New Ways of Measuring Catastrophic Risks May Enhance Air Force Efforts

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by Maria Callier
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3/25/2010 - **ARLINGTON, Va.** -- Noted Air Force Office of Scientific Research-funded researcher, Dr. Graciela Chichilnisky is pioneering a new approach for measuring, anticipating and managing catastrophic risks, sometimes called "Black Swans" or natural catastrophes like hurricanes, tornadoes, tsunamis and floods that may possibly enhance the Air Force's capabilities of preparing for disasters.

"This research is important because it will provide solid foundations to help the Air Force and the public better prepare for the impact of catastrophic risks, communicate to experts and make decisions that can enhance national security," said Chichilnisky from her office at the Columbia University Consortium on Risk Management where the research is occurring.

Her team has developed new tools in probability and statistics for ranking risks, giving realistic prioritization to catastrophic events, making decisions under unpredictable conditions preceding an event and evaluating the economic after-effects of a disaster. They have also been conducting research, experiments validating theories and finding that decisions made under uncertainty do not always match up with classic treatment of Black Swans. Using their current findings as well as historical research, the team is rewriting the foundations of probability, statistics and decision-making for Black Swan events that better fit the observations.

"Our goal is to link our latest results, analytical tools and experimental efforts with other new theoretical and empirical strands of the literature in this area," she said.

The emerging statistics and probabilities will provide a new foundation, changing the field of research in a way that is more appropriate for Black Swans, which are now occurring with more regularity because of climate, migration and coastal changes.

"We need to organize and protect ourselves against natural hazards in a way that increases our capabilities to anticipate, mitigate and respond to catastrophes as was never done before," she said.

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