The fractional non-homogeneous Poisson process and limit theorems

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The fractional non-homogeneous Poisson process was introduced by a time change of the non-homogeneous Poisson process with the inverse alpha-stable subordinator. We propose a similar definition for the (non-homogeneous) fractional compound Poisson process. We give both finite-dimensional and functional limit theorems for the fractional non-homogeneous Poisson process and the fractional compound Poisson process. The results are derived by using martingale methods, regular variation properties and Anscombe's theorem. Eventually, some of the limit results are verified in a Monte Carlo simulation. This is a joint work with E. Scalas and M. Trinh (University of Sussex, UK).