1106-62-2060 **Eric Ruggieri*** (eruggier@holycross.edu), College of the Holy Cross, 1 College Street, Worcester, MA 01610, and **Marcus Antonellis**. *A Bayesian Approach to Sequential Change Point Detection.*

Because long time series are often heterogeneous in nature, the best type of model may be one whose parameters can change through time. The goal of change point analysis is to fit a piecewise regression model to a data set when the set of breakpoints is unknown. The exponential number of possible solutions to a multiple change point problem must be dealt with efficiently if long time series are to be analyzed. Here we introduce a sequential Bayesian change point algorithm that provides uncertainty bounds both on the number and location of the change points in a computationally efficient way. The algorithm is able to quickly update itself as each new data point is recorded and infer whether or not a change point has recently been observed. Simulation studies illustrate how the algorithm performs under various detection criteria and parameter settings, including error rates, detection speeds, and any detection biases. Finally, the Bayesian sequential change point algorithm is used to global surface temperature anomalies over the last 130 years. (Received September 15, 2014)