UNDERGRADUATE FORECAST SKILL IN THE WXCHALLENGE NATIONAL WEATHER FORECASTING CONTEST: 2005 – 2016

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What is the WxChallenge?

- The WxChallenge is a national weather forecasting contest ran by the University of Oklahoma and open to all undergraduates, graduate students, faculty, staff and alumni associated with universities across North America.
- Forecasts are made for daily high and low temperatures, precipitation, and maximum wind speed, Monday-Thursday, for two weeks each location and 10-12 locations each year (including tournament sites)

Results and Further Analysis

- First vs. last semester scores are significantly different using matched pairs (p-value < .00001, 1922 forecasters)
- First semester vs. subsequent semesters →
- Preliminary analysis indicates that scores are significantly higher for forecasters who do not participate as a course requirement, with increased experience in the contest, and with increased class standing, with experience seemingly a more significant factor than class standing.

p-values	1st Sem	2nd Sem	3rd Sem	4th Sem	5th Sem	6th Sem	7th Sem	8th Sem	9th Sem	10th Sem
1st Sem		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2nd Sem			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3rd Sem				0.011	0.000	0.000	0.000	0.000	0.011	0.023
4th Sem					0.001	0.000	0.000	0.003	0.042	0.064
5th Sem						0.268	0.002	0.113	0.215	0.239
6th Sem							0.015	0.201	0.288	0.302
7th Sem								0.281	0.360	0.386
8th Sem									0.492	0.484
9th Sem										0.492
10th Sem										

- Regression model:
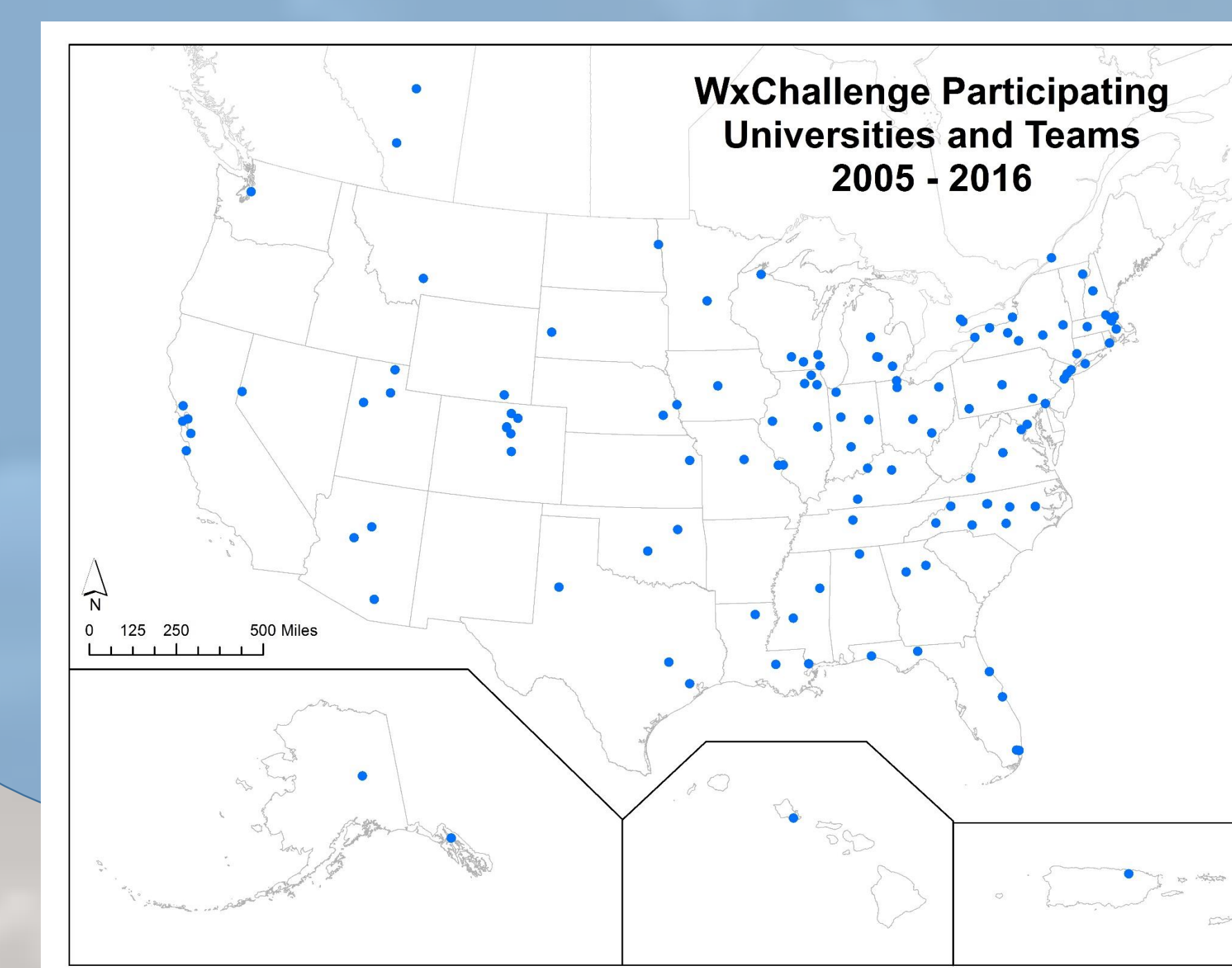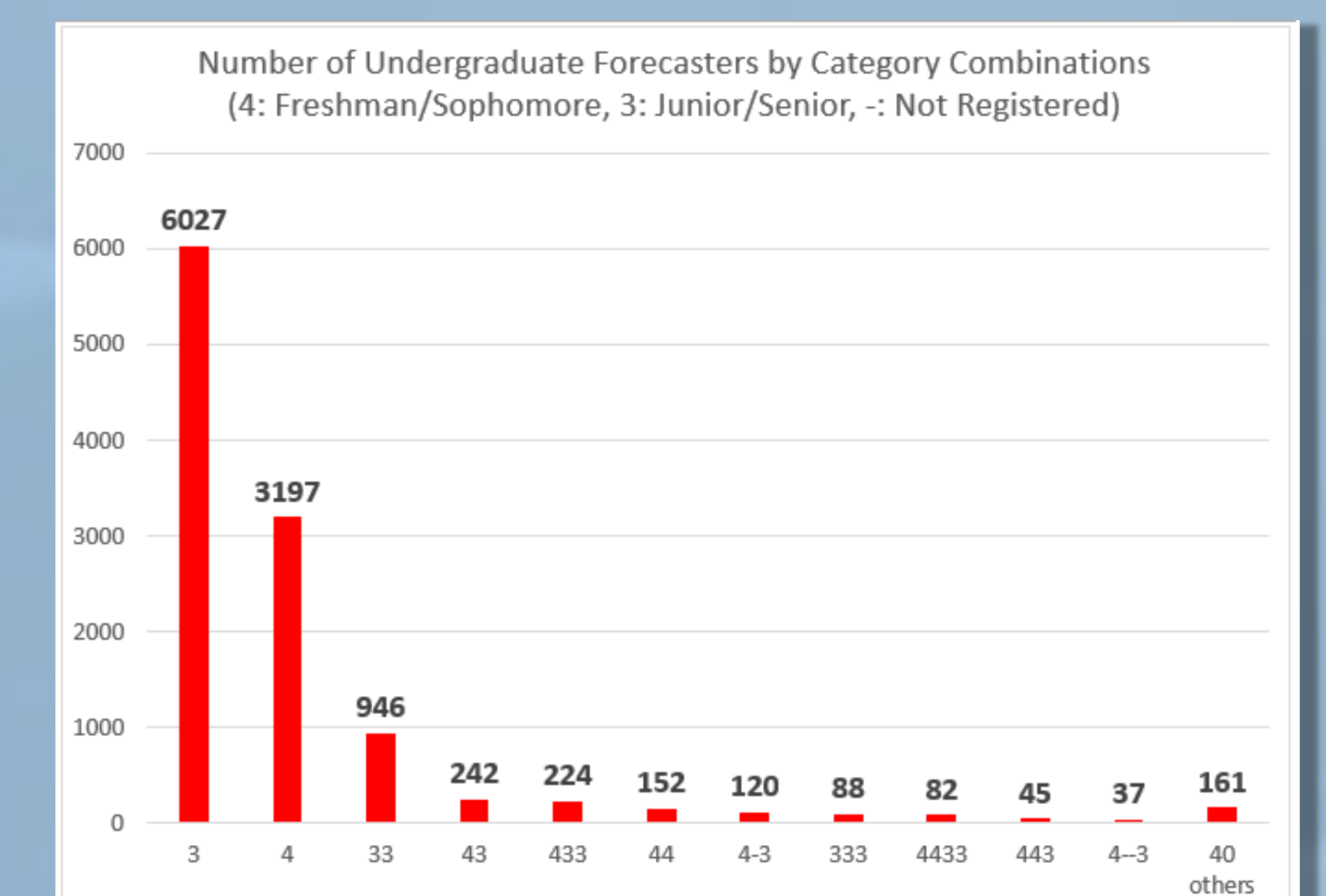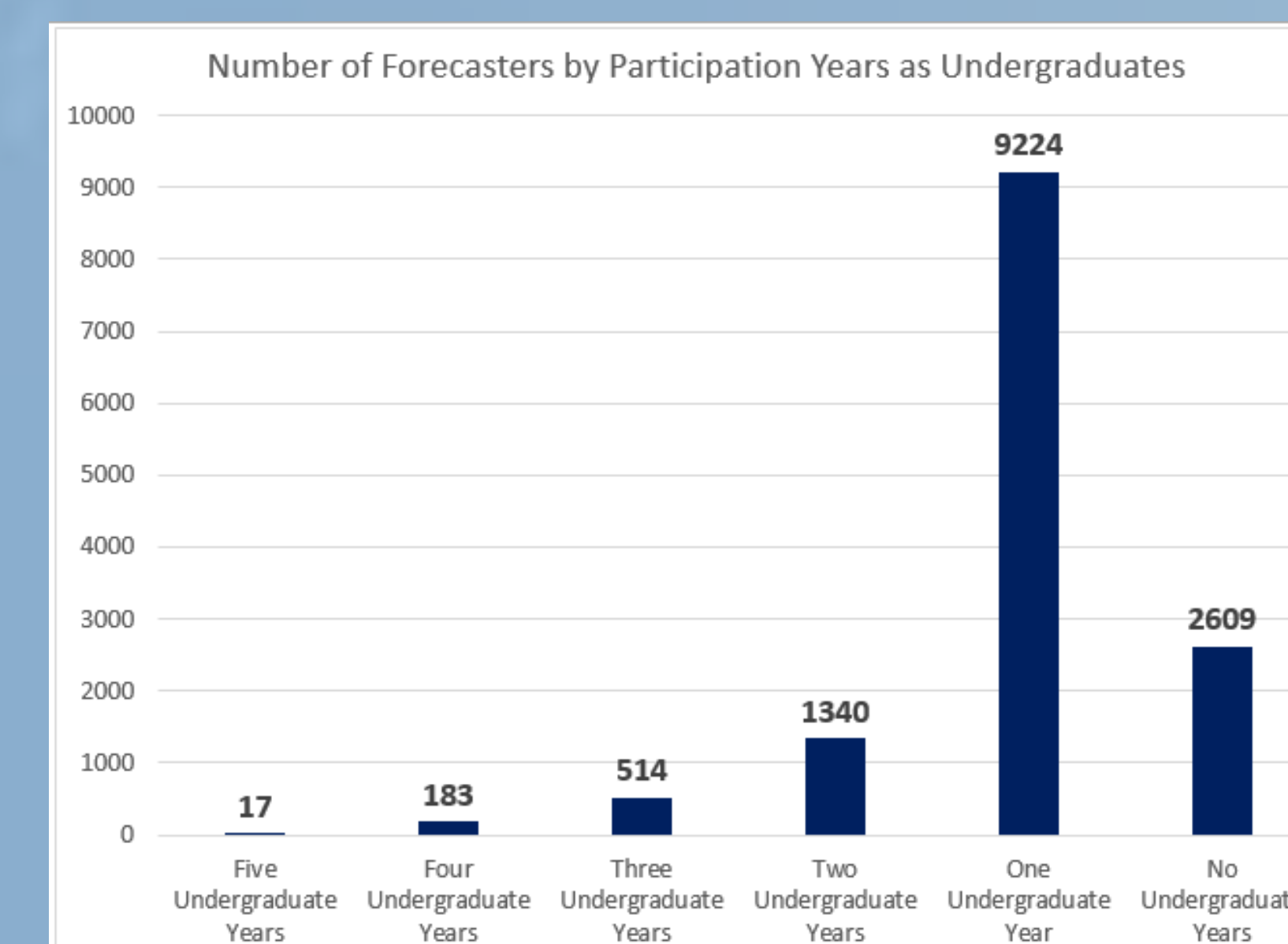
$$Score = 16.18095 + 1.654942 * Courses - 0.09604 * PctDays - 0.45759 * Class - 1.10105 * Semesters$$

R^2 only 19.7%

- Further analysis: Examine scores by forecast element (high, low, precipitation, wind) and by university

Data

- Forecasts obtained for 11 years: 2005 through Spring 2016
- 1040 forecast days and nearly 2000 forecasters per year
- 13890 unique forecaster ID/school combinations
    - Over 11000 forecasted at least one year as an undergraduate
    - 9224 only forecasted one year as an undergraduate: 6027 as juniors/seniors and 3197 as sophomores/freshmen

Number of Forecasters by Participation Years as Undergraduates

Number of Undergraduate Forecasters by Category Combinations (4: Freshman/Sophomore, 3: Junior/Senior, -: Not Registered)

WxChallenge Participating Universities and Teams 2005 - 2016

WxChallenge Forecast Sites: 2005 - 2016
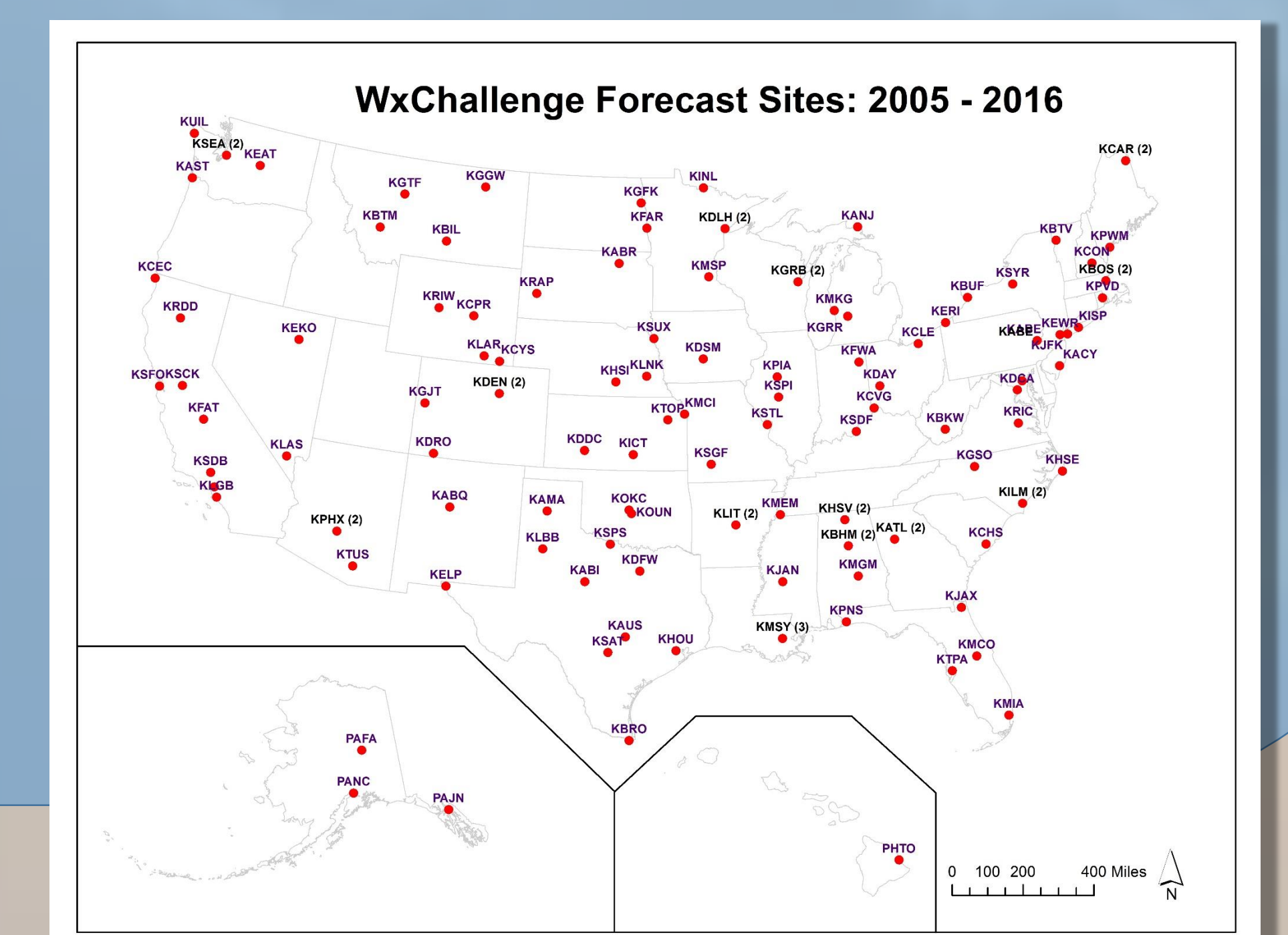
Additional Information

- Source of WxChallenge forecast data: http://wxchallenge.com/history/daily_files/ and http://wxchallenge.com/challenge/results.php
- Thanks is extended to Dr. Jeff Basara and Brad Illston at The University of Oklahoma for additional information about the contest and data