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Earthquake Energy, Earthquake Volume, Aftershock Area, and Strength of the Earth's Crust

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記事の概要抄録

Various facts appear to suggest that one continuous field of mechanical stress developed in the earth's crust has a certain upper limit for its voluminal extent. The ultimate mechanical stress energy that can be stored up in this whole volume until a break-down takes place in it may be identified with the energy of the largest possible earthquake. The energy deduced on this hypothesis agrees well with those of the actual largest earthquakes. The area A in which aftershocks occur in association with a major earthquake has been found by UTSU and SEKI regularly to increase with the magnitude M of that main shock. This relation, when combined with the magnitude-energy relation due to GUTENBERG and RICHTER, yields a formula

$$E=6 \times 10^2 \times A^{1.5}.$$

The numerical values of the coefficient and of the exponent of A in this formula can be well explained by the hypothesis stated above regarding the spatial distribution of the stress energy within the earth's crust.

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Earthquakes, temblors, quakes, tremors: These names are used to describe the sudden release of energy in the earth's crust causing movement. Firstly, lets get to know some terms that are associated with earthquakes: Earthquake: A sudden and violent movement of a portion of the earth's crust, and the series of vibrations that follow. Earths crust: This is the solid thin layer that covers the outside of the earth. To put it in perspective, think of it as the skin on the outside of an apple. Plate: A plate is a section of the earths crust. Plates slide along either beside, over or under each othe An earthquake (also known as a quake, tremor or temblor) is the shaking of the surface of the Earth resulting from a sudden release of energy in the Earth's lithosphere that creates seismic waves. Earthquakes can range in size from those that are so weak that they cannot be felt to those violent enough to propel objects and people into the air, and wreak destruction across entire cities. The seismicity, or seismic activity, of an area is the frequency, type, and size of earthquakes experienced over a Earthquake Energy, Earthquake Volume, Aftershock Area, and Strength of the Earth's Crust. Article. Jan 1956. Chuji Tsuboi. The area A in which aftershocks occur in association with a major earthquake has been found by UTSU and SEKI regularly to increase with the magnitude M of that main shock. This relation, when combined with the magnitude-energy relation due to GUTENBERG and RICHTER, yields a formula $E=6 \times 10^{2 \times A - 5}$. The numerical values of the coefficient and of the exponent of A in this formula can be well explained by the hypothesis stated above regarding the spatial distribution of the stress energy within the earth's crust. View. Show abstract. Seismicity of The Earth and Associated Phenomena. Article. Apr