Report of the Workshop on

"Climate Change and Disaster Losses:
Understanding and Attributing Trends and Projections"

25-26 May 2006
Hohenkammer, Germany

EXECUTIVE SUMMARY

On the basis of collaboration between Peter Höppe, Munich Re, and Roger Pielke, Jr., University of Colorado, an international workshop on climate change and disaster loss trends was held in May 2006 in Hohenkammer, Germany with sponsorship from Munich Re, the U.S. National Science Foundation, GKSS Research Center, and the Tyndall Centre. In total 32 experts in the fields of climatology and disaster research from various parts of the world (13 countries) participated. "White papers" from 25 participants were submitted in advance and formed the basis of the discussions. This Executive Summary reports 20 statements which each represent a consensus among participants on issues of research and policy as related to the workshop's central organizing questions. A Workshop Summary Report follows which provides greater detail on the statements. The participant white papers, biographies, and workshop agenda are also included.[1]

The focus of the workshop was on two central questions:

- What factors account for increasing costs of weather related disasters in recent decades?
- What are the implications of these understandings, for both research and policy?

To be clear about terminology, we adopted the IPCC definition of climate change. According to the IPCC (2001) *climate change* is

> "Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use."[2]

The IPCC also defines *climate variability* to be

> "Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all temporal and spatial scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability)."[3]

We use the phrase *anthropogenic climate change* to refer to human-caused effects on climate.

Consensus (unanimous) statements of the workshop participants:

1. Climate change is real, and has a significant human component related to greenhouse gases.

[1] The views expressed in this report are those of the participating individuals. Institutional affiliations are only provided for identification purposes.

[2] http://www.grida.no/climate/ipcc_tar/wg1/518.htm

[3] http://www.grida.no/climate/ipcc_tar/wg1/518.htm

2. Direct economic losses of global disasters have increased in recent decades with particularly large increases since the 1980s.
3. The increases in disaster losses primarily result from weather related events, in particular storms and floods.
4. Climate change and variability are factors which influence trends in disasters.
5. Although there are peer reviewed papers indicating trends in storms and floods there is still scientific debate over the attribution to anthropogenic climate change or natural climate variability. There is also concern over geophysical data quality.
6. IPCC (2001) did not achieve detection and attribution of trends in extreme events at the global level.
7. High quality long-term disaster loss records exist, some of which are suitable for research purposes, such as to identify the effects of climate and/or climate change on the loss records.
8. Analyses of long-term records of disaster losses indicate that societal change and economic development are the principal factors responsible for the documented increasing losses to date.
9. The vulnerability of communities to natural disasters is determined by their economic development and other social characteristics.
10. There is evidence that changing patterns of extreme events are drivers for recent increases in global losses.
11. Because of issues related to data quality, the stochastic nature of extreme event impacts, length of time series, and various societal factors present in the disaster loss record, it is still not possible to determine the portion of the increase in damages that might be attributed to climate change due to GHG emissions
12. For future decades the IPCC (2001) expects increases in the occurrence and/or intensity of some extreme events as a result of anthropogenic climate change. Such increases will further increase losses in the absence of disaster reduction measures.
13. In the near future the quantitative link (attribution) of trends in storm and flood losses to climate changes related to GHG emissions is unlikely to be answered unequivocally.

Policy implications identified by the workshop participants

14. Adaptation to extreme weather events should play a central role in reducing societal vulnerabilities to climate and climate change.
15. Mitigation of GHG emissions should also play a central role in response to anthropogenic climate change, though it does not have an effect for several decades on the hazard risk.
16. We recommend further research on different combinations of adaptation and mitigation policies.
17. We recommend the creation of an open-source disaster database according to agreed upon standards.
18. In addition to fundamental research on climate, research priorities should consider needs of decision makers in areas related to both adaptation and mitigation.
19. For improved understanding of loss trends, there is a need to continue to collect and improve long-term and homogenous datasets related to both climate parameters and disaster losses.
20. The community needs to agree upon peer reviewed procedures for normalizing economic loss data.