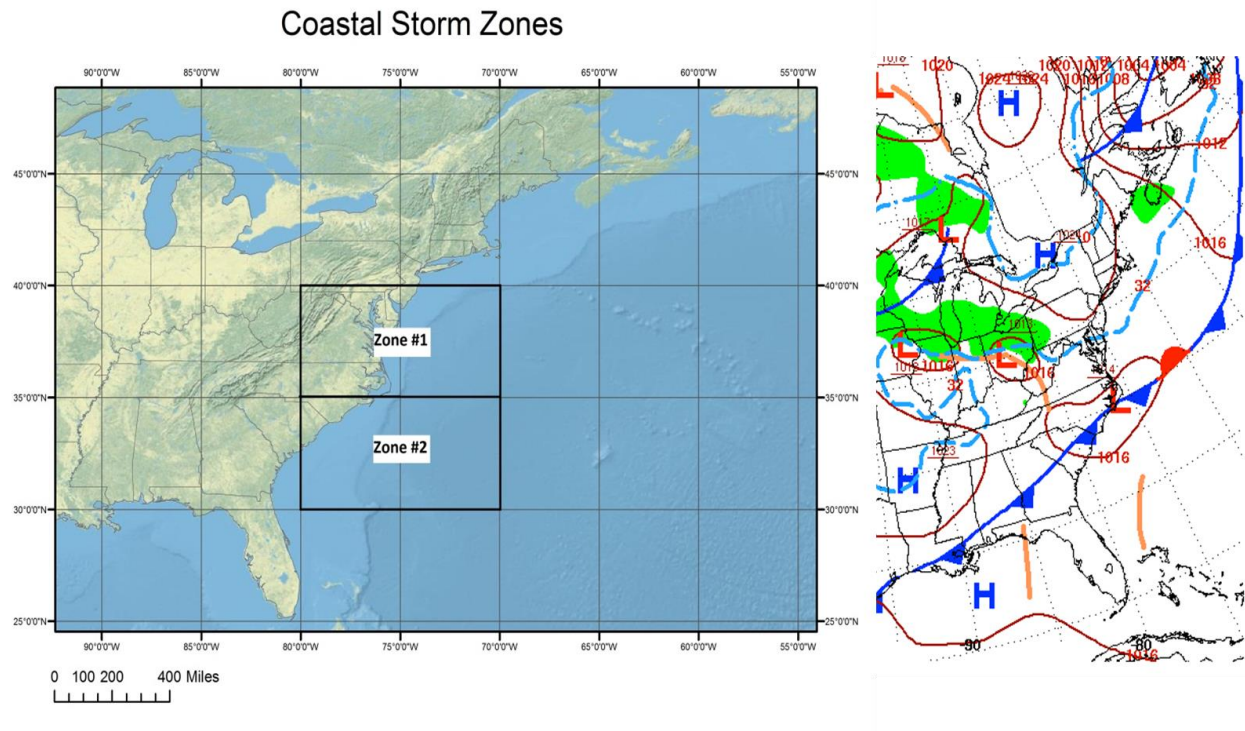


## Supplementary S1

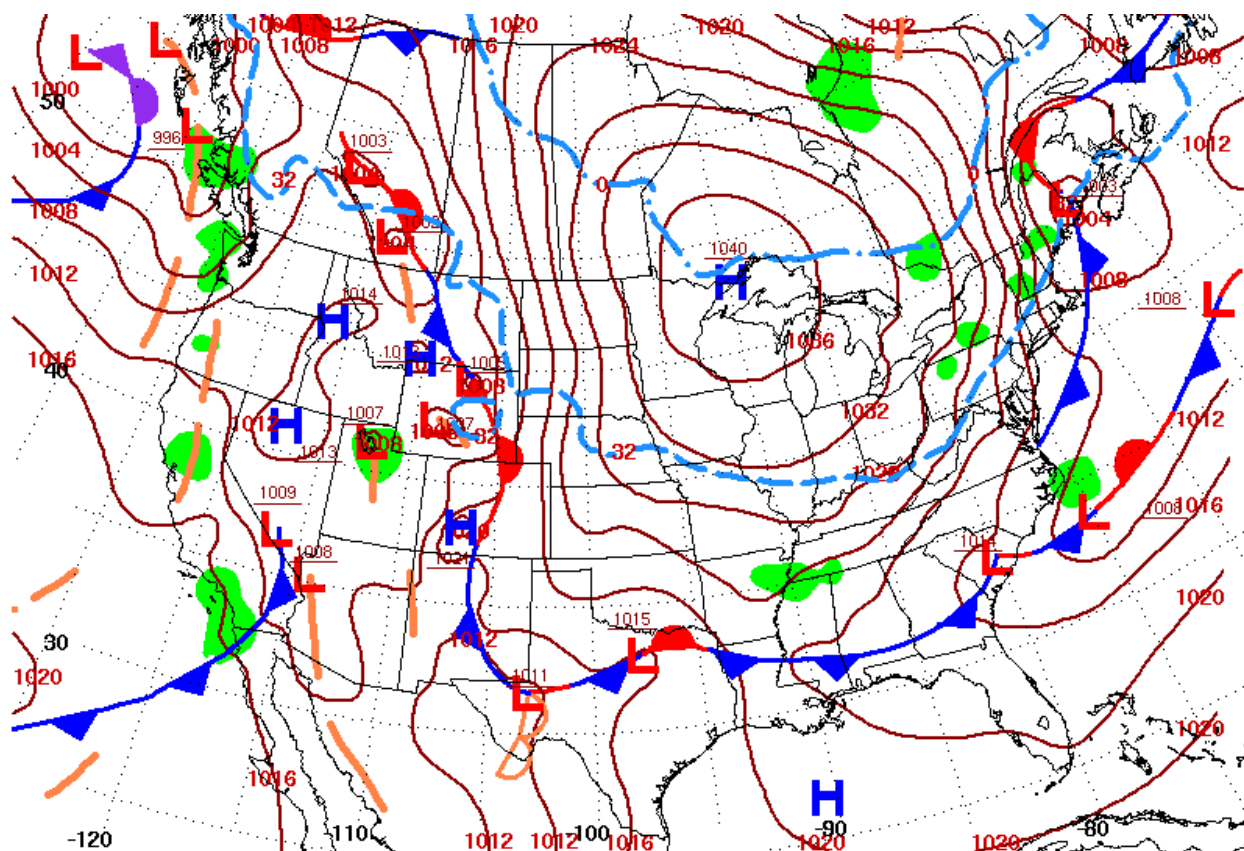
### *Daily Weather Maps Analysis*

This document contains details regarding how the Daily Weather Maps (DWM) were used to create the long-term dataset of cyclonic events near the study site from 1851-2019. This dataset was previously published by Leather et al. (2011) and extended by the authors to 2019 using the same methods. Geographical zones were chosen as shown in Figure S1.1 below (left). An example of a DWM is shown in Figure S1.1 (right) when a low-pressure system with a closed isobar crossed into the zones and would be counted as a cyclonic event in the dataset.



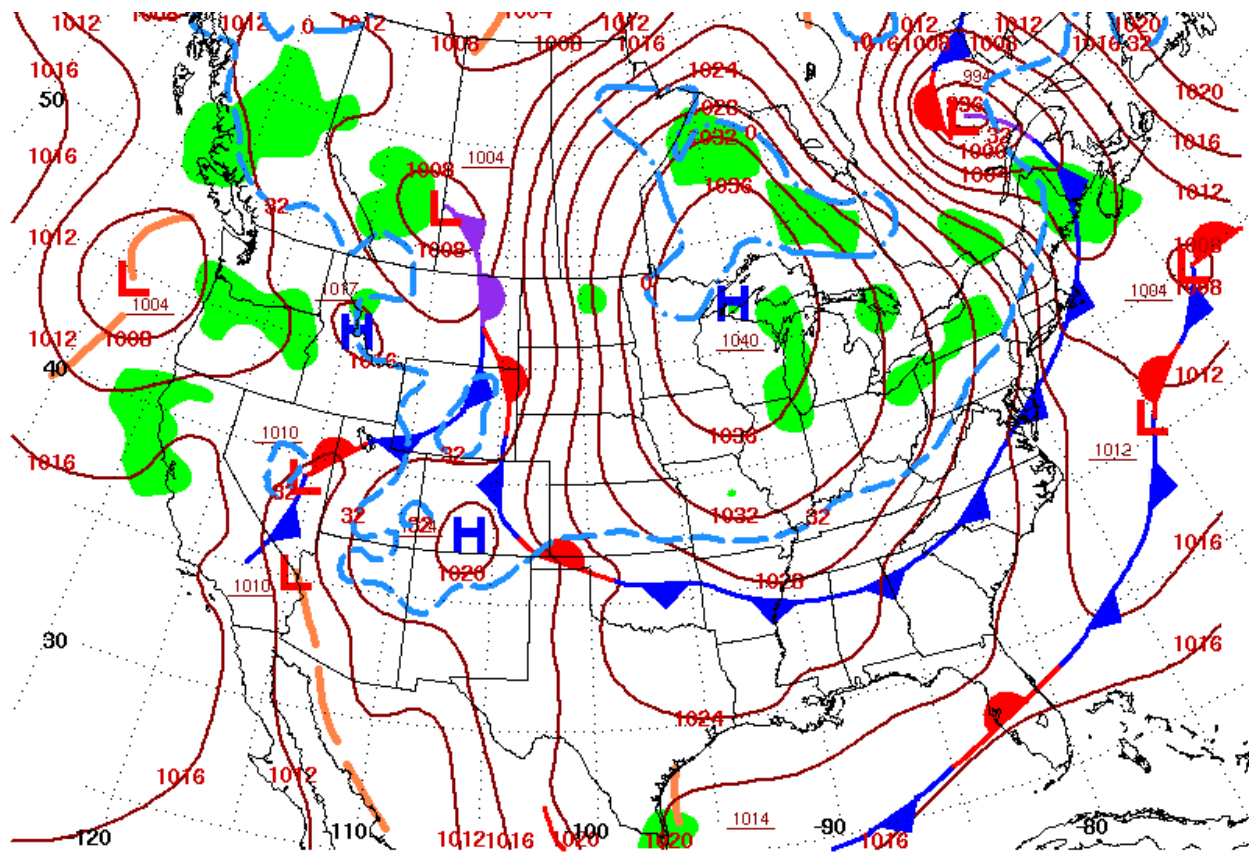
**Figure S1.1:** (left) Zones created for determining storm occurrences from 1945-2019; (right) example of a Daily Weather Map analyzed for closed isobar low pressure systems (images courtesy of Dr. Leathers).

Below are examples of TCs, XCs, wind, and sunny day swell events when viewed from on the DWM.



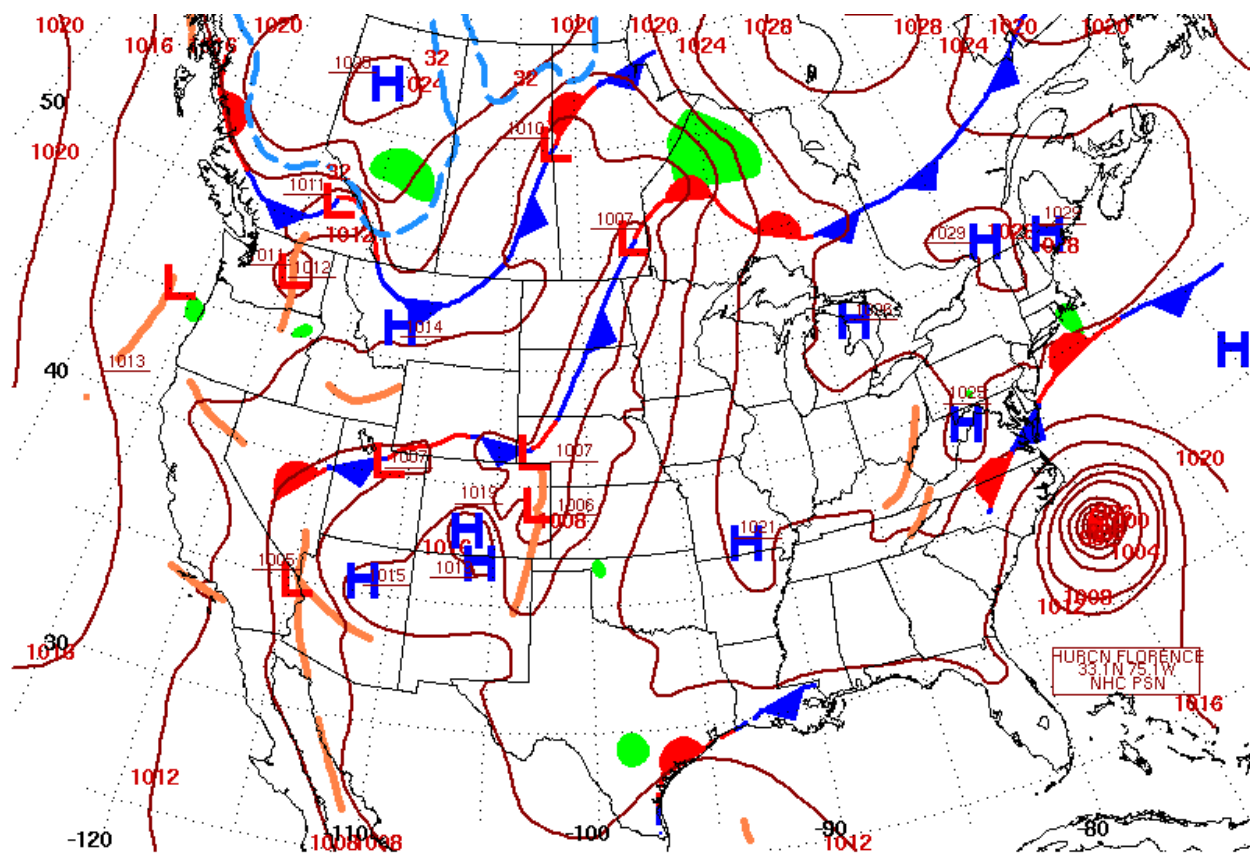
Surface Weather Map at 7:00 A.M. E.S.T.

Figure S1.2: DWM from Mar 22, 2017 identified as a wind event based on the category criteria.



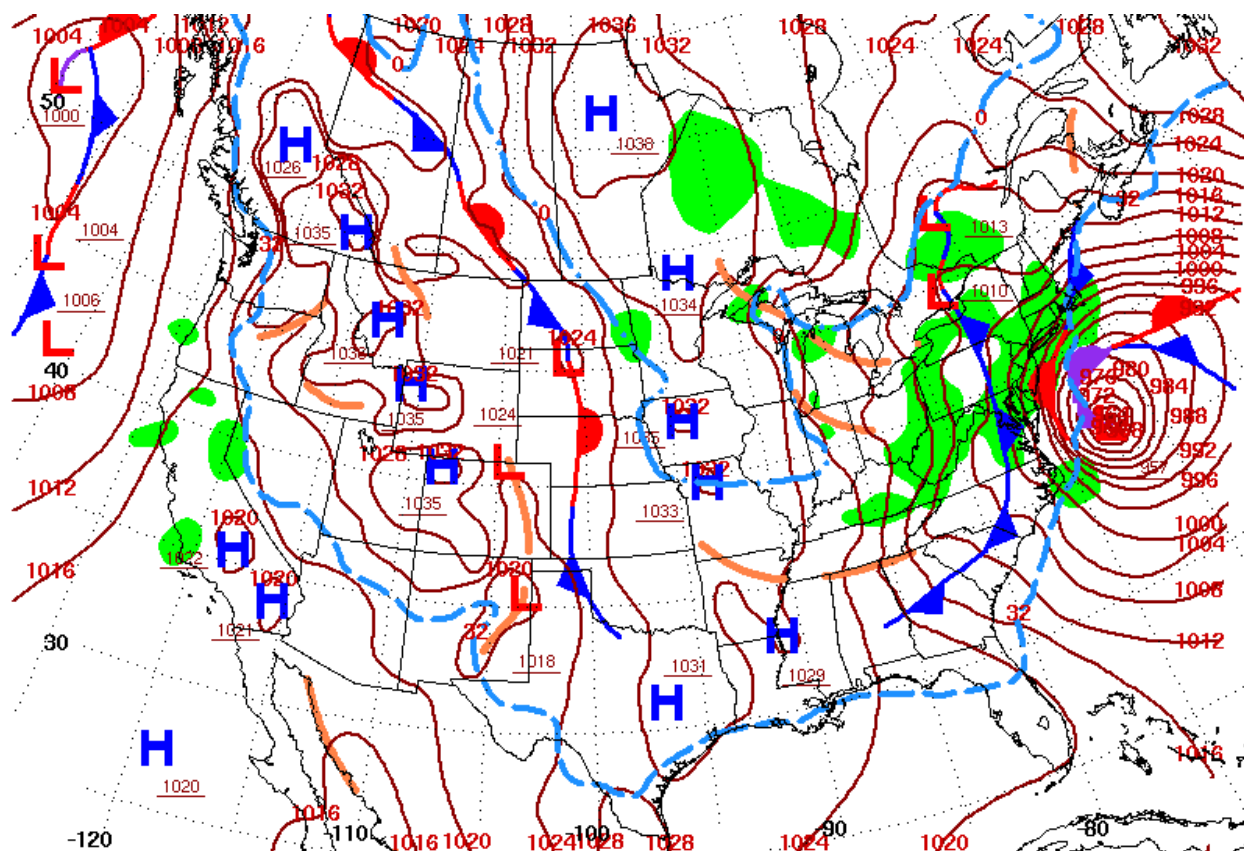
Surface Weather Map at 7:00 A.M. E.S.T.

**Figure S1.3:** DWM from Nov 10, 2017 identified as a sunny day swell event based on the category criteria.



Surface Weather Map at 7:00 A.M. E.S.T.

Figure S1.4: DWM from Sep 13, 2018 identified as a storm event (TC Florence) based on the category criteria.



Surface Weather Map at 7:00 A.M. E.S.T.

Figure S1.5: DWM from Jan 4, 2018 identified as a storm event (XC Grayson) based on the category criteria.