

## **Disaster Risk Management – the Weather Perspective**

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Weather is often widely reported in the press as the “cause” of disasters after the events. This is very unfortunate. To minimize human suffering and material loss, how much better it would have been if weather was recognized as a potential hazard and then something was done about it beforehand? That would be “disaster risk management” reduced to the simplest terms. Doing it well would also help governments avoid the heavy costs of disaster relief, recovery and reconstruction as well as the loss of political goodwill among the population.

Climate and its day-to-day manifestation in the form of weather constitute the positive and enabling context in which the human race has evolved and flourished over millions of years. However, in recent decades, the magnitude of weather-related disasters in terms of the number of people impacted has increased substantially, in spite of much improved science and technology. The signal is clear: the fundamentals governing the interactions between weather hazards and human communities have changed. It is time to review critically the basic equation: “risk = hazard x vulnerability” in order to find solutions that would minimize “risk”.

Vulnerability arises from human communities placing themselves in harm’s way and not taking appropriate measures to cope with the physical forces of inevitable natural phenomena. However, the pressure of the rapidly expanding global population especially in the last half century has resulted in many communities living in places where previous generations would consider as dangerous and undesirable, such as mountain slopes, arid zones, flood plains and coastal stripes.

Vulnerability could be reduced through adaptive strategies involving the movement of people. Habitations may be located out of hazard-prone areas through either policy e.g. land use planning or inducement e.g. insurance incentives. Populations may also be temporarily re-located away from danger whenever hazardous weather is about to hit. Alternatively, vulnerability could also be reduced by an engineering

approach, such as wind- and rain-resistant homes, strengthened slopes, high-capacity drainage and resilient dykes. Disaster risk management is a matter of putting such ideas into practice in a rational manner. But the choice of what to do depends very much on individual national circumstances and is not purely dictated by scientific and technological considerations.

Meteorological services are well-placed to support national authorities in disaster risk management. They could provide scientific data and expertise to help map out areas of high exposure to natural hazard so that they may be avoided. Climatological data would enable engineering designs to be developed and put into effect, to cope with hazards where they could not be avoided. Another critical role of meteorological services is to deliver meteorological warnings to enable temporary defensive measures to be taken by the government and the individuals to “ride out the storms”. Very importantly, this would allow places occasionally impacted by severe weather to be used for human habitation with a (hopefully) calculated and acceptable degree of risk.

To make disaster risk management efforts successful, one critical element is the engagement of stakeholders. It is essential that they all understand the characteristics of the hazardous phenomena, appreciate where vulnerability lies, are committed to reduce vulnerability and know what their respective actions should be, prior to, during and even after the visitation of severe weather. Thus, meteorological services must be proactive in its outreach activities to educate the public as well as its partners in the government and in the civil society. Examples will be drawn from the work of the Hong Kong Observatory to illustrate how this may be done.

Finally, “hazard” especially in the weather context should not be viewed as a static term in the risk equation. Increasingly, it is apparent that climate change is translating itself into more frequent occurrences of extreme weather in different forms. To the extent that particular types of weather phenomena could now affect previously un-exposed regions, governments should beware of new vulnerability emerging unexpectedly to impact on their people. Surprise has the potential to become the biggest killer. Prudent planning for disaster risk management should therefore factor in an adaptation to the evolving hazard scenario in association with climate change.