



THE UNIVERSITY OF  
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Precipitation Modelling Using Cluster Point Processes and  
Nonparametric Markov Models

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ZOOM Meeting, 5747 S. Ellis Avenue

#### ABSTRACT

Precipitation time series are of great importance to environmental scientists and hydrologists. The nature of these time series, which are often highly seasonal, zero-inflated, and only weakly structured, presents particular challenges for developing accurate and parsimonious models. In this paper, we discuss several approaches to this problem, which draw on a variety of statistical subfields including cluster point processes, Markov chains, and generalized linear models. After a thorough development of the theoretical and analytical properties of these models, we test them on real-world data from different climates and assess their strengths and weaknesses.