismology data

Submarine paleoseismology data selected from studies published in the open literature, which present high-resolution records and robust age models. Full references list of all evaluated literature is given below. All records, which are incorporated into the compilation, are indicated by a reference index indicating location region, as outlined above for the earthquake data and on the figure.

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