Great Lakes Wind Forecasting: A Workshop For Sailors

Seminar Description: No aspect of weather is more important to sailors than the wind. It dictates when it is safe to leave port and whether your journey will be fast or comfortable. On the race course, properly predicting the wind separates the winners from the losers. This workshop is designed for sailors of all experience levels and interests. Accurately forecasting the wind promotes safer, more enjoyable outings and improves performance on the race course. Whether you are a day sailor, beer-can racer, long-distance cruiser or serious competitor, the skills learned during this workshop will enhance your understanding of the wind and improve your sailing experience.

Introduction: My background and a discussion of the seminar's structure.

A Solid Foundation: An understanding of the wind requires a familiarity with basic physical and meteorological principles. This section addresses concepts such as barometric pressure, air masses, atmospheric instability and other meteorological terminology in order to build a foundation for the remainder of the seminar.

Interpreting Weather Graphics: Weather forecast graphics use a confusing array of symbols, meteorological shorthand, and color schemes to display current weather conditions and portray future weather patterns. The symbols identifying high and low pressure systems, frontal boundaries, troughs, ridges, and other meteorological features will be explained.

The Invisible Forces Controlling the Wind: Mariners have attempted to explain the capricious nature of the wind for thousands of years. This section looks at the forces that control the wind and reviews a variety of online resources that will improve your ability to predict its speed and direction.

Large-Scale Wind Patterns: Sailing on the Great Lakes will place you in the path of low pressure systems, known as "cyclones" in the meteorological community. The passage of a low pressure system is often accompanied by strong, gusty, and shifty winds. This section will examine the wind patterns associated with stationary fronts, cold fronts, warm fronts, and surface troughs. High pressure systems and their features will be also be introduced.

Small-Scale Wind Patterns: Lake and land breezes are quite common on the Great Lakes, particularly during the peak of summer. This section will explain the localized dynamics that lead to their formation and how to recognize the large-scale weather patterns that support their development. Thunderstorm downdrafts and temperature inversions will also be reviewed.

Wind Forecasting Resources: There is no shortage of weather data on the Internet or apps promising to provide you with the perfect forecast. This section will explain how forecasts are produced and discuss the pluses and minuses of several popular resources. A couple of relatively-unknown but very powerful wind forecasting resources will be introduced.

The Forecast Process: This section will introduce the Forecast Funnel and a daily forecast routine to guide the preparation of your wind forecasts.

Conclusion: A few final thoughts.

Instructor Biography

Mark Thornton has been sailing on Lake Erie for more than 20 years and currently owns *Osprey*, a C&C 35. His interest in weather forecasting grew from his experiences cruising and racing on the lake. Mark is a 2006 graduate of the Penn State University *Certificate of Achievement in Weather Forecasting*, a two-year program that develops skills in general, tropical, and severe weather forecasting.

He is the president of LakeErieWX LLC, a company dedicated to providing marine weather education and forecasting resources for recreational boaters (www.lakeeriewx.com). He served as race meteorologist for the 2014-2017 Bell's Beer Bayview Race to Mackinac, and is the past president of the Cleveland chapter of the American Meteorological Society. Mark is employed as the Vice-President of Administration for the law firm of Wegman, Hessler & Vanderburg, and as a Teaching Assistant in the *Certificate of Achievement in Weather Forecasting Program* at Penn State University. He can be reached by email at Mark@LakeErieWX.com.