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Estimating rates of land falling US hurricanes on a 5-year timescale

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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 and other climatic variables. Risk Management Solutions has created a set of over 500,000 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 long-term averaged rates 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 hindcasting, that simple statistical models can significantly improve estimates of the number of Atlantic hurricanes hitting land on this timescale.