

1125-VH-2895 **Andrew E Long*** (longa@nku.edu), 495 Rossford Ave, Ft. Thomas, KY 41075, and **Steven Wilkinson** (wilkinson@nku.edu), **Madison Culbertson** (culbertsom1@mymail.nku.edu) and **Laura Farro** (farrol1@mymail.nku.edu). *Teasing climate signals from one hundred year-old seasonal data of Nova Scotia*. Preliminary report.

Starting in 1892 and continuing for 30 years, Alexander MacKay, Superintendent of Public Schools in Nova Scotia, directed a program of citizen science for the collection of seasonal data on plants and animals. Students in hundreds of schools amassed the data. MacKay, a brilliant scientist as well, summarized the collected data and published the summaries in Nova Scotia's premier science journal.

We pick up where MacKay left off, using his summary data. We incorporate meteorological data, sea ice data, etc. to tease out the impact of climate on changes in first appearance of flowers in five plant species (MacKay's favorites).

We built a complete data set for 23 years of MacKay data, dealing with region changes and missing values through weighted averages and imputation based on the Singular Value Decomposition (SVD).

Then we focus on physical aspects of place (e.g. winds and ocean currents) as well as climatic factors (e.g. air temperatures and Arctic sea ice extent, precipitation and snowfall) to model First Appearance as a function of latitude, longitude, air temperature, and sea ice extent. We use linear and non-linear regression, and application of a tensor variant of the SVD.

We hope that our work might shed light on how plants will respond in a changing climate. (Received September 20, 2016)