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Predicting Uncertainty and Risk in the Natural Sciences: Bridging the gap between academics and industry

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The increase in large-scale disasters in recent years, such as the 2007 floods in the UK, has caused disruptions of livelihood, enormous economic losses and increase in fatalities. Losses from natural hazards are only partially derived from the physical event itself but are also caused by society's vulnerability to it. In the first three months of 2010, an unprecedented US\$16 billion in losses occurred from natural hazards caused by events such as the Haiti and Chilean earthquakes, and the European storm Xynthia. This made it the worst ever first quarter for natural hazard losses and left the insurance industry exposed financially to the more loss-prone third and fourth quarters.

NERC science has a central role to play in the forecasting and mitigation of natural hazards. Research in this area forms the basis for technological solutions to early warning systems, designing mitigation strategies and providing critical information for decision makers to help save lives and avoid economic losses. Understanding uncertainty is essential if reliable forecasting and risk assessments are to be made. However, the quantification and assessment of uncertainty in natural hazards has in general been limited particularly in terms of model limitations and multiplicity. There are several reasons for this; most notably the fragmented nature of natural hazard research which is split both across science areas and between research, risk management and policy. Because of this, each sector has developed its own concepts and language which has acted as a barrier for effective communication and prevented the production of generic methods that have the potential to be used across sectors.

It is clear therefore that by bringing the natural hazard community together significant breakthroughs in the visualisation and understanding of risk and uncertainty could be achieved. To accomplish this, this research programme has 4 prime objectives:

1. To improve communication and networking between researchers and risk managers within the financial services sector
2. To provide a platform for the dissemination of information on uncertainty and risk analysis between a range of researchers and practitioners
3. To generate a portfolio of best practice in uncertainty and risk analysis
4. To act as a focal point between the financial sector and natural hazard research in NERC

This paper will discuss how the Natural Environmental Research Council, in partnership with other organisations such as TSB, EA and EPSRC etc, is working with academics and industry to bring about a step change in the way that uncertainty and risk assessments are achieved throughout the natural hazard community.