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### Is the growing number of natural disasters related to global warming?

Although a link is often suspected, it has not been clearly established. Nevertheless, if 2010 was the warmest year on record, it was also the most catastrophic. Earthquakes in Haiti and Chile; heatwave in Russia; floods in Pakistan and China . . . And the start of 2011 doesn't look any more promising, already having landslides in Brazil and exceptional floods in Australia. So, is it simply coincidence?

First certainty: The number of natural disasters and the economic losses incurred around the world has grown considerably in the last few decades. According to Munich Re, the German reinsurance company, which since the 1950s has held the most extensive data base on this subject, there has been an average of 785 natural disasters per year during the last 10 years (950 in 2010 alone) compared with 646 between 1990 and 1999, and only 407 between 1980 and 1989, i.e. nearly double the number in the space of 30 years.

#### Several factors to take into account

The second certainty: 90% of the natural disasters recorded in 2010 were due to extreme weather (torrential rainfall; heat waves; storms). Knowing that global warming is happening at the same time as this growing number of natural disasters, the conclusion seems clear . . . But that's not necessarily the case, because two other factors need to be taken into account: first of all, consider the uninterrupted growth of population and wealth around the world. In 1980 there were only 4.4 billion people on earth, whilst there are 7 billion this year. A demographic explosion together with unrestrained urbanization has led to the concentration of people in areas most affected by climatic hazards.

The second factor to consider is the natural variability of climate. For example the annual frequency of cyclones varies depending on meteorological cycles of varying length making it difficult to find evidence of variability caused by human activity.

“Once these two factors are taken into account it is very difficult to see other signs, like the efforts of risk reduction that could lower the disasters curve, or climate change which could make it rise,” explains Laurens Bouwer of The Institute of Environmental Research, Amsterdam, The Netherlands. His conclusion: “Climate change has not up until now had a direct impact on natural disasters.”

At the present time, in fact, it has only been established that mankind is responsible for the increase in extreme rainfall and the increase in the number of droughts, not yet for the natural disasters that they lead to.

This is an idea contested by some. Peter Höppe, Director of the Munich Re Natural Hazard Centre states “although the increase in catastrophes is mainly attributable to socio-economic factors, the number of disasters linked to weather probably can’t be completely explained without taking climate change into account.” His argument is that since 1980 the number of weather-related disasters has doubled whilst at the same time the frequency of geologically-related disasters (earthquakes; volcanic eruptions) has remained relatively unchanged. So, if economic factors alone were in play, the increase in disasters of geological and weather-related origin should develop at a similar rate.

Laurens Bouwer says this argument is untenable.

### **Populations more exposed**

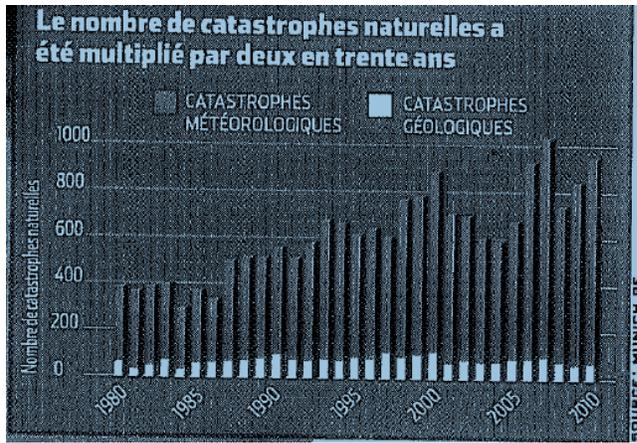
The researcher mentions that the exposure of populations to these disasters has not developed in the same way in the last few decades. According to Bouwer “People have deliberately moved to coastal zones or plains, increasing their flood and storm risk; and avoided areas with seismic activity.” This would explain why these two types of catastrophe have not followed the same trend, and invalidates the link with climate change.

If the pattern of climate change doesn’t appear clearly yet in the natural catastrophe records, it should become more visible as the disturbances envisioned by climatologists come to pass.

Ask us the same question in a few decades.

The number of natural disasters has doubled in the last 30 years.

■ WEATHER-RELATED DISASTERS □ GEOLOGICALLY-RELATED DISASTERS



90% of the 950 natural disasters of 2010 were weather-related (storms; floods; heatwave).

HURRICANES: THE INFLUENCE OF CLIMATE CHANGE WILL NOT BE KNOWN FOR 60 YEARS

We'll need to wait for at least 60 years to see irrefutable signs in the data that growth in frequency of the most violent hurricanes is due to greenhouse gas emissions, says Maurice Bender, climatologist at Princeton (USA). And according to **Ryan Crompton** of Macquarie University (Australia), if eight out of ten of the costliest weather-related catastrophes between 1970 and 2009 were caused by hurricanes, it will take 120-550 years to establish the link between global warming and increased economic cost of hurricanes in the United States.

Translated by Delphine McAneney