East Coast Winter Storms (ECWS) are among the most severe weather phenomena to impact the Northeastern United States. These storms may bring heavy precipitation, strong winds, and flooding to coastal and interior areas of the eastern coast. Hirsch et. al. (2001) and subsequent data keeping has provided an accurate history of ECWS for the past 60 years. Climatology of storms prior to this period, however, is less readily available. Utilizing hourly surface climate data being processed as part of the Climate Database Modernization Program (CDMP), a method for determining when ECWS are occurring has been developed for the pre-1948 period.

CDMP is a partnership between the National Climatic Data Center and private industry to make historical climate data available for research purposes. At the Northeast Regional Climate Center in Ithaca, New York, final quality control and processing of this data is accomplished. In this particular project, 1928-1948 SAO (Surface Airways Observations) data was used from the following stations:

- Bangor International Airport
- Trenton, New Jersey
- New York LaGuardia Airport
- New Providence T.F. Green Airport
- Providence T.F. Green Airport
- Bangor International Airport
- Philadelphia International Airport

To verify the accuracy of the program, its results for 1949-present were compared to the storms found by Hirsch et al. (2001) during this period in their study. They used NCEP-NCAR Reanalysis datasets to determine ECWS. When the results of the program were compared to Hirsch, 336 of the 352 storms found by the program were verified. The program was most skillful at identifying “strong” ECWS, defined by the NRCC as storms with winds of at least 52 MPH. Please also note that the figure to the right was used by Hirsch to identify possible low pressure systems (dashed lines) and potential ECWS (solid lines).

The results obtained gave a good snapshot of ECWS activity during the 1930’s and 1940’s. The data also correlated well with the results from the Hirsch study. As seen to the right, ECWS develop between October and April, with the peak in January and February. Annual frequency of ECWS could vary considerably, with no distinct trend during the period. This can be seen in the following graphs of storms per year at three of the stations:

One likely explanation for the sometimes stark contrast in yearly ECWS frequency is the El Niño phenomena. When the Southern Oscillation Index (SOI) was negative, indicating El Niño, there were generally more ECWS. The presence of El Niño or lack thereof is used to forecast the likely number of ECWS in a given season.

Numerous historically significant ECWS were identified by the program. One example is the “Post-Christmas Day Blizzard of 1947.” A strong low moved up the east coast December 26th and 27th, pummeling the Northeast and New York City especially. The storm briefly stalled over Long Island on the 26th, bringing the city to a complete standstill and causing about 80 deaths. 26.4 inches of snow were reported at Central Park, while the highest mark was an impressive 30.5 inches at Yonkers.