Roofs fail to defend against frequent hailstorms, study reveals

October 27 2008

(PhysOrg.com) -- A new study of hailstorms in Sydney has found many of the city's roofs are unable to resist the large hailstones expected to hit every 10 years.

Professor Alan Jeary, from the UWS School of Engineering, has used innovative techniques to determine the interval between hailstorms and the likely size of the hailstones that fall.

In the past 20 years, Sydney has been hit by six significant hailstorms which have caused over $5 billion* damage. The December 2007 storm in Blacktown alone is expected to cost in excess of $400 million.

Despite the economic, physical and emotional toll the storms have on communities, Professor Jeary says Australian Building Codes do not currently acknowledge the potential danger of hail.

"The current wind codes in Australia require buildings to withstand a one in 1000 year wind storm, yet preliminary data analysis suggests the devastating hailstorm in Blacktown last December could happen as often as every 10 to 15 years," says Professor Jeary.

Using an innovative technique that was originally used to analyse windstorms in Denmark, Professor Jeary has studied Sydney hailstorms.

The preliminary findings show:

* Hail 30 to 40mm in diameter, which breaks glass and plastic, recurs every 5 years
* Hail 40 to 50mm, which cracks old slate and other tiles, recurs every 10 years
* Hail 50 to 60mm, which breaks old slate and other old tiles and cracks new tiles, recurs every 15 years
* Hail 60 to 75mm, which breaks new concrete and terracotta tiles, recurs every 20 years
* Hail 75 to 85mm, which breaks all new tile and slate roofs and dents corrugated metal roofs, recurs every 50 years.

According to Professor Jeary, a key element of any building code relating to natural events is establishing how frequently they occur and how significant any single event is likely to be.

"Using standard statistical measures, there hasn't been sufficient historical data on hail size to establish the risk of hail damage - so the threat has been being largely ignored by regulators, builders and manufacturers," he says.

However, Professor Jeary believes the preliminary figures from the new study demonstrate there is a pressing need to closely examine the standards for roofing and establish new guidelines so roofs can resist hail damage.

"It is extraordinary to contemplate replacing a roof potentially every 10 years because of hail damage," he says.

*adjusted to equivalent in 2007 dollars

Provided by University of Western Sydney