# Santa Ana Wind Season Outlook

## Issued: Friday, May 5, 2017

The following is a new experimental product from Predictive Services which uses a number of statistical methods to make long range predictions of the Santa Ana wind season in Southern California. This outlook uses 30 years of historical meteorological data in conjunction with a blend of three statistical models which forecast above/below normal numbers of Santa Ana wind days for a 1 month and a 3 month time period. While it is difficult to assign specific winds speeds, a Santa Ana wind day is determined to be distinctly different from the light offshore winds which normally occur during the overnight and early morning hours of the day. Santa Ana wind days were defined by correlating wind velocities with synoptic scale weather patterns that result in gusty, dry offshore winds across Southern California. The models used in this outlook are: Random Forest, ARIMA Time Series, and Analog. The Random Forest and Analog methods use various predictors such as the Pacific Decadal Oscillation (PDO), the Southern Oscillation Index (SOI), and the Niño3.4 index. The time series model relies solely on frequencies and trends within the 30-year historical dataset.

## Discussion:

The 2016/2017 Santa Ana season is nearly over with approximately 4-5 weeks left for any further widespread offshore wind events to occur. The number of Santa Ana days last month was close to the average which is around five days over the Los Angeles area and around three days across the San Diego vicinity. **The average number of Santa Ana days in May is 2 for the Los Angeles area and only 1 day for San Diego.** Most of our **model guidance suggest a near normal number of Santa Ana days for the month of May.**

Looking back over our season, most of our models have done reasonably well in forecasting the number of Santa Ana days for both the one-month and three-month periods. The Analog model, which looks at the current trends in the Pacific Decadal Oscillation (PDO) and the Niño3.4 Index, seems to work best for forecasting an above/below normal number of Santa Ana wind days. Over the past 8 months, we have found that the time series model has the worst performance, which is mainly due to the model only using information inherent to the dataset.

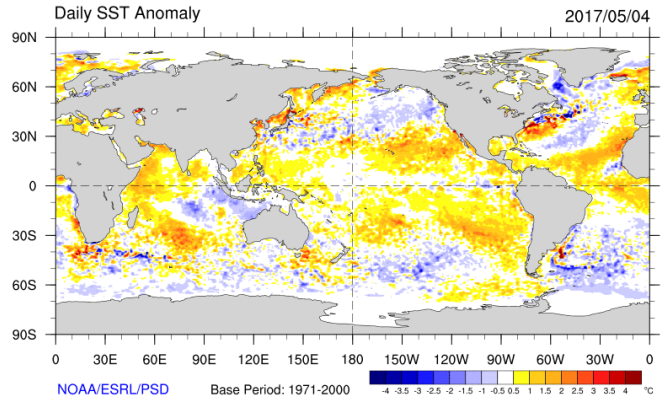


*Figure 1 - Map showing global Sea Surface Temperature (SST) anomalies.*

At the present time, both the PDO and the Niño3.4 Index are in a weak warm phase (**Figure 1**). Waters off the coast of South America and across the Central Pacific region near Hawaii, have become increasingly warmer during the past 4-6 weeks. Most of the computer models are suggesting that a weak El Niño will develop by late summer or early fall. **Our analog models are predicting a slightly below normal number of Santa Ana wind days for the months of September and October**, which if an El Niño does develop, would likely favor less offshore wind days. **The normal number of Santa Ana wind days for both September and October is around 7.**

From a fire perspective, any windy days during the next 4-6 weeks could prove to be problematic as most grasses have cured across Southern California below 3,000 feet. Despite the potential for fewer than normal Santa Ana wind days during the September and October period, all fuel types by that time of the year will be fully receptive to ignitions, resulting in high fire potential during windy periods. This may be especially true this fall as a more significant grass crop will be in place as compared to prior years. In the meantime, the focus will begin to shift from the classic Santa Ana winds over Southern California to the more localized “Sundowner” winds across Santa Barbara County this summer. Although fuels across this portion of the state are wetter than in years past, heavier fuel loading and more decadent, dead material could result in a period of elevated large fire potential during Sundowner events.

**Note: This will be the last outlook until the beginning of September.**