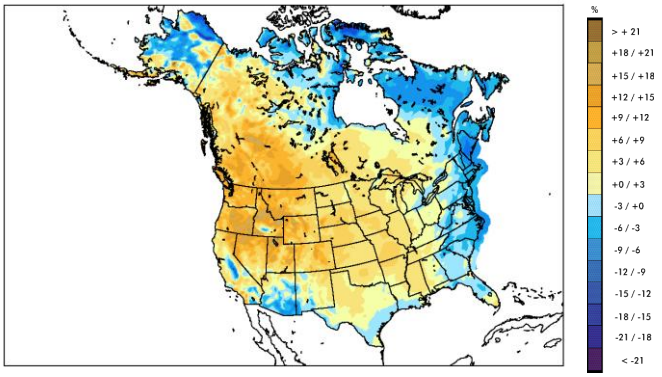
Wind Trends Bulletin, North America: 2012 Q1

14 June 2012

During the first quarter of 2012, mean wind speeds across much of North America significantly exceeded the long-term average (1997 – 2012) for the same quarter (see inset map). Deviations as large as +20% were observed in parts of the Central Rocky Mountains; in the Great Plains, they averaged less than +10%. On the other hand, below-normal winds were observed along the Eastern Seaboard and in small areas of the Southwestern United States and Texas-Louisiana coast.



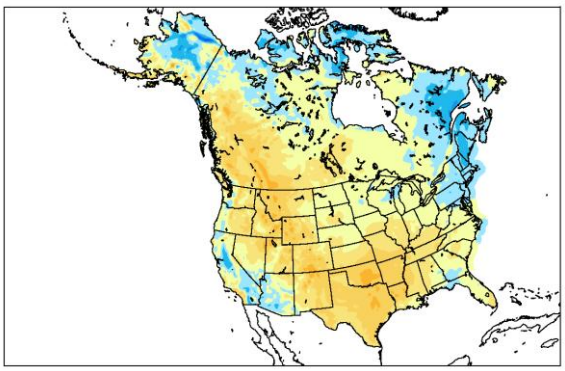
Wind Speed Anomaly Map: Q1 2012

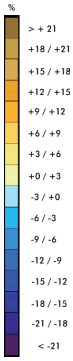
The patterns are explained in part by above-average storm activity in the Northwestern United States and Western Canada, influenced by the El Niño/Southern Oscillation (ENSO), which was negative (La Niña) throughout the quarter, though it trended toward a neutral phase. Concurrently, the North Atlantic Oscillation (NAO) and Pacific-North American pattern (PNA) were primarily neutral to slightly positive. The Arctic Oscillation (AO) was also neutral in January and February before becoming positive in March.

The monthly speed deviations across North America shifted throughout the quarter. Relatively weak pressure over Western Canada, coupled with strong pressure over the Western United States, yielded a strong zonal (west to east) high-altitude wind flow. This produced in January, a weak but fast-moving weather systems resulting in above-normal (+5% or more) 80 m wind speeds across much of the continent; speeds were 15% or more above the average over most of Western Canada. Below-normal storm activity resulted in a relatively weak wind resource (-15% to -5% below the average) along the mid-Atlantic and northeastern coast. In February, near- to below-normal wind speeds (-10% to 0%) were observed over eastern North America, consistent with a weak pressure gradient. At the same time, near- to above-normal winds (0% to +10%) were recorded in the Central United States and Northwestern Canada. During March, below-normal pressure over Western Canada and Alaska, combined with high pressure over the remainder of North America, resulted in very strong wind speeds (+10% to +30% or more above average) in much of the Western United States and Southern Canada. Near- to above-normal wind speeds (0% to +10%) occurred in central areas and below-normal speeds (-15% to -5%) continued to occur the Eastern United States.

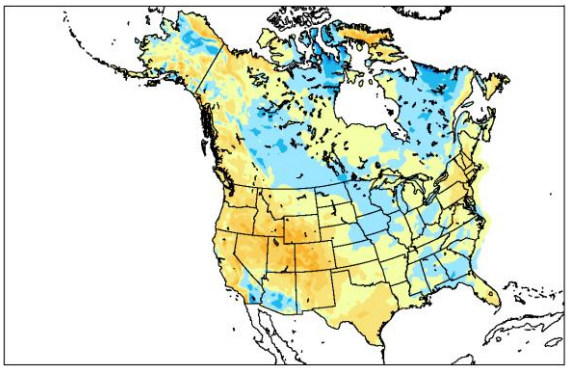
For the 12-month period from 1 April 2011 to 31 March 2012, the wind resource was above-average over most of the continent (see map below left). The largest positive deviations occurred in the Rocky Mountains and Southern Great Plains. Overall, the wind resource pattern was similar to, but somewhat stronger than, that of the previous year ending 31 March 2011, with the exception of the Northeast (see map below right).

This analysis was conducted by AWS Truepower's meteorology team. It is based on a computer simulation of weather conditions dating back to 1997, which results in a comprehensive and detailed weather snapshot at multiple heights above ground for every hour. Project assessments, maps, data and monthly reports are available. To view additional bulletins and sign up for our Wind Trends mailing list, visit http://www.awstruepower.com/knowledge-center/windtrends-bulletins/.





Wind Speed Anomaly Map: Q2 2011 – Q1 2012



Wind Speed Anomaly Map: Q2 2010 – Q1 2011

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