F I G U R E S

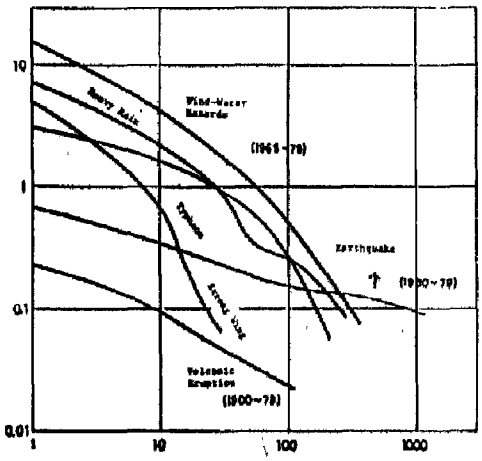


Figure 1. The relation between the scale and frequency of casualties due to natural hazards

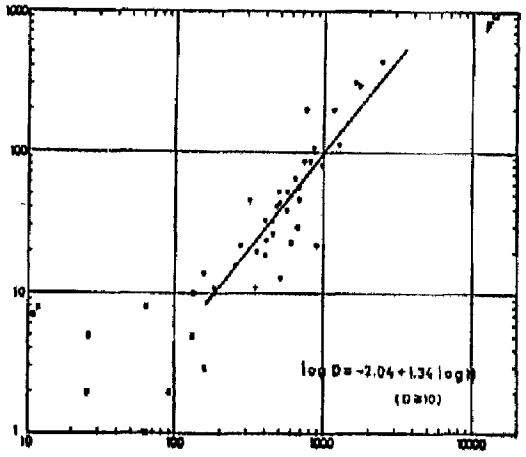
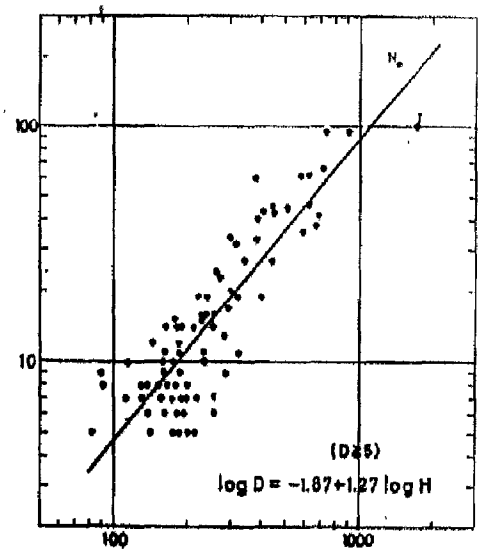


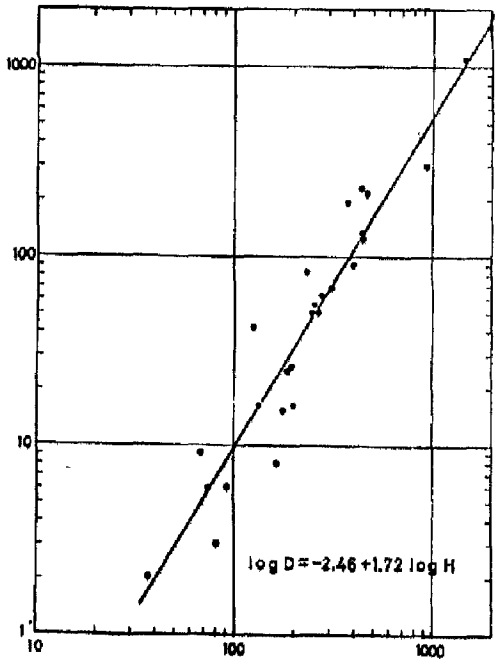
Figure 2. The relation between the number of damaged houses and the number of deaths: Fukui Earthquake (1948). Damages by cities, towns and villages of Fukui Prefecture, F: Fukui



The number of deaths (D)

The number of damaged houses
(totally-collapsed + o,2 partly-collapsed) (H)

Figure 3. The relation between the number of damages houses and the number of deaths: Nōbi Earthquake (1891). Damages by cities, towns and villages of Aichi Prefecture, N: Nagoya, I: Ichinomiya

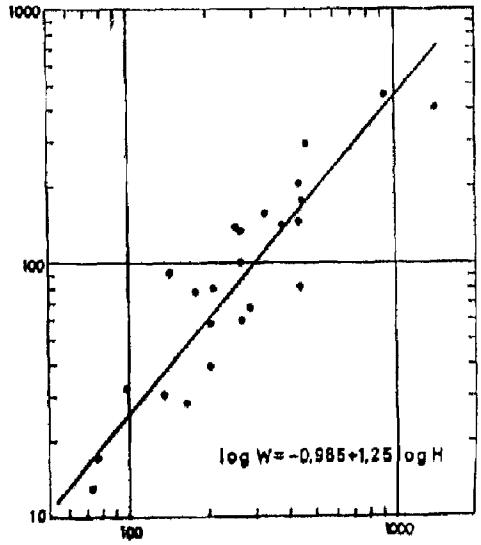


The number of deaths (D)

The number of damaged houses
(totally-collapsed + 0.2 partly-collapsed + burnt-down) (H)

Figure 4. The relation between the number of damaged houses and the number of deaths: Northern Tango Earthquake (1927). Damages by towns and villages of Kyoto Prefecture

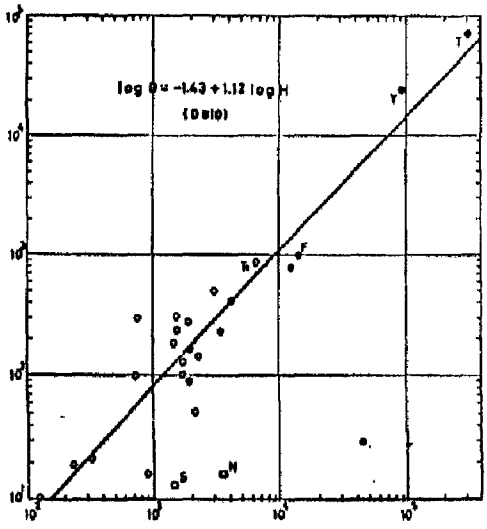
The number of injured (W)



The number of damaged houses (totally-collapsed + 0.2 partly-collapsed + burnt-down) (H)

Figure 5. The relation between the number of damaged houses and the number of the injured: Northern Tango Earthquake (1927). Damages by towns and villages of Kyoto Prefecture

The number of deaths (D)



← 1000 or more burnt-down houses

The number of damaged houses (totally collapsed + 0.2 partly-collapsed + burnt-down) (H)

Figure 6. The relation between the number of damaged houses and the number of deaths due to earthquake hazards (1891-1978) in the case of cities.
T: Tokyo (Kantō Earthquake), Y: Yokohama (Kantō Earthquake)
F: Fukui (Fukui Earthquake), Tt: Tottori (Tottori Earthquake)
N: Niigata (Niigata Earthquake), S: Sendai (Earthquake off Miyagi Prefecture)

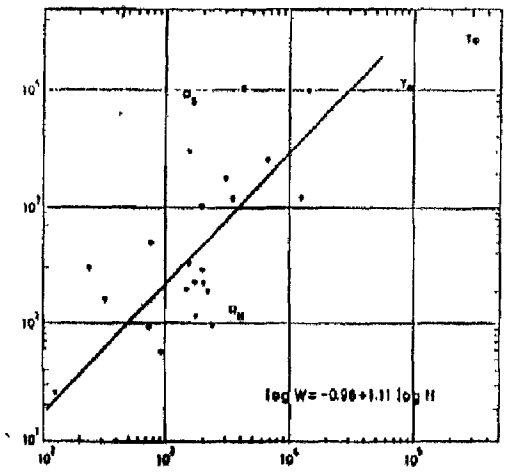


Figure 7. The relation between the number of damaged houses and the number of injured. T: Tokyo, Y: Yokohama, N: Niigata, S: Sendai

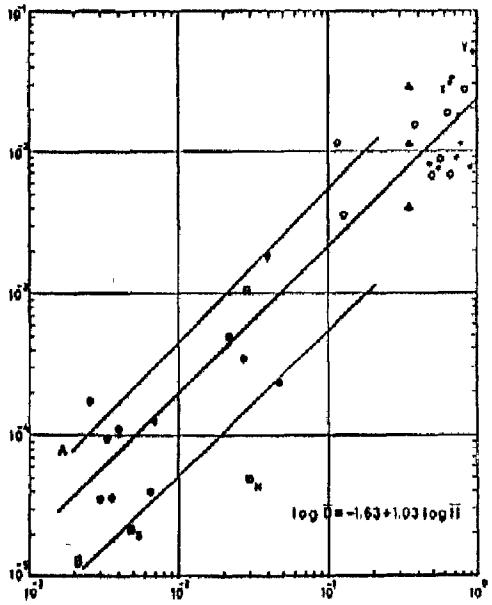
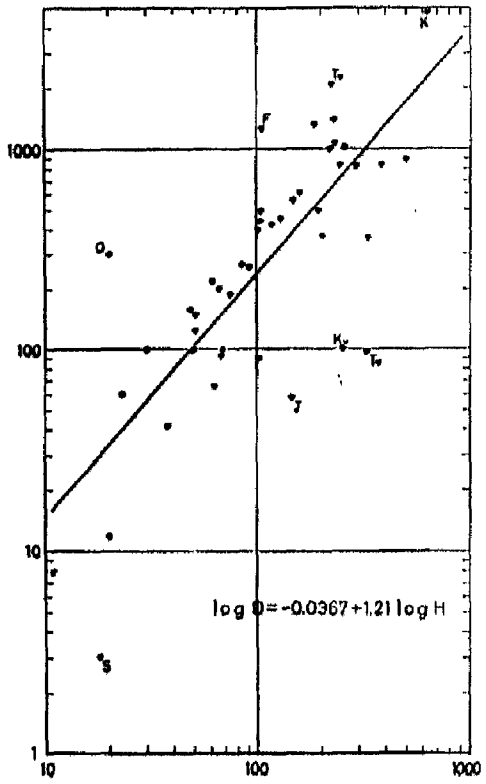


Figure 8. The ratio of damages due to earthquake hazards in the case of cities. T: Tokyo, Y: Yokohama, N: Niigata, S: Sendai, A: Regression line of flood and debris hazards in cities, B: Regression line of strong-wind and storm-surge hazards in cities. The three estimates of damages done to Tokyo are plotted (by •) according to equation (2), equation (1) and prediction by the Tokyo Metropolitan Commission for Disaster Prevention (1978) in this order from top to bottom.

The number of deaths (D)



The number of washed-away and destroyed houses (H)

Figure 9. The relation between the number of washed-away and destroyed houses and the number of deaths due to Sanriku Tsunami hazards in 1896. Damages by towns and villages of Iwate and Miyagi Prefectures.
K: Kamaishi, To: Tôni, F: Funakoshi, O: Origasa, Ku: Kuwagasaki, Ta: Tanohata, J: Jôgohama, S: Sokei

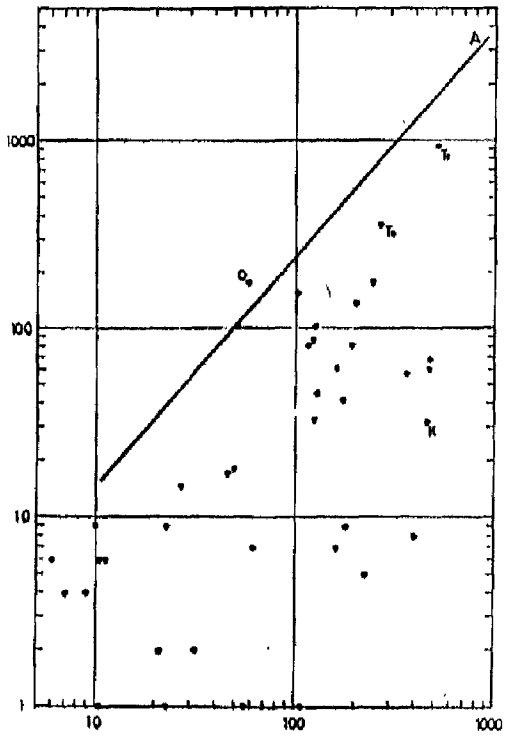
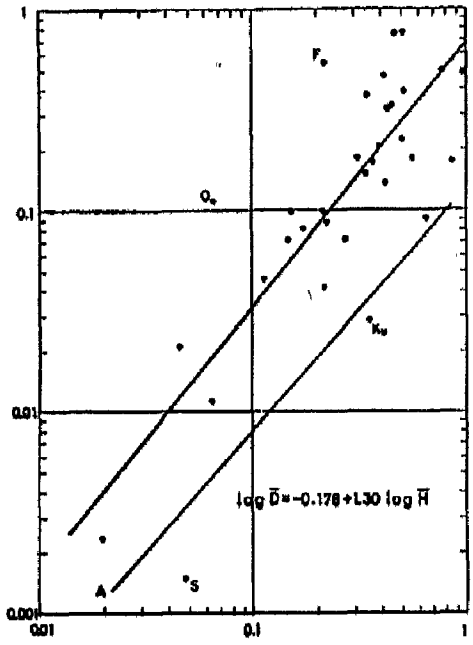


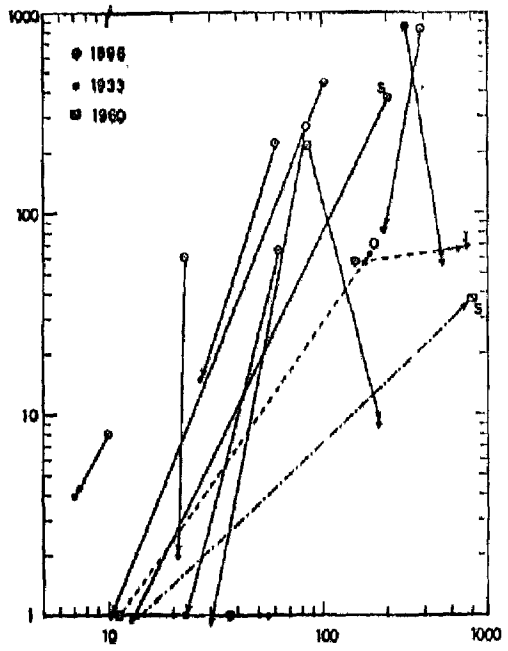
Figure 10. The relation between the number of washed-away and destroyed houses and the number of deaths due to Janriku Tsunami hazards in 1933. Damages by towns and villages of Iwate and Miyagi Prefectures. Tr: Tarō, To: Tōni, O: Omoshige, K: Kamaishi, The regression line of the 1896 hazards is shown in the figure.

The death rate (D)



The ratio of washed-away and destroyed houses (H)

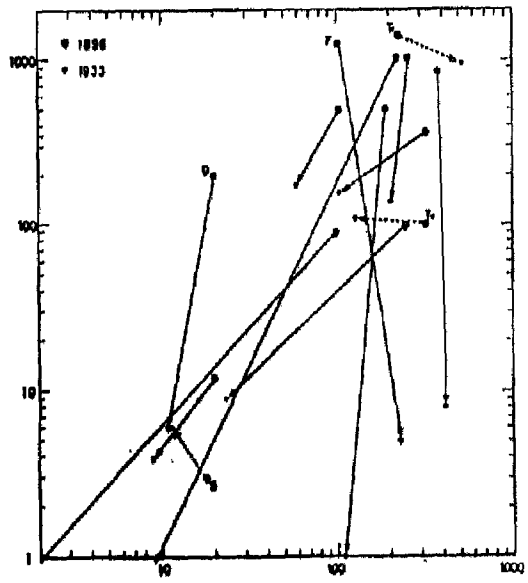
Figure 11. The ratio of damages due to Sanriku Tsunami hazards in 1896. Damages by towns and villages of Iwate Prefecture. F: Funakoshi, O: Origasa, Ku: Kuwagasaki, S: Sokei, A: Regression line of storm-surge hazards due to Isewan Typhoon which caused damages to cities, towns and villages located at the Deltaic Coastal Region of Ise Bay.



The number of deaths

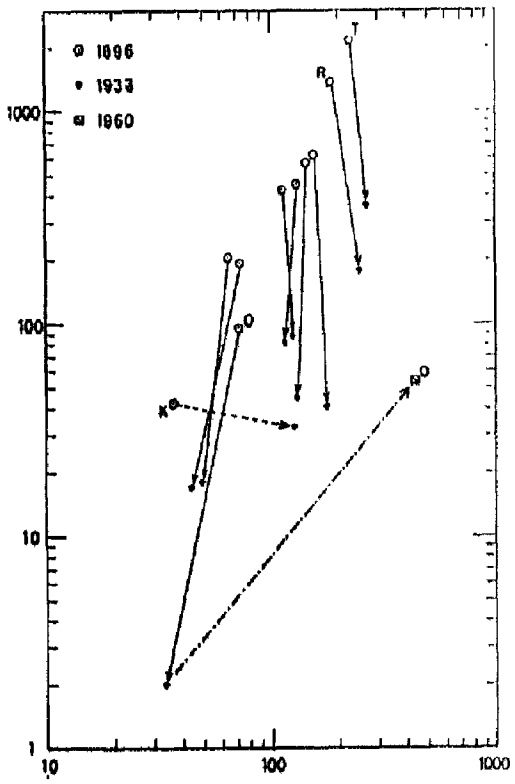
The number of washed-away and destroyed houses

Figure 12. Changes over time in damages due to Tsunamis (towns and villages of Miyagi Prefecture). S: Shizugawa, J: Jūgohama



The number of washed -away and destroyed houses

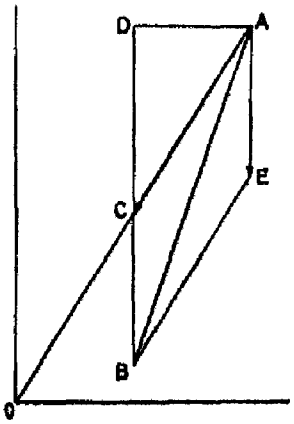
Figure 13. Changes over time in damages due to Tsunamis (towns and villages of Heii County of Iwate Prefecture) Tr: Taro, F: Funakoshi, Ta: Tanohata, S: Sokei



The number of deaths

The number of washed-away and destroyed houses

Figure 14. Changes over time in damages due to Tsunamis (towns and villages of Kesen County of Iwate Prefecture). T: Tōni, R: Ryōri, K: Kesen, O: Ōfunato



The number of deaths

The number of washed-away and destroyed houses

Figure 15. Decomposition of vectors indicating changes over time in damages

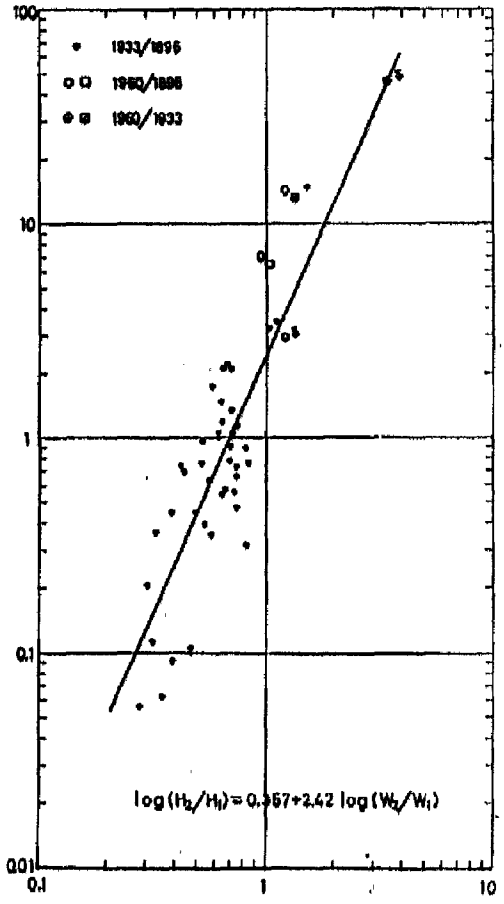
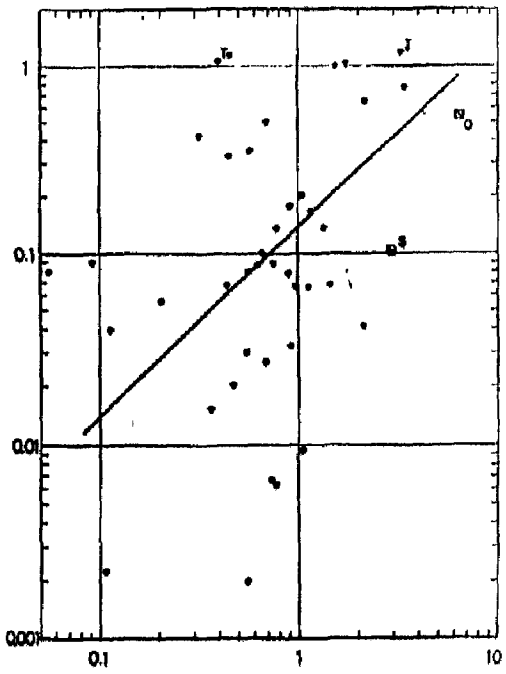


Figure 16. The relation between the tidal wave height ratio and the ratio of the numbers of washed-away and destroyed houses. S: Shizugawa, O: Ōfunato

The ratio of the number of deaths



The ratio of the numbers of washed-away and destroyed houses

Figure 17. The relation between the ratio of the numbers of washed-away and destroyed houses and the ratio of the numbers of deaths
J: Jūgohama, Ta: Tanohata, O: Ōfunato, S: Shizugawa

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