

Volcanic Activity & Wildfires

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CRED Crunch

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Brussels 2019 - In the past two decades, volcanic activity and wildfires have been some of the least impactful disasters worldwide. This is evident when compared to other types of disasters, such as floods or earthquakes. From 2000 to 2016, volcanic activity and wildfires combined caused 1,648 deaths, affected approximately 5.8 million people, and cost \$41 billion in damages. In comparison during the same period, earthquakes resulted in 700,000+ deaths, floods affected 1.5 billion people, and storms caused \$802 billion in damages. However, in 2017 and 2018, wildfires and volcanic activity made global headlines as a result of multiple tragedies that took the lives of hundreds and left billions of dollars in damage along the way.

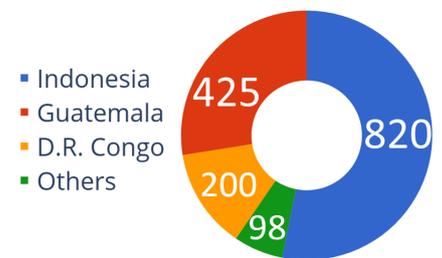
Volcanic Activity

Volcanic activity, which is classified in EM-DAT as a geophysical hazard, occurs regularly throughout certain regions of the world, particularly in an area referred to as the “Ring of Fire” circling the Pacific Ocean. These events do not often cause catastrophes as they are either not severe or are in areas away from human settlement. From 2000-2017, there were 90 volcanic activity disaster events, which killed 665 people and affected 3 million people.

Number of Volcanic Activity Events By Country (2000-2019)

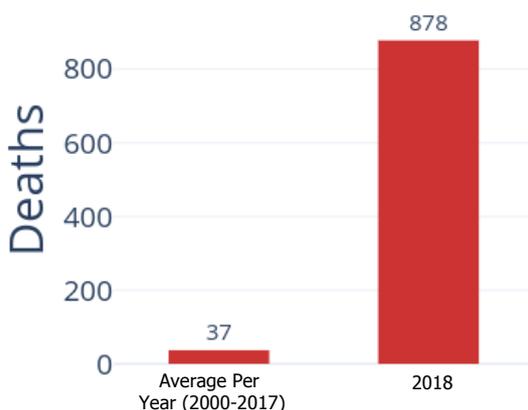


Volcanic Activity Deaths by Country (2000-2019)



In 2018, mortality from volcanoes resulted in more deaths than all the previous years in the 21st century combined. In June 2018, the Volcan de Fuego Eruption in Guatemala sent volcanic ash and pyroclastic flow into the surrounding communities. The eruption killed 425 people and affected 1.7 million people in the area. The eruption also hampered recovery efforts of the local community by destroying local agriculture, damaging roads and infrastructure, and causing the shutdown of the country’s main airport in Guatemala City.

Volcanic Activity Deaths (2000-2018)



The Volcan de Fuego Eruption was the deadliest volcanic activity worldwide since 1991, and the deadliest in the Americas since 1985, when an eruption in Colombia killed over 21,000 people.

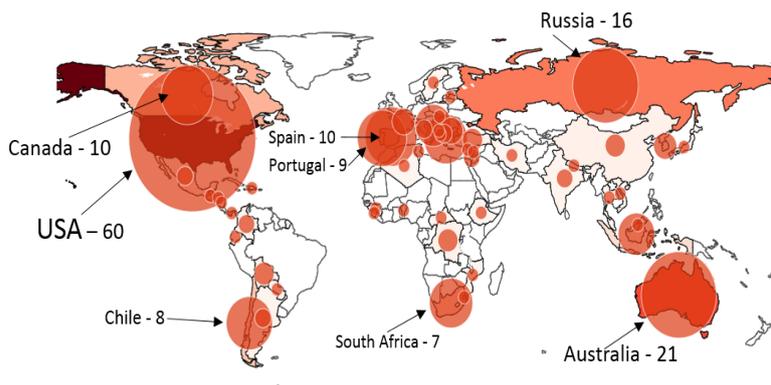
This eruption in Guatemala alone would have made 2018 the most impactful and deadliest year to date this century. However, in December, the Anak Krakatau volcano erupted off the coast of Java Island in Indonesia. One of the eruption events on Anak Krakatau triggered a tsunami that sent waves onshore to the islands of Java and Sumatra striking in the late evening along coastal settlements. Several villages were destroyed causing a total of 453 deaths and impacting nearly 48,000 people. This tragedy was the second tsunami related disaster of the year in Indonesia, the other triggered by an earthquake off the island of Sulawesi that killed 4,340 people.

The events in 2018 reinforced the threat of volcanic activity throughout the world, and their potential for destruction.

*All monetary values are given in US Dollars
*All figures presented updated July 2019

Wildfires

Number of Wildfire Events by Country (2000-2019)



Unlike volcanic activity, wildfires occur throughout much of the world, particularly where there is abundant fuel (such as dry brush or forests). Most often wildfires occur far from human settlement and burn without causing major damage to infrastructure or communities. But occasionally, wildfires can turn deadly and destructive.

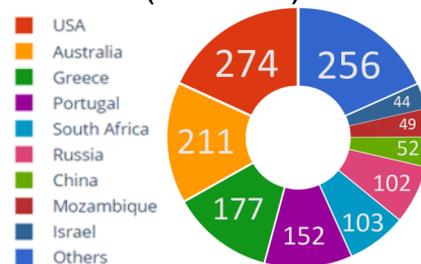
From 2000-2016, there were 199 wildfire events resulting in 983 deaths, 2.9 million people affected and \$40 billion in damages. In 2017, there were increased impacts with 15 recorded events, 165 deaths and \$17 billion in damages in that year alone. In June 2017, a heat wave and a series of dry thunderstorms sparked fires in central Portugal killing 64 people. Most deaths occurred when people attempting to escape the fire were trapped in their vehicles. In October 2017, another series of wildfire outbreaks in Portugal claimed 45 lives. That same month in the US, wildfires in California claimed 30 deaths and caused \$13 billion in damages.

The trend continued into 2018 with 10 events resulting in 221 deaths, 260,000 people affected, and nearly \$23 billion in damages. In July 2018, during a heatwave, wildfires broke out in the Attica region of Greece. The fire burnt through a dense recreational community by the coast resulting in 100 deaths, some of which occurred during rescue operations. The fire was the deadliest ever recorded in Europe by EM-DAT.

In the US, numerous fires occurred throughout the summer and autumn months. The Camp Fire in California was the standout event of the year. The fire, which was started by power transmission lines, resulted in an urban firestorm burning 95% of buildings in the town of Paradise and surrounding area, killing 88 people and causing \$16.5 billion in damages. It was the deadliest wildfire in the United States since the early 20th century, and the costliest wildfire ever recorded. Additionally, numerous fires created air pollution throughout the California, resulting in the worst air pollution levels ever recorded in the San Francisco Bay Area.

In the coming years climate change will likely cause increase of “fire-weather conditions” in numerous regions across the globe. The increasingly favorable fire conditions are occurring concurrently with increased human development in flammable biomes, such as sub-urban development in forested regions, and this will likely result in an increase in wildfire disasters (1).

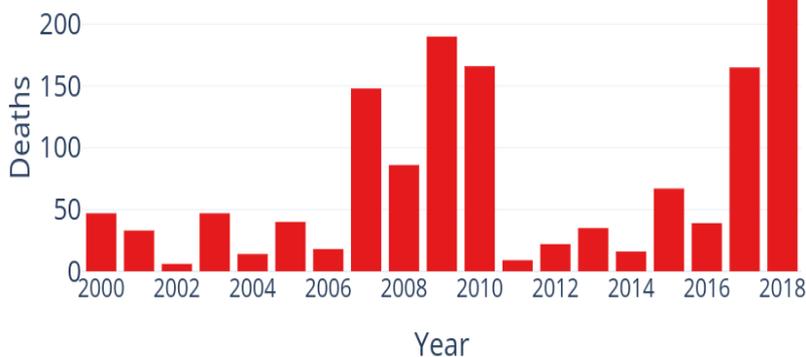
Wildfire Deaths by Country (2000-2019)



Wildfire Economic Damages by Country (2000-2019) (USD)



Wildfire Deaths By Year (2000-2018)



In addition to the direct impacts from the flames and heat, wildfires release massive amounts of pollutants (such as particulate matter) into the atmosphere, creating health hazards for sensitive individuals and those with respiratory difficulties (2). These impacts are difficult to measure as the pollution can spread over long distances. Studies conducted on large wildfires, such as the 1997 South-east Asian wildfires or 2010 Russian wildfires, have attributed increased mortality due to smoke exposure, while numerous other studies have come to similar conclusions resulting from purposive fires such as crop burning or land clearing fires (2). Overall, the recent increase in wildfire impacts may signal an upcoming trend, which requires more effort in prevention and research on the health impacts of smoke pollution.

1. Bowman, et al. 2017. *Nature Ecology & Evolution*
2. Reid, et al. 2016. *Environmental Health Perspectives*

CRED News

•CRED & USAID/OFDA will organise the EM-DAT Technical Advisory Group Meeting, Oct 16-18 2019, in Brussels.

•New Publication: Moitinho de Almeida M, van Loenhout JAF, Thapa SS, Kumar KC, Schlüter B-S, Singh R, et al. (2019) Clinical and demographic profile of admitted victims in a tertiary hospital after the 2015 earthquake in Nepal. *PLoS ONE* 14(7): e0220016. <https://doi.org/10.1371/journal.pone.0220016>

• Al-Shamsi M., Moitinho De Almeida M., Nyanchoka L., Guha-Sapir D., Jenes S. (2019) Assessment of the Capacity and Capability of Burn Centers to Respond to Burn Disasters in Belgium: A Mixed-Method study. *J of Burn Care and Research* (doi/10.1093/jbcr/irz105/5520239)