



Estimating rates of land falling US hurricanes on a 5-year timescale: applications for catastrophe risk modelling

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Atlantic hurricanes are the costliest of US natural disasters. Their frequency, intensity and likelihood of landfall are highly variable, being impacted by sea-surface and upper-atmosphere temperatures, wind shear, El Niño, the North Atlantic Oscillation and other climatic variables. Risk Management Solutions has created a set of over 1,000,000 synthetic Atlantic hurricanes for use in catastrophe modelling.

Until 2005, the rates associated with each of these storms were based on the averaged historical rate since 1900. However, there is evidence that hurricane frequencies are non-stationary and this means that a long-term average may not be the best estimate of future rates. Furthermore, the insurance/reinsurance industry is particularly interested in 5-year projections of land falling US hurricanes. We show, using out-of-sample hindcast tests, that statistical models can significantly improve projections on this timescale, when compared to the long-term average.