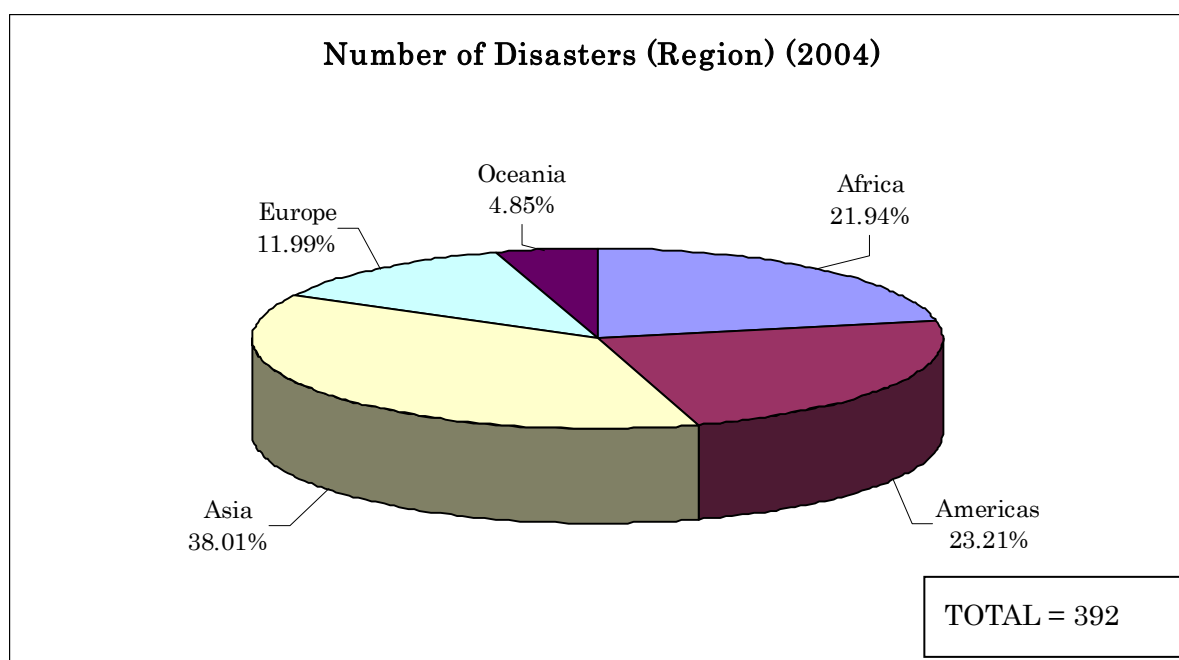


Chapter 3: Regional Characteristics of Natural Disasters

3.1 Proportion of Natural Disasters in the World Compared to Regions:

The majority of disasters in the year 2004 occurred in Asia, with 38% (increased from previous year), followed by America, Africa, and Europe with 23%, 22%, and 12% respectively. Oceania had the least with only 5% of the total natural disasters that occurred in the world in the year 2004. This is almost the same pattern of 2003 except Asia. Figure 26 summarizes this data visually.

Figure 26

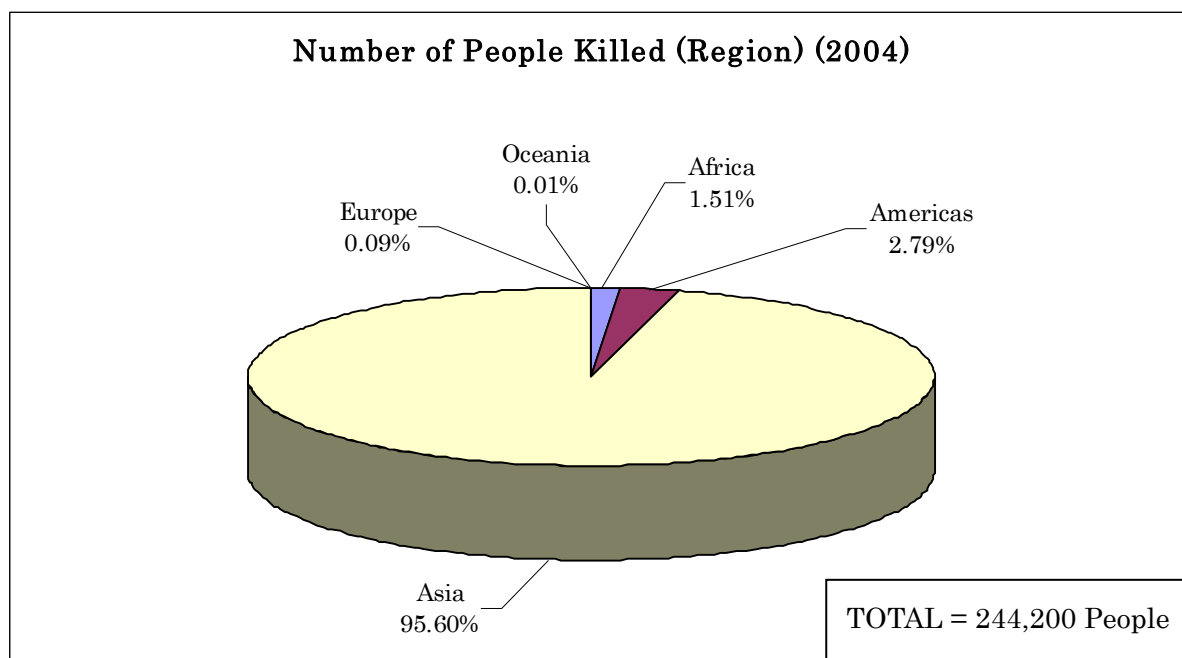


Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

As can be seen in Figure 27, the majority of people killed by natural disasters in the year 2004 lived in Asia, with 96% of the total number of people killed by disasters in the world (tremendously increased from 57% from the previous year). This is due the catastrophic Tsunami and earthquake that occurred in Asia. Another significant region is

America, with 3% (increased from the previous year). People killed by disasters in Africa decreased from 6% in 2003 to 2% in 2004. Europe also recorded a drastic decrease in terms of people killed from 35% in 2003 to 0.1% in 2004. This is due to the heat wave that hit Europe in 2003 and the improved weather conditions in 2004. Oceania registered a decrease from 0.1% in 2003 to 0.01% in 2004 in terms of people killed by natural disasters. Due to the heavy death toll in Asia because of the Tsunami disaster, other regions' figures look smaller.

Figure 27

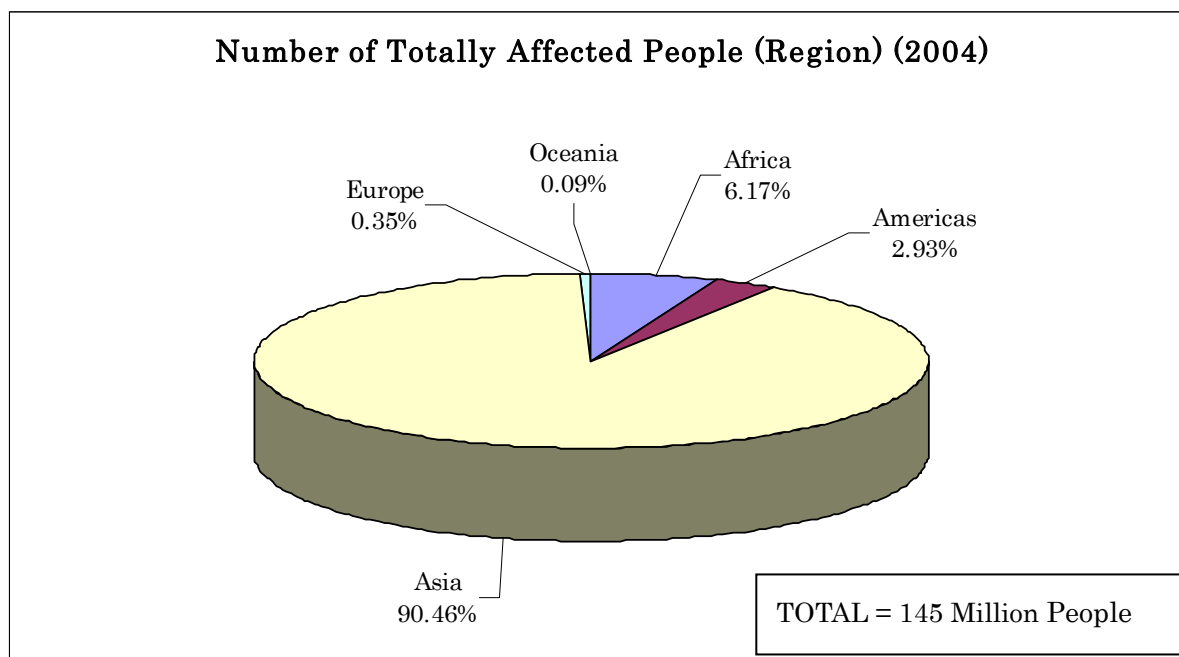


Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

The number of overall totally affected people decreased from 2003 (254 Million People) to 2004 (145 Million People) despite the severe Asian tsunami disaster. As Figure 28 shows, the Asian region has recorded the highest percentage of *totally* affected people by natural disasters, with 90% (almost same as the previous year). Except for the Tsunami affected people in Asia, other disasters occurred in the world has not affected many people in

the world. Nevertheless, it clearly demonstrates the continuous vulnerability of Asia to natural hazards.

Figure 28

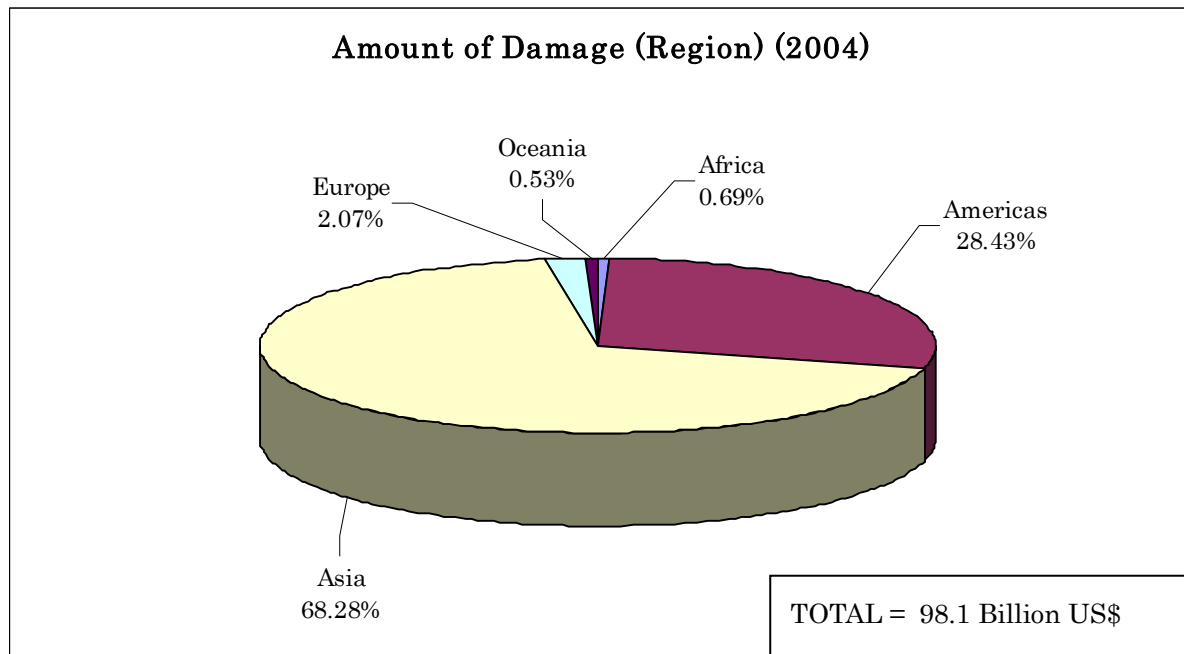


Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

According to Figure 29, in contrast to previous year figures, Asia accounts for more than two third of the economic damage caused by natural disasters in the year 2004. This is mainly due to the 2004 Tsunami and Earthquake that struck many Asian countries and the record number of Typhoons that hit Japan, as well as the flood caused by them. Japan earthquake (Niigata) also contributed to this increased damage in Asia. America (28%) and Europe (2%) account for the second and third level of economic losses. Europe registered a significant decrease from 17% in 2003 to 2% in 2004 in terms of damage. The socio-economic structure of these regions and the disaster occurrences and countermeasures could be attributed to these trends. All other regions accounted for much less economic damages.

Overall damage has increased by more than twofold from the previous year, from US\$44 Billion to US\$98 Billion and this is considerably a huge blow to the development efforts.

Figure 29



Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

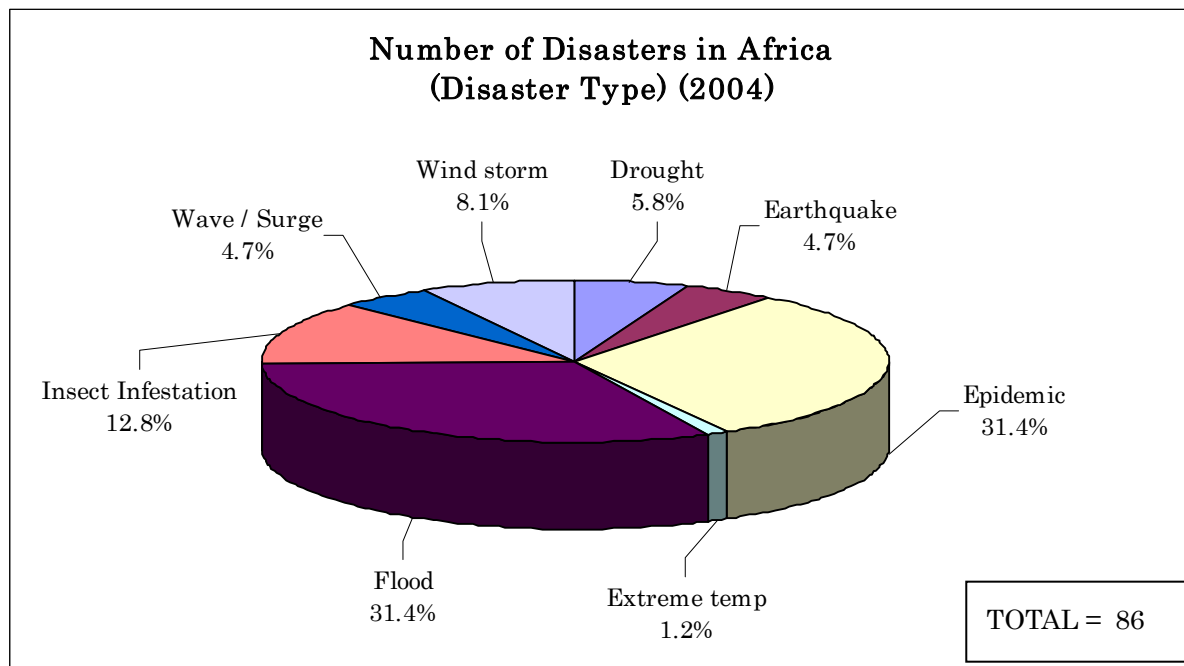
These figures indisputably demonstrate that the disaster vulnerability of the Asian region cannot be neglected in relation to global sustainable development and the need of stronger disaster countermeasures.

3.2 Regional Characteristics of Natural Disasters in the World

3.2.1 Characteristics of Disasters in Africa

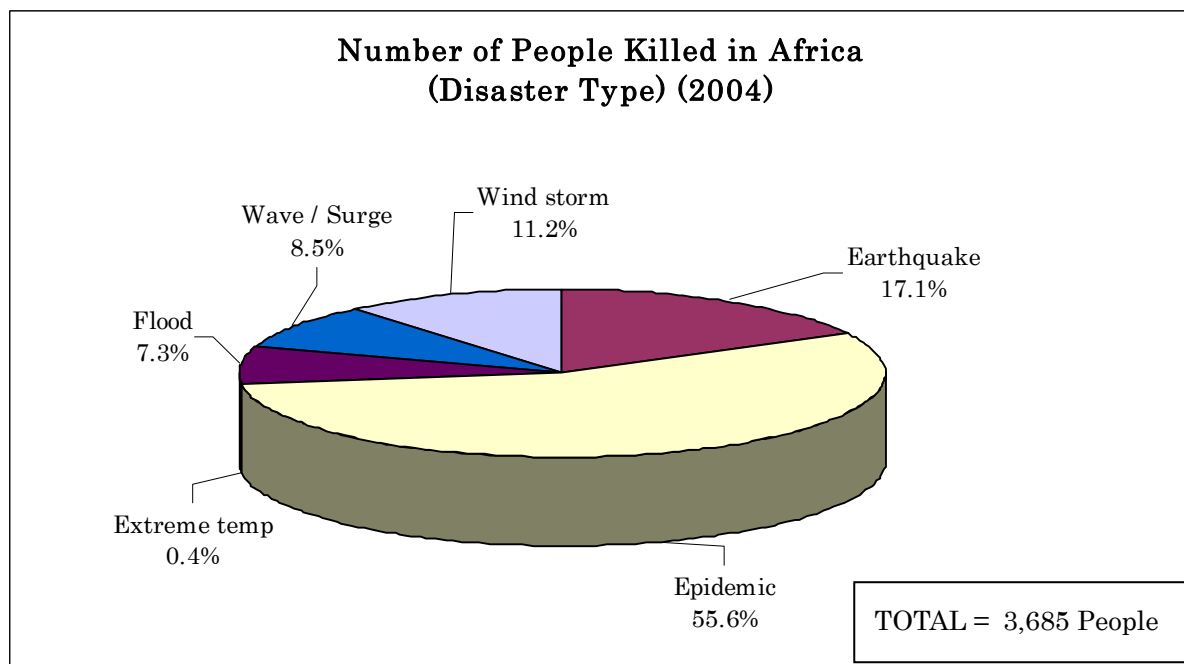
It can be seen from the Figure 30 that about 95% of the natural disasters in the year 2004 in Africa constituted of epidemics, flood, insect infestations, wind storms, earthquakes, and droughts. Tsunami that hit the east African coastal line also accounted for 5% of the total disaster occurrences in Africa. Furthermore, Figure 31 suggests that the majority of the human loss in Africa was due to epidemics, earthquakes and wind storms, as they account for 84% of the human loss. Tsunami and flood accounted for the rest of the 16% of the totally killed in Africa. Meanwhile, the majority of the people affected by disasters in Africa are affected by drought which accounts for nearly 75% of the *totally* affected people in Africa in the year 2004, as shown in Figure 32. Furthermore, droughts, wind storms and flood disasters account for nearly 98% of the *totally* affected population in Africa for 2004. Also, economic damage caused by the Morocco Earthquake was the biggest in the region which contributed for nearly 59% of the total economic damage in the region for 2004. Wind storms that hit Madagascar contributed to the second largest economic damage in the region. The tsunami represented the third most damageful disaster in Africa for 2004 (Figure 33). These figures characterize the African region as a serious disaster-prone region with more socio-economic vulnerabilities, where the majority of human suffering comes from droughts, floods, earthquakes, tsunami and epidemics.

Figure 30



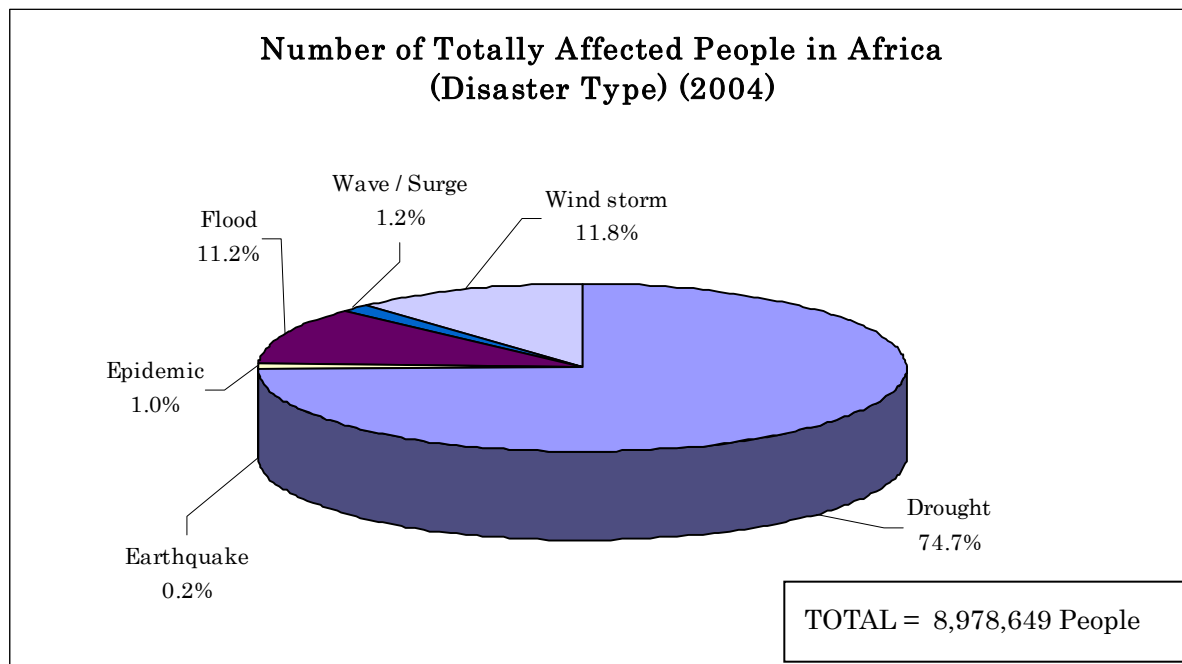
Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 31



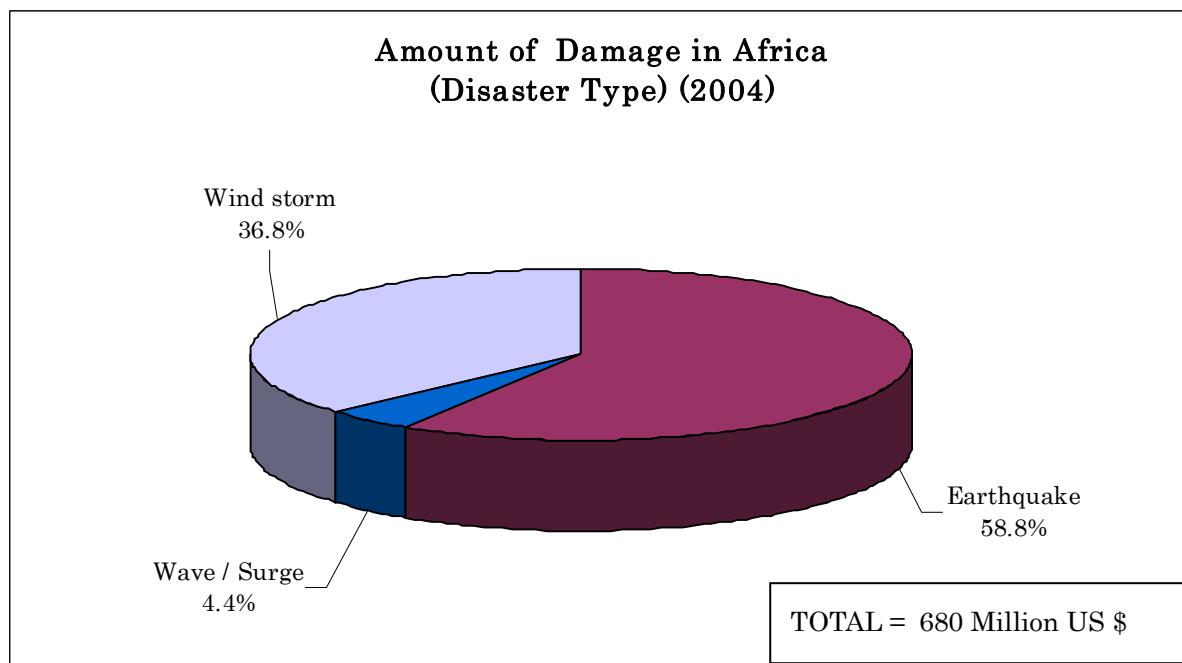
Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 32



Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 33

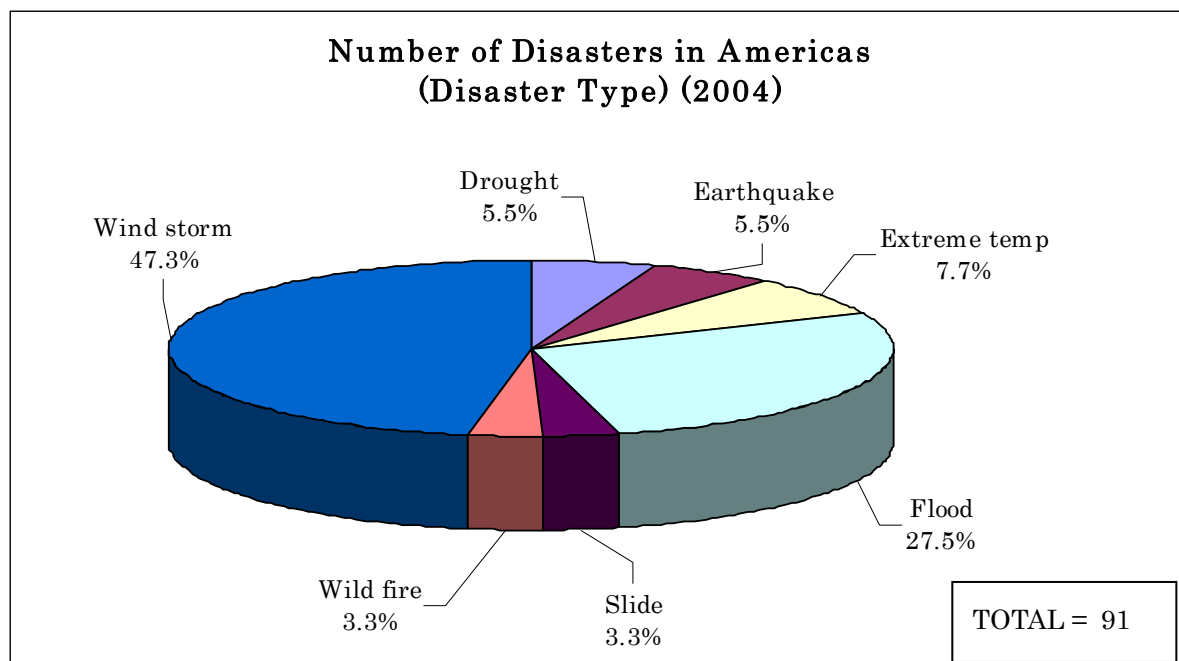


Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

3.2.2 Characteristics of Disasters in Americas

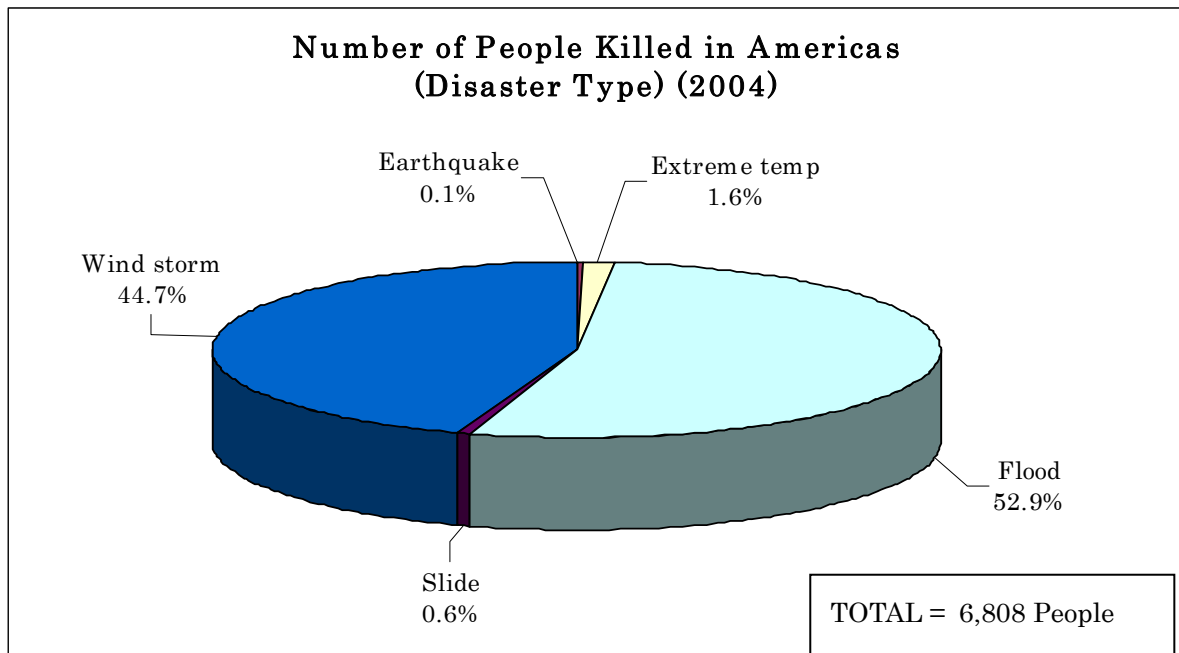
In the American region which includes North and South American countries, floods and windstorms make up the majority (almost 75%) of natural disasters that occurred in the region in 2004. When considering human loss and suffering, 97% of people were killed by floods and windstorms. Meanwhile, nearly 94% of the disaster-affected people are brought by extreme temperatures, wind storms, and floods. The majority of the economic damage was caused by wind storms (hurricane and tornado) in 2004. Severe damage was done by Hurricane Jeanne, Charley, Ivan and Frances that hit the USA and Hurricane Charley that also hit Carribean. It is evident from Figure 34 to 37 that the American region was greatly affected by hydro-meteorological disasters in the year 2004 as it was affected in the year 2003 too.

Figure 34



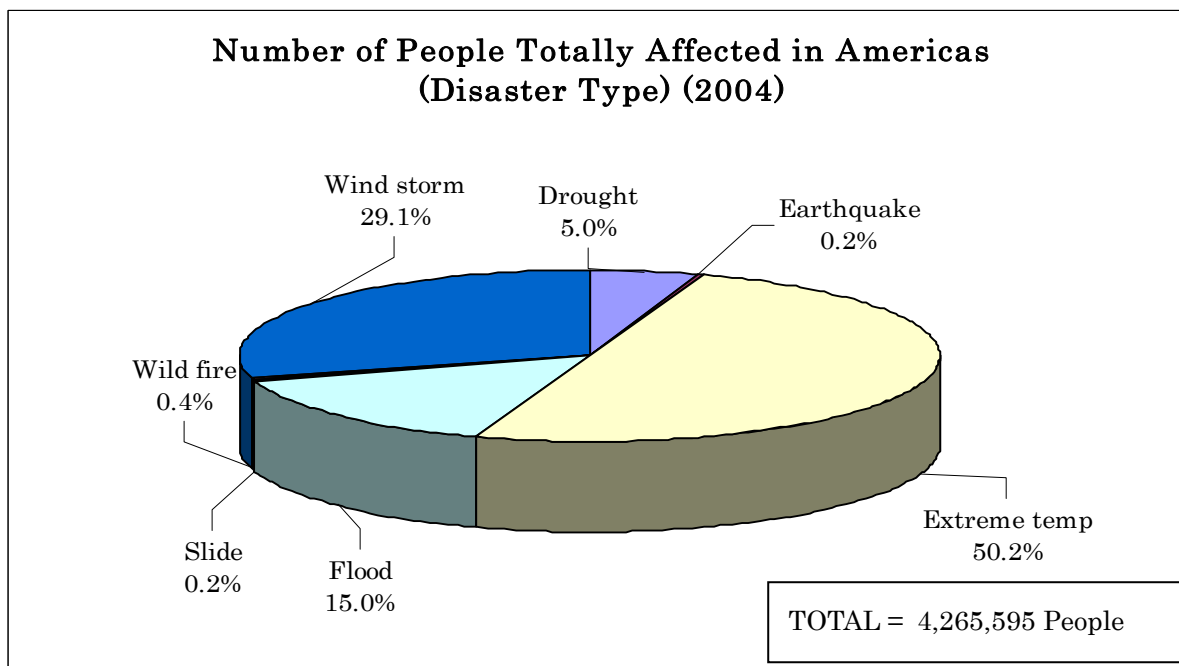
Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 35



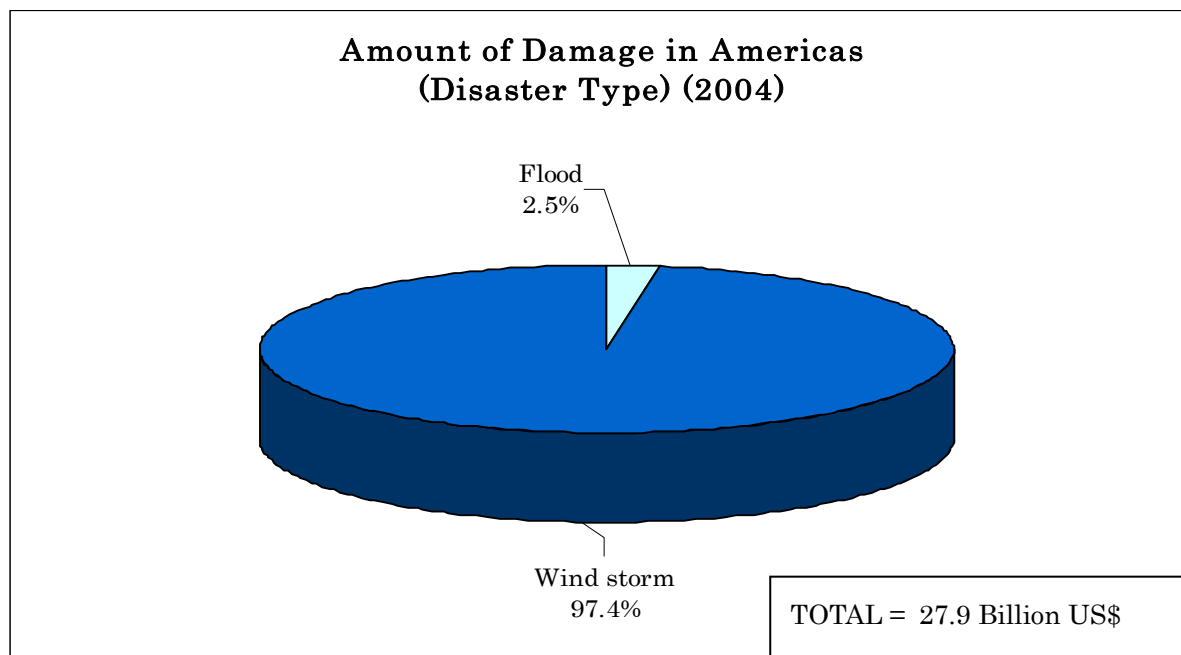
Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 36



Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 37

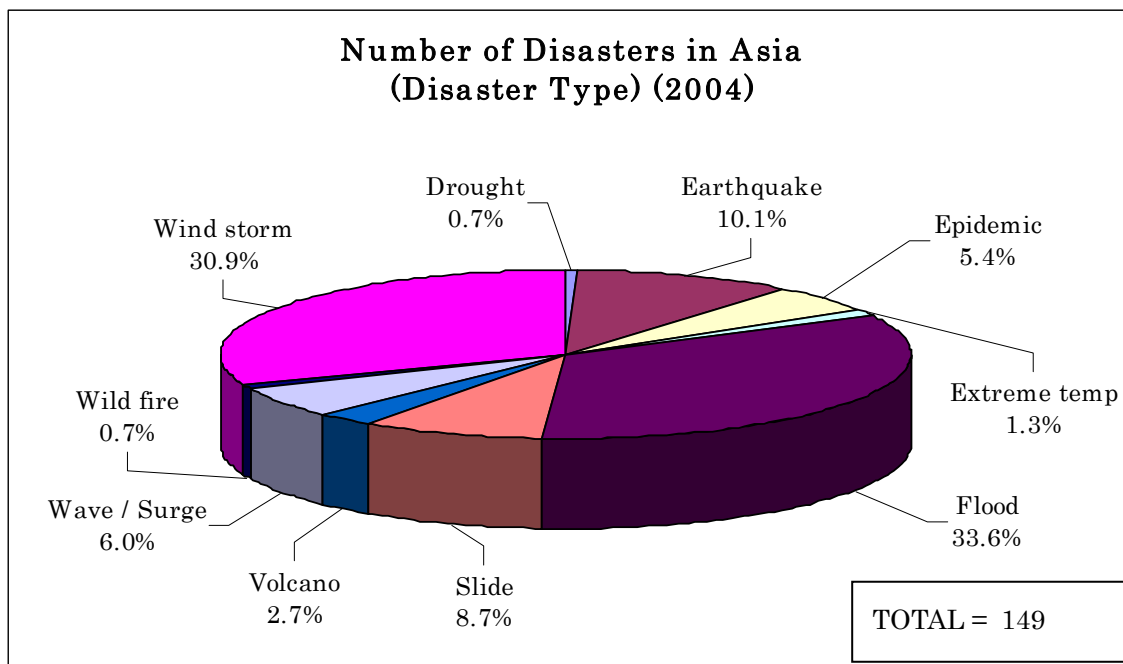


Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

3.2.3 Characteristics of Disasters in Asia:

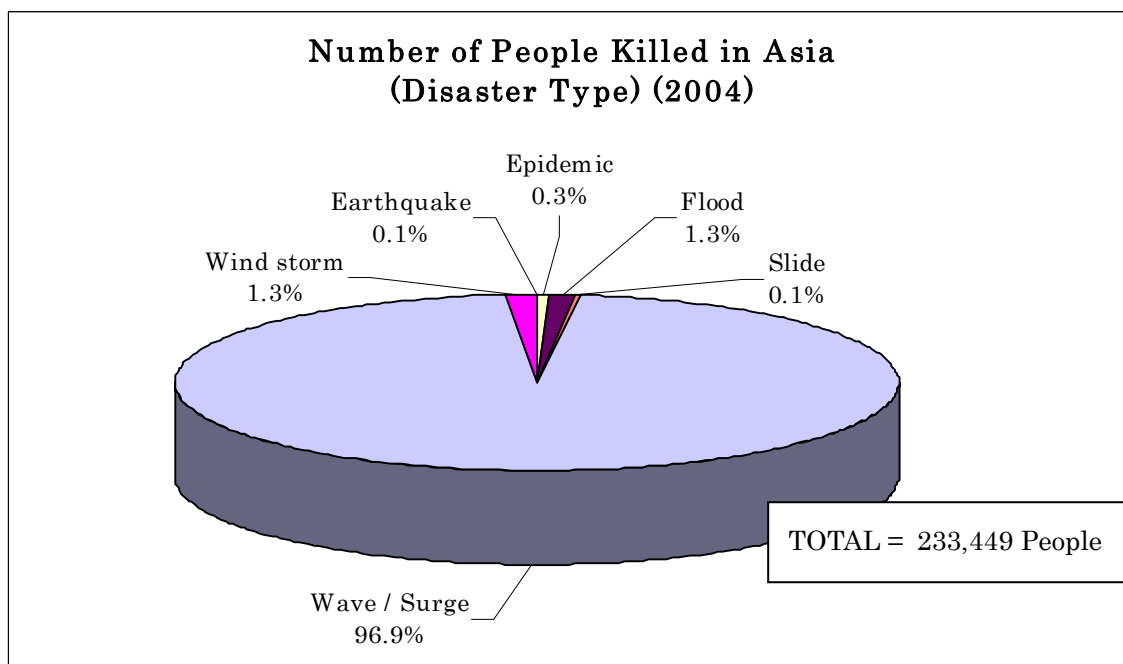
In the earlier section, it was demonstrated that the Asian region is highly vulnerable to natural disasters. The same trend will also be observed in the following discussion. According to Figure 38, floods, wind storms, earthquake, slides and wave/surge (tsunami) have occurred at a greater rate than other disasters. About 65% of disasters that occurred in Asia were wind storms and floods, followed by earthquakes accounting for 10%, slides 9% and wave/surge (tsunami) 6%. It is noteworthy to observe that Indian Ocean Tsunami has caused the greatest human loss in many countries in Asia (Figure 39), along with typhoons, floods, and earthquakes that occurred in Japan. Floods in China, Nepal and Bangladesh also contributed to the high death toll in Asia. It is evident from Figure 40 that floods, wind storms and wave/surge (tsunami) caused severe human suffering in Asia as almost all the people affected by natural disasters in the region in 2004 were affected by these types of disasters. Furthermore, about 54% of the economic damage was also due to earthquake and tsunami in the region. The rest is due to wind storms and floods (Figure 41). Hence, it can be concluded that the Asian region is severely prone to disasters and vulnerable to both hydro-meteorological and geophysical disasters. The following figures from 38 to 41 clearly depict these trends.

Figure 38



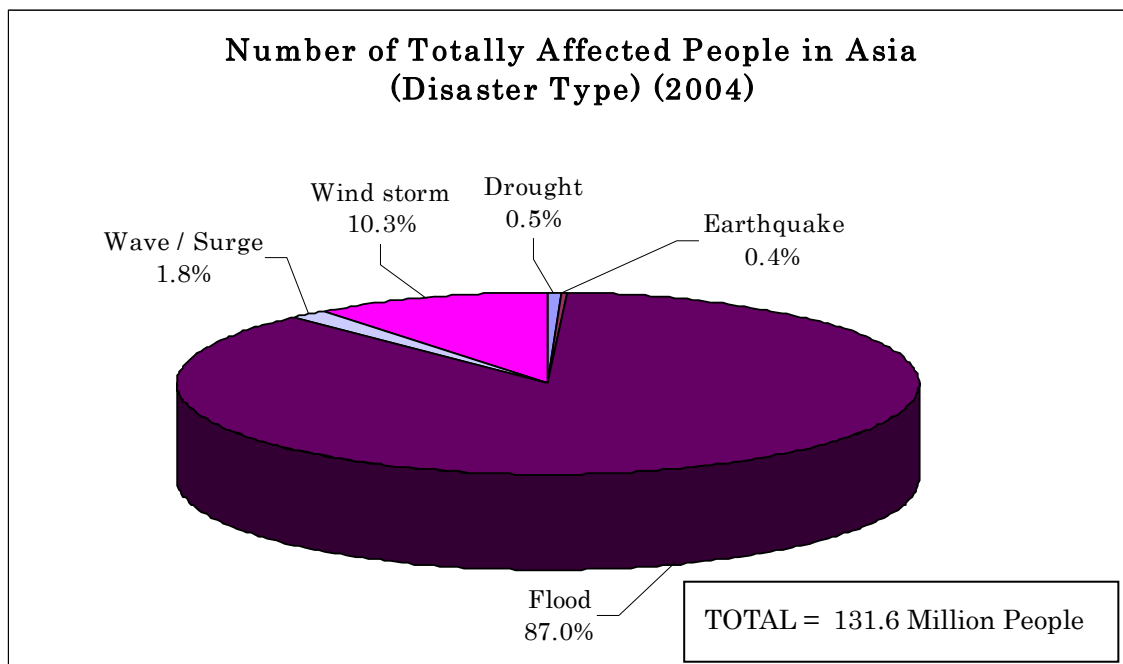
Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 39



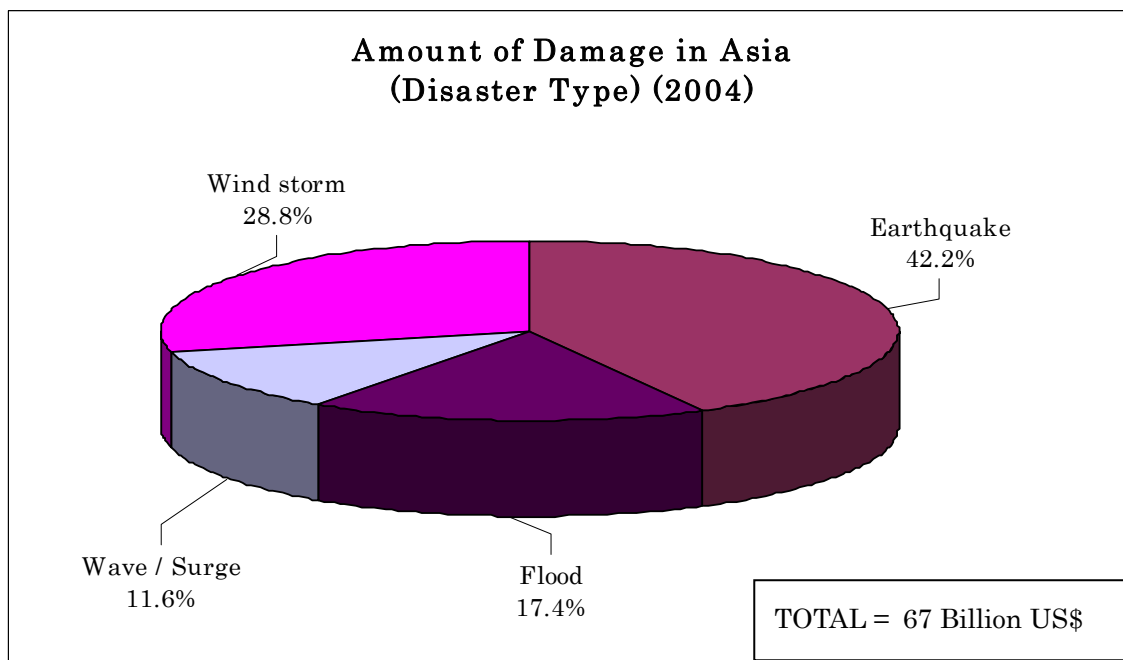
Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 40



Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 41

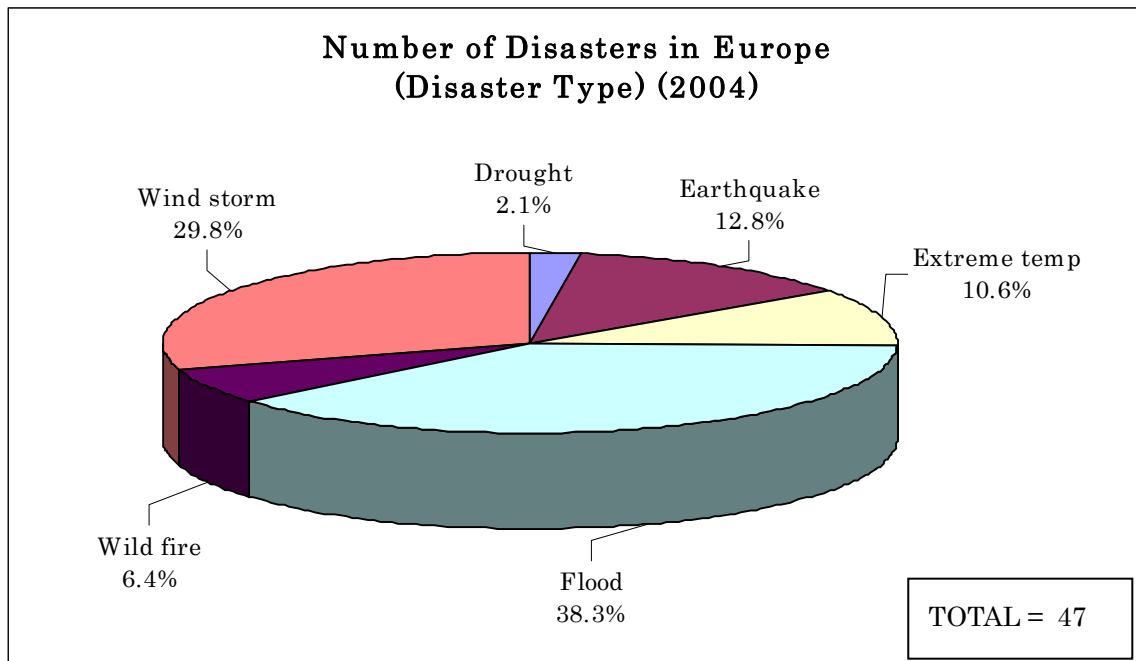


Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

3.2.4 Characteristics of Disasters in Europe

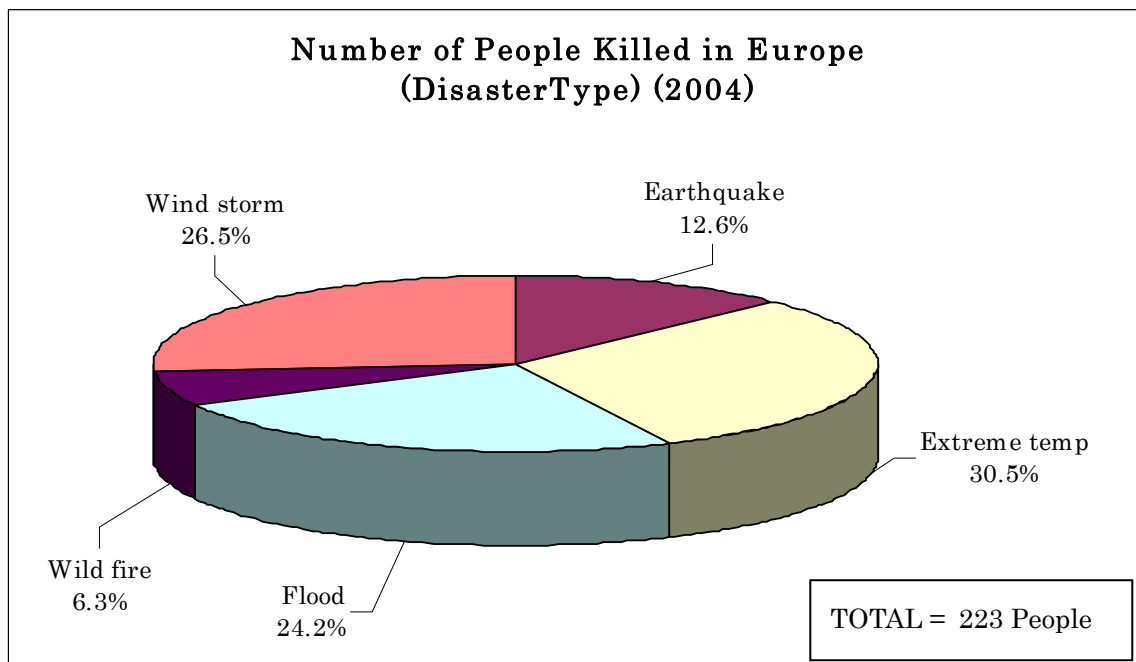
As we know, the year 2004 was not a difficult year for Europe after the 2003 extreme temperatures and heat wave, and the 2002 devastating floods. If we observe the following figures, from Figure 42 to Figure 45, we can notice that floods, winstorms, earthquakes and extreme temperatures (heat wave) and subsequent droughts caused severe human loss in the region. According to Figure 42, the majority of the disasters in 2004 were floods and wind storms, which accounted for 68% of the total disasters. The majority of the human loss was due to extreme temperatures (heat wave), wind storms, flood and earthquakes as explained in Figure 43. All of these disasters caused about 94% of the total human loss in the region in 2004. Furthermore, as seen in Figure 44, 88% of the *totally* affected people were affected by floods, in contrast to the situation of the previous year (In 2002 many people (84%) were affected by floods, whereas in 2003, many people were affected by heat waves). Mainly Romania's extreme temperatures (heat wave), Russia (flood and wildfire), Turkey (earthquake, wind storm and flood) and France (wind storm and flood) immensely contributed to the human loss and economic damage in this region in 2004. According to the Figure 45, the droughts created heavy economic loss in the region in 2004 (floods made heavy economic loss in the region in 2003). Mainly Portugal droughts contributed to this phenomenon. Thus it can be concluded that the year 2004 was tumultuous for Europe, as hydro-meteorological disasters once again caused severe damages.

Figure 42



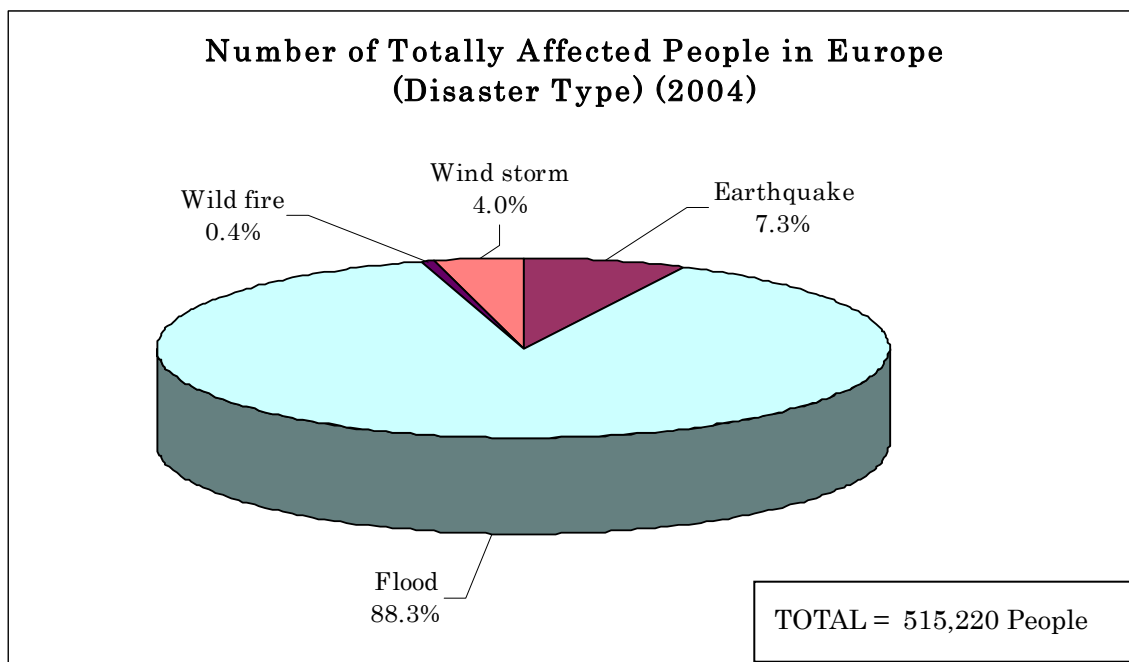
Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 43



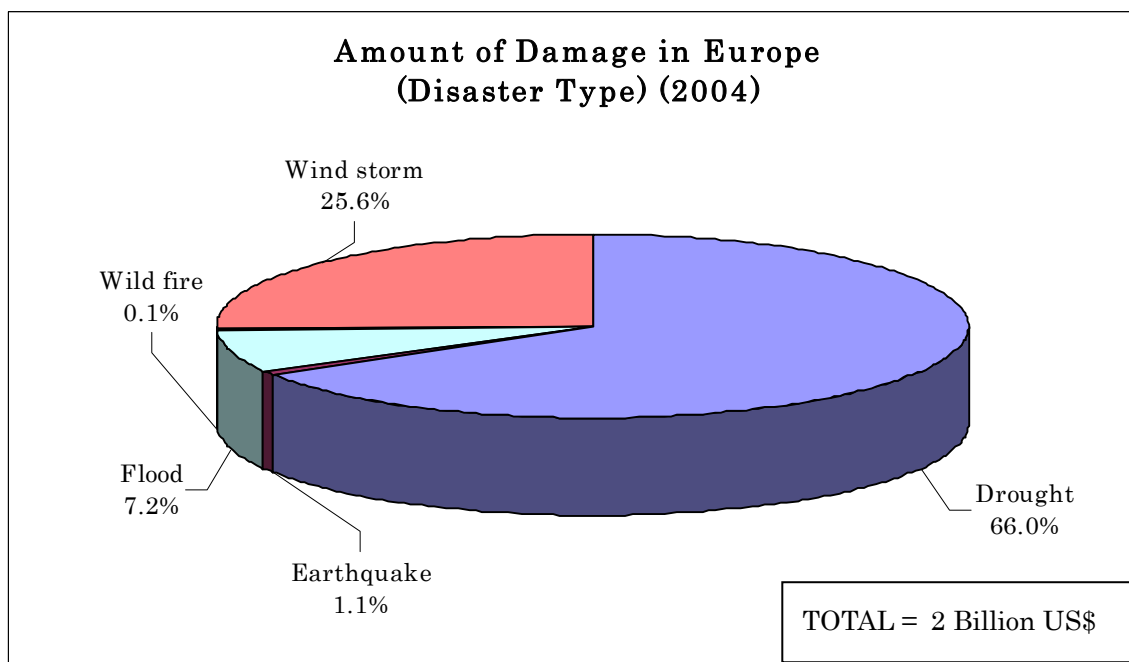
Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 44



Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 45



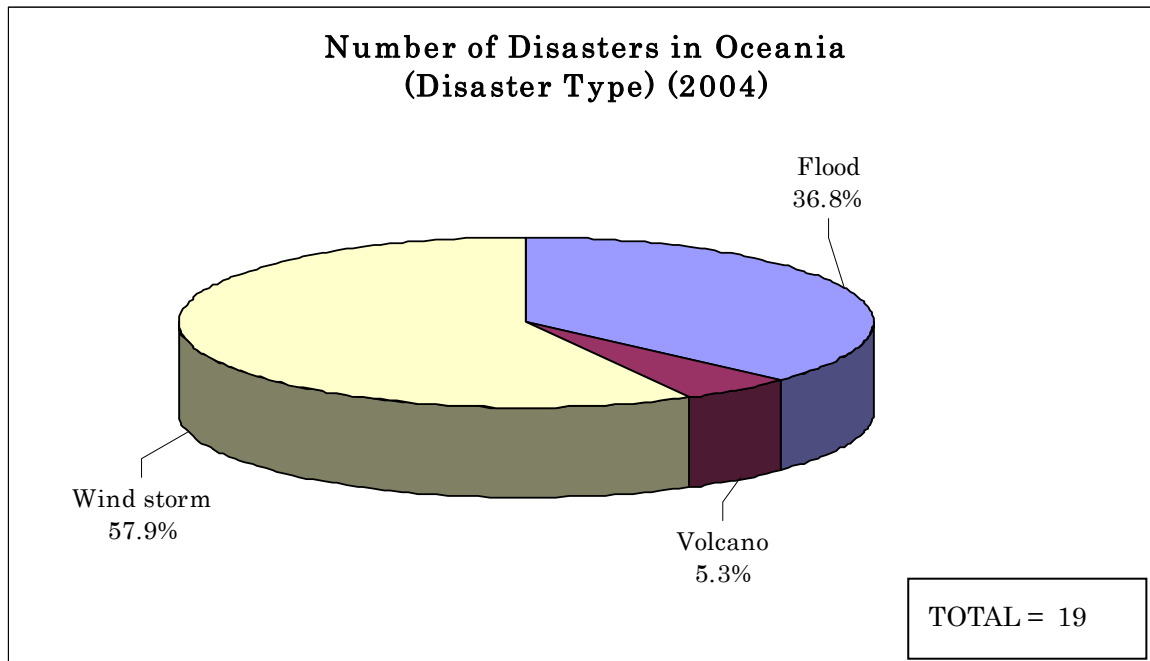
Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

3.2.5 Characteristics of Disasters in Oceania

Disaster trends in Oceania are a bit different compared to those in other regions in the year 2004. Natural disasters in the year 2004 were different from the average pattern of the natural disaster occurrences in Oceania. Not all types of natural disasters have occurred in the region, but the majority of them were windstorms and floods, totaling 95% among them. The rest constituted of volcanic eruption. This trend can be seen in Figure 46. According to the Figure 47, the entire human loss was due to windstorms and floods. The reason is due to the storms in the pacific island countries (Fiji, Niue, Vanuatu, Micronesia Federal States and American Samoa) in 2004. Figure 48 illustrates the pattern of *totally* affected people in Oceania in 2004, with floods and windstorms causing the majority (92%) of the human suffering. The Papua New Guinea Volcano eruption affected the rest of the people in the Oceania in 2004. The reason for this unusual picture is the severe wind storm that hit the small pacific island countries in Oceania and the volcano eruption in Papua New Guinea. Furthermore, the majority of the economic damage has been caused by floods (59%) and wind storms (28%). Figure 49 shows this trend clearly.

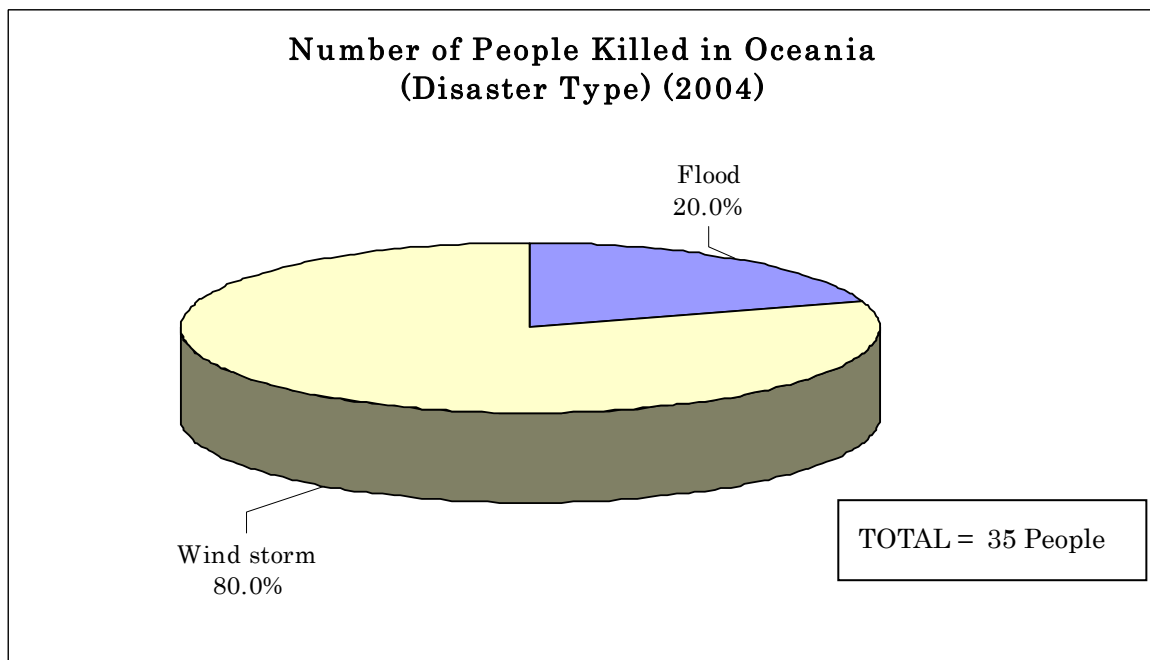
It is concluded that in 2004, Oceania experienced mostly hydro-meteorological disasters, almost in equal amounts due to the geographical location.

Figure 46



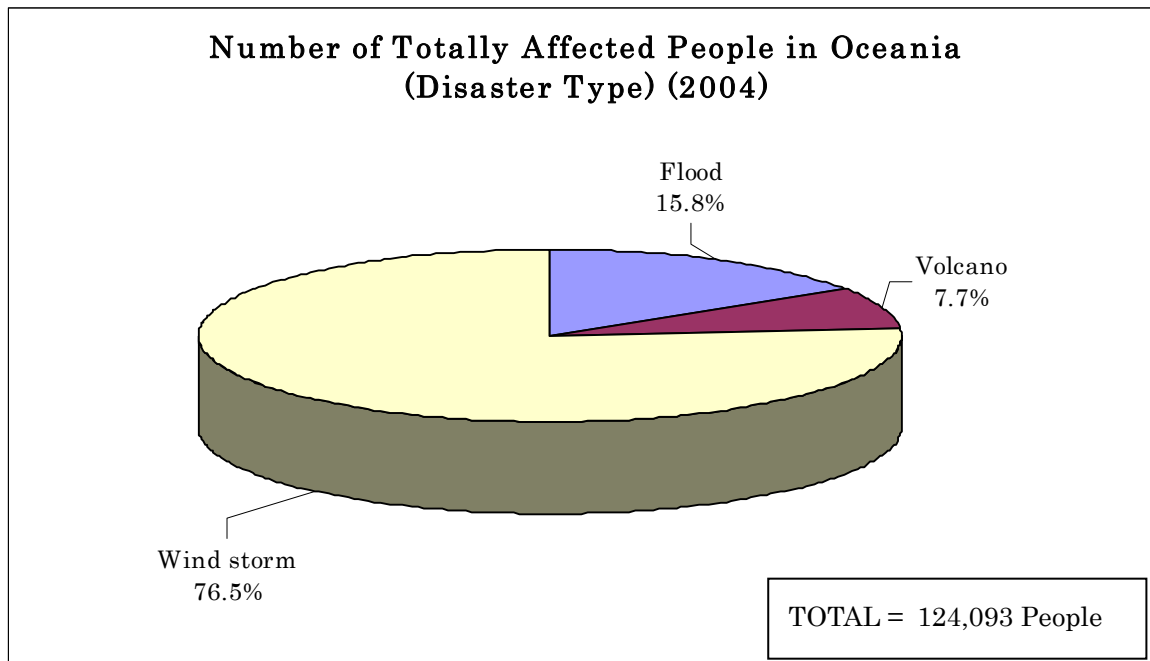
Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 47



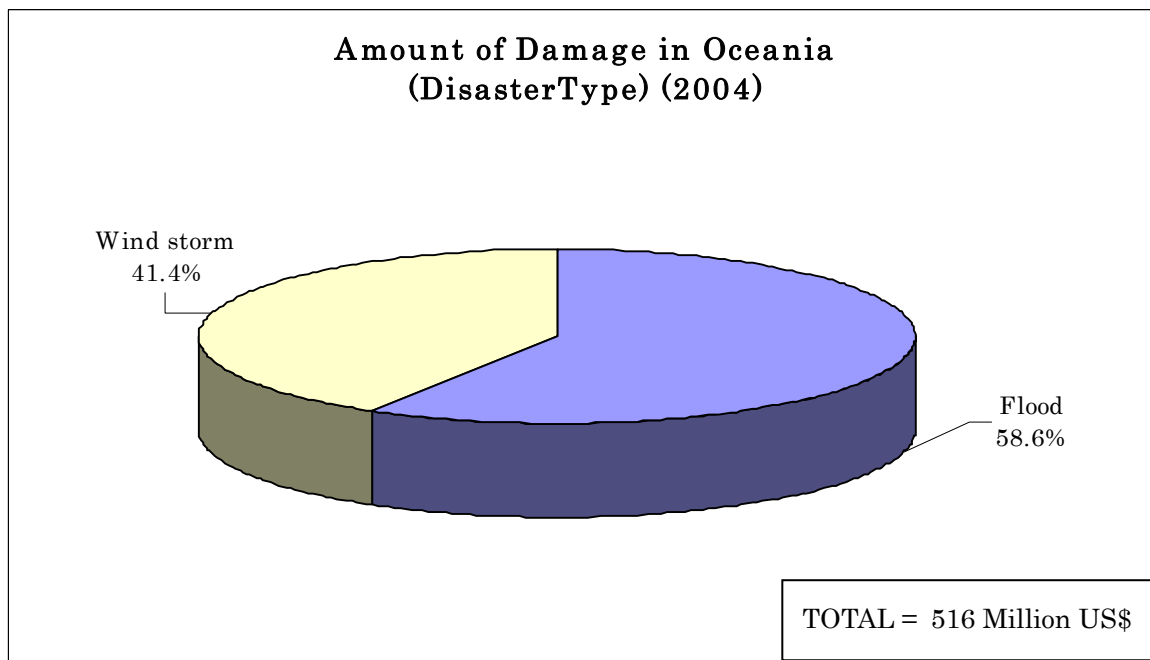
Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 48



Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

Figure 49



Source: ADRC, Japan and CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2004

This section provides a summary of patterns of natural disasters in the world with regional perspectives. Tables 2 and 3 in the Chapter 1 also provide these figures in a tabulated form. It can be said that in 2004, the world was affected by both hydro-meteorological and geophysical disasters in all the regions, while Oceania also experienced mostly hydro meteorological disasters. The biggest damage in terms of human and economic loss came from Indian Ocean Tsunami that struck many Asian countries and some countries in eastern Africa. It is easily understood from these sections that Asia is an extremely disaster prone region of the world in terms of human loss and suffering. It is evident when we look at most of the severe disasters in the year 2004 such as the Sumatra Earthquake in Indonesia and consequent Tsunami in Indian Ocean, Typhoons, Earthquakes and floods in Japan, as well as floods in China, and Bangladesh, occurred in the Asian region. It can be said that affected populations are deprived of their socio-economic development benefits, thus considerably hindering efforts towards sustainable economic development in the region and throughout the globe.